**MAKERERE UNIVERSITY**

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**DEPARTMENT OF ARCHITECTURE AND PHYSICAL PLANNING**

**BACHELOR OF ARCHITECTURE**

# AN EXPLORATION OF THE INFLUENCE OF THE BUILT ENVIRONMENTAL ELEMENTS ON CRIME IN INFORMAL SETTLEMENTS.

**(A case of Naguru Go-down in Kampala)**

**BY**

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## DECLARATION

I **Kyambadde Joseph**, declare that this report is a compilation of my own original research work and has never been submitted for the award of a degree of Bachelor of Architecture at Makerere University or any other institution in the world. All the information included in this report is based on my own findings.

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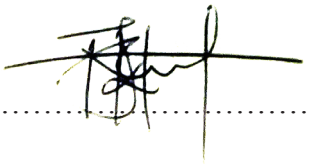

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This dissertation has been submitted for examination with the approval of the following Supervisor**.**

## SUPERVISOR

**Dr. Allan Kenneth Birabi**

Signature ..... Date .....

26/01/2023

## DEDICATION

I dedicate this report primarily to my Father and Mother for their guidance and sense of direction they gave toward my living as a responsible.

I also dedicate this to the people in the Naguru Go-down as they produce creative solutions to the challenges they always encounter in their lives.

## ACKNOWLEDGEMENT

First and foremost, I would like to thank the Lord Almighty for thus far He has brought me and for all that He has supplied unto me during the period of this research.

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## LIST OF ABBREVIATIONS.

1. **CPTED**-Crime Prevention through Environmental Design
2. **KCCA**- Kampala Capital City Authority
3. **UBOS** - Uganda Bureau of Statistics
4. **NCRMD**- Not Criminally Responsible on Account Due to Mental Disorder

## DEFINITION OF KEY TERMS.

1. **Response**: A reaction to something.

2. **Burglary**: Illegal entry into a building or other location for the purposes of committing an offence, especially theft.

3. **Crime**: An antisocial act that violates a law and for which a punishment can be imposed by the state or in the state's name (UN-Habitat Report, 2004)

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**ABSTRACT.**

In the last couple of years, crime and violence in many African countries has been shaped by deep social-economic inequalities. However, the spatial design and different built environment element factors have also played a big role in the crime and violence wave.

The major objective of this research was therefore to find out the relationship between crime and violence happening in urban informal settlements with the built environmental elements. By understanding the causes of crime and it`s correlation with the low-income houses, open drainage systems, road, route, and junction types in informal settlements, brown and green fields.

This research employs empirical explorative monitoring through observations, measurements and deep interviews and indicates that crimes and violence are random in different places, spaces and times with differing factors depending on the motives of the potential offender and suitable target.

The study concludes by outlining the different built environment elements and their relation with crimes and violence and suggests different environment design strategies for eliminating crimes within informal settlements.

# CHAPTER ONE: INTRODUCTION.

## 1.0 Introduction.

This study aimed at investigating how built environmental elements relate with crime in informal settlements. This is through a case study of Naguru Go-down, a Kampala suburb in Nakawa.

## 1.1 Informal Settlements.

African population growth rate is globally faster than other regions at an average rate of 6% per annum. In 2001, 47% of the world population was located in urban areas and was expected to have increased to 50% by 2007. It was estimated that by 2010, 42.7% of African population would have been in cities and increased to 47.9% by 2020. (Strategy Paper on Urban Youth in Africa-UN Habitat-2001).

Informal settlements refer to planned or unplanned housing units that have been legally or illegally constructed on land without complying with formal planning and building regulations. Uganda is the 81$^{st}$ largest country by area in the world and the 36$^{th}$ largest populated country as per 2019. According to the Uganda National Bureau of Statistics census report (UBOS, 2014), it was recorded that Uganda`s population was 34.6 million, with Kampala district having the highest population per district of 1,507080, (male-712762, female-794318) followed by Gulu with a population of 275,613 (male-134,571, female-141,042), (Uganda Bureau of Statistics, 2002). With this high population within the cities. With this high population the cities are faced with a housing problem that in the long run lead to the growth of informal settlements, (UN-Habitat, 2015)

Kampala Capital City Planning Board reports show that informal settlements around Kampala city suburbs are due to rural-urban migration which has resulted into increased populations densities causing housing deficits around the suburbs. The presence of privately owned (Mailo) land, political forces, bad governance, economic decline, past colonial plans covering small portions of the city, and weaknesses in following and enforcing prepared plans have been key factors in the existence of informal compact suburbs around Kampala, (UN-Habitat, 2007; Uganda Bureau of Statistics, 2002, 2019).

### 1.2 Built Environment Elements.

`Built environment`, refers to human made space in which people live, work, and recreate on a day to day basis. Built environment elements in Naguru Go –down include; social and service networks, drainage lines and channels, electricity and telecommunication lines and tower service areas, road networks and road signage, structural built elements which include, low income houses, territorial walls and fences, unoccupied houses, public spaces like markets, play grounds, schools, hospitals, bars and gyms, landscape elements like big trees and deep valleys, and groups of structural built elements like rentals, (Lynch, 2007).

### 1.3 Crime and Violence.

Security pauses a key development challenge not only to criminal judicial systems but also to the city and urban planning boards more so to the urban dwellers who live with its impacts. 60% of all urban dwellers in developing countries have been victims of crime and violence, (UN Habitat, 2007). Crimes are committed in certain areas, crimes are not random; they are either planned or opportunistic and do happen when the activity space of the victim or target intersect with that of the offender.

Crime, refers to any violation of law by commission or omission of an act forbidden by law that is usually punishable according to a particular jurisdiction, (Leonard, 1982). It is also defined as a violation of societal rules of behaviour as interpreted and expressed by the criminal law, which reflects public opinion, traditional values, and the viewpoint of people currently holding social and political power. Citizens who violate these rules are subject to sanctions by State authority, social stigma, and loss of status, (Siegel, 2014).

The Ugandan Constitution, in Chapter 12, Article 212, mandates the Uganda Police Force to protect life and property of the citizens, preserve law and order, prevent and detect crime. Naguru local Citizens depend on police response towards crime and violence cases. However, security is best achieved from a homestead level, through community levels to district and country level as everyone has a role to play. Crime prevention through environment principles of design (CPTED) can and have been employed in Naguru Go-down around the built environment elements to curb crime by, creating opportunities for natural surveillance by residents, neighbours and standers, instill a sense of territory, so that residents develop proper attitude and outsiders feel deterred from entry to a

private space, avoid social isolation, and protect targets of crime (Constitution of the Republic of Uganda, 1995; Newman, 1972).

### 1.4 Types of Crime.

Criminal acts can be classified into two categories as either violent or non-violent crimes. Violent crimes refer to crimes against property, traffic in illegal goods and services, and other crimes. Violent crimes in Naguru Go-down indicate criminal acts directed at an individual and these acts include murder, rape, robbery, and violent and sexual assault. Crimes against property usually refer to nonviolent crimes such as fraud, burglary, theft, embezzlement, forgery, arson, and vandalism. Traffic in illegal goods and services are the prohibited dealings within gambling, prostitution, narcotics, loan-sharking and alcohol, (Sharp et al, 2008). This research considered violent crimes (such as aggravated assault, kidnap, sexual related and robbery) and non-violent crime (such as burglary and theft), and how they are influenced by the built environmental elements. There are other forms of crime, such as organized crime that could not be considered in this research which is focused on environmental crime prevention.

This Study was intended to show whether multi-system of building organisations, narrow, zigzag endless dark streets and housing units with different heights and having easy access to each other have provided a green light to crime and violence in the Naguru Go-down as opposed to the gated, low-density areas with organized streets with specific routes with street lights and cameras installed and having security officials and dogs at specific housing units.

### 1.5.0 Problem Statement.

Over time, Uganda has an increasing rate of people moving from rural to urban cities, causing an increase in the city population densities with its related impact of housing challenge. This has resulted into multiple growth of informal compact settlements in Kampala suburbs making it hard for both Kampala and Wakiso planning authorities. Informal compact settlements are characterized with a multitude of problems which are not limited to; high unemployment levels, high illiteracy levels, high poverty levels, high early school dropouts' levels, drug abuse, political differences, dark streets, greed, and violent ritual activities. These unsolved problems can be extrapolated to appear as the leading factors of crimes and violence around Kampala suburbs.

In addition to the aforementioned factors leading to crime, the built environment elements within the informal settlements such as, houses, the movement systems and layouts, lighting of streets and semi-public spaces, spatial patterns of informal settlements have a direct consequence on the security of the dwellers. In Kampala, some areas are considered as 'no-go' zones, mostly within and around informal settlements due to the crimes committed around such built environmental elements.

Therefore, this study sought to investigate whether the built environment act as a catalyst to crime in informal settlements and through investigation suggest recommendations of how the built environmental elements can be treated to reduce crime.

### 1.6 Objective of Study.

The Main objective was to find out the relationship between insecurity (crime and violence) in Naguru go- down and the area`s land use, spatial aspect and seasonality of crime.

### 1.7 Specific Objectives.

i) To explore how built environment elements, relate with crime in Naguru.
ii) To explore how effective built environment elements might have been used to prevent crime.
iii) To discover better ways of using built environment elements to prevent crimes in Naguru.

### 1.8 Research Questions.

i) What are the major causes of crime and violence in Naguru Go-down?
ii) Which are the major built environment elements having security concerns in Naguru Go-down?
iii) What are the local measures taken by the dwellers to control crime and violence in Naguru Go-down?
iv) How can built environment elements be planned and organized to counter the crime and violence problem in the Naguru Go-down?

### 1.9 Justification of the Study.

Insecurity has and will remain a big threat to National development as potential investors lose confidence in high security risk areas. Uganda has had a history of conflicts and wars in most parts

of the country, with the recent northern Uganda-Kony war, and the crime wave involving murder, kidnap, and assassination cases that have recently discomforted the country.

Naguru Go-down is located in Nakawa Division, 4.5 kilometers in the northeast of Uganda Capital, Kampala. The population densities in Kampala are rapidly increasing due to rural urban migration of people hunting for greener pastures, thus creating more housing deficit problems in the city and its suburbs. Informal settlements that have developed in and around Kampala with undesirable conditions of, rampant unemployment, high levels of poverty, income differences which are a big factor for the crimes in and around built environment elements in Informal settlements.

As such, the study was inclined to the analysis of how the built environment elements relate to insecurity in Naguru Go-down, and if so, the crime prevention principles of design (CPTED) to be employed.

**1.10 Scope of the Study.**

This study was done in Naguru Go-down, located within the northeast outskirts of Kampala Capital City, in Nakawa Division. Naguru Go-down is boarded by high developing areas of Naguru, Bukoto, and Kololo.

**1.10 Methodology of the Study.**

This study required an understanding of the local in Naguru Go-down and how the residents spend their daily life in relation to the built environment elements surrounding them through the following:

i) Study of records in archives; These included, police crime and violence reports, human rights reports, crime records at local leaders, and Uganda bureau of statics reports;
ii) Interviews with the locals in Naguru Go-down. Local leaders, people living and staying in Naguru Go-down, and local law enforcers;
iii) Observations of the situation around selected built environment elements and peoples` reactions during day and night hours. This included observing the nature of the said built environment elements; and
iv) Photography; this included maps of Naguru Go-down showing different built elements, pictures of selected built environmental elements.

Hence, the Qualitative-Case study method research design was adapted for the study.

# CHAPTER TWO: LITERATURE REVIEW.

## 2.0 Introduction.

The 1960s were characterized by high crime and violent rates happening within low-income area in America (Melissa,2017). This high crime and violent occurrences encouraged various crime prevention techniques that included Crime Prevention Through Environmental Design started to emerge with the essay "*The Death and Life of Great American Cities,"* (Jacobs, 1961). Jacobs (1961) stressed that some areas have higher crime rates than others because of their poor planning design and her work reshaped the ways that urban planners and architects thought about urban problems, such that neighbourhoods should be isolated from each other and that an empty street is safer than a crowded street. In the 1970s, a surge of theories was developed for modifying the public environment to prevent crime, most noticeably Jeffery's Crime Prevention Through Environmental Design (CPTED) and Newman's Defensible Space, (Jeffery, 1971; Newman, 1972). The basic idea of CPTED was that careful design of physical environments can produce positive behavioural effects and reduce possible incidence and fear of crime, thereby improving quality of life and enhancing profitability for business around such physical environments.

Researchers questioned and amplified the findings of Newman, (1972) and finally modified and improved the strategies of CPTED. They reinforced the concept of the physical environment exerting direct influence on the crimes and violence settings by delineating territories, reducing or increasing accessibility through the creation or elimination of boundaries and circulation networks, and facilitating surveillance by citizens and police, (Angel, 1968). A good plan of the built environment elements can be used as a strategy towards crime prevention by changing the human behaviour patterns and strengthening the inter-relationship between people and the built environment elements.

This chapter looks at the different theoretical, contextual and philosophical perspectives that describe crime occurrence, crime prevention and crime status in informal settlements like Naguru Go-down, Kampala City.

## 2.1 Crime in informal settlements.

### 2.1.1 Crime.

Crime has different legal and social definitions. In the legal sense, crime is a behaviour or mistake that violates the law, and which leads to a range of punishments including fines, imprisonment or death. In the social sense, crime is an act or incident of negligence that jeopardizes the general welfare, interests and that is legally forbidden. Siegel, (2001) suggested a unifying definition of crime stating that "Crime is a violation of societal rules of behaviour as interpreted and expressed by a criminal legal code created by people holding social and political power". Individuals who violate these rules are subject to sanctions by state authority, social stigma, and loss of status.

Crime occurs when a suitable target, a motivated offender, and the absence of a capable guardian must all converge at one time in a specific place, (Felson and Cohen, 1979). For example, to measure crime on a Street, it is necessary to consider several factors including the capable guardians, the motivations of offenders, potential targets, and environmental conditions. The offender is an important component in criminal activity and he/she always has several reasons/factors to commit offences.

### 2.1.2 Types of Crime in Informal Settlements.

Approximately one in three Ugandans (34%) have encountered crime in the past four years. Petty crimes such as theft (80%), and burglary, robbery and damage to property (20%) make most of the the criminal justice problems, (Hiil, 2020).

In an extensive research study carried out by Hiil, (2020) on crime rate and typologies in Ugandan informal settlements, it was discovered that;

i) Theft was 80%
ii) Assault was 60%
iii) Robbery, burglary, damage to property was 20%
iv) Violent crime such as (attempted) murder or bodily injury was 3%
v) Sexual offence was 1%
vi) Drug related crimes was 1%

However, on adding up the percentages, the total comes to 165% that tops the 100% marker by 65%. This major variance is due to the question being a multiple response question; respondents could choose more than one crime problem they have encountered during the past four years (Hiil 2020). Hence showing that most of the residents had experienced multiple forms crimes within the informal settlement's multiple times.

### 2.1.3 Causes of Crimes in Informal Settlements.

Crime is a usually a two-party act that is influenced in most cases by the surrounding environment, (Felson and Cohen, 1979). The perpetrator in most cases has several motivations and these can be catergorised into psychological, economic and social factors.

The psychological factors deal with the unrestrained passions or emotions, and these tend to have the greatest impacts on crime occurrences which lead to violent crimes. Occasionally, criminals may commit offences on impulse, out of rage or fear. In such cases, for example, rapists push aside the constraints of moral norms and punishments to commit crime when their emotions run high. Other offenders believe that their criminal activities can bring greater reward, excitement, and satisfaction, at least before they are caught. Accordingly, criminals, especially organized ones, decide to commit crime after carefully planning everything to increase gain and reduce risks of failure.

Poverty, unemployment, inflation, constitute the main economic factors that appear to play an important role in shaping trends in property crime. People who are poor or suffering from economic stress have the most motivation to commit crimes in order to get what they need or desire which is through stealing, robbing and other illegal activities. They are also assumed to commit violent crimes so as to express their anger and frustration against the society. On the contrary, crime rates drop when the poor are provided with economic opportunities via welfare and public assistance (Hannon and DeFranzo, 1998).

Social factors such as racial heterogeneity, age and gender, drug and alcohol abuse, wrong moral choices, mental disorders, bad influences, homelessness, education levels and broken families, also have various effects on potential criminal activities of individuals. They contribute to the relationship between social class and crime. Racial difference is an extremely sensitive issue in reference to the crime rate. After conducting a number of studies related to community racial composition and violent crime, social ecologist Sampson, (2008) discovered that districts with a

higher proportion of African American residents tend to have higher level of violent crime than other racial and economic groups (Lersch, 2004),

In addition, income inequality, unemployment rates, low level of education, neighbourhood disorganization and family disruption are closely tied to race, all of which strongly impact crime and delinquency. Most of the impact on the legacy of racism, discrimination on personality and behaviour, sub-cultural adaptations and social disorganization influence crime (Siegel, 2001). Studies have investigated the impact of family structure on crime and delinquency, noting that there is a strong tie between family disruption and rates of violent crime (Lersch, 2004). For example, someone growing up in a poor and broken family, has a possibility of being undereducated, may find it difficult to get a decent job. The resulting level of frustration over this individual's future, in this case, could drive the possibility of gaining social prosperity through illegal activities.

Without a potential victim or the target, crime would not occur. According to the Routine Activities' theory, targets are crime-specific. For example, for sexual assault, a suitable target must be vulnerable enough to exclude any guardianship; for burglary, it could be a low-occupancy building. There are four main factors that make targets more attractive from the offenders' perspectives, which include value, inertia, visibility and access (Greene, 2006). Typically, offenders prefer to commit crimes that demand the least effort and that result in the highest gains, while taking the lowest risks. Items such as purses, phones, MP3 players and other small portable possessions with a high value are examples that prove the conditions that make it possible for crime to occur. Inertia (referring to the size or weight of the item) can affect how suitable it is for theft. If a thief witnesses someone counting money in front of the market shop, or Vendor on a deserted street, the offender has the advantage of visibility. He or she has seen the money and knows exactly where it is placed. Moreover, the fact that the victim will standing alone without any guardians thereafter provides easy accessibility for the offender to try to attack without being noticed.

### 2.2 Some Useful theories on the occurrence of crime

A number of theories were proposed regarding the cause of crime within society. In most cases, these theories have proponents as well as critics that examine them and highlight their inaccuracies which either lead to new theories or improvements of the existing theory.

### 2.2.1 Rational Choice Theory.

Humans are reasoning actors who weigh means and ends, costs and benefits in order to make a rational choice (Cornish and Clarke, 1987). The theory does not describe the choice process, but rather predicts the outcome and pattern of choices based on assumptions that an individual has preferences among the available choice alternatives that allow them to state which option they prefer (Becker, 1992).

In support of this theory, failure of families and extended kin groups, expand the realm of relationships that are no longer controlled by the community which in turn undermines government controls. The realm of relationship was highlighted as a disorganization factor that causes and reinforces the cultural traditional and cultural conflicts that support anti-social activities leading to persistent, systematic, crime and delinquency.

#### 2.2.1.1 Support for Rational Choice Theory.

Many features of rational choice perspective make it particularly suitable to serve as a criminological "meta-theory" with a broad role in the explanation for a variety of criminological phenomena. Since rational choice can explain many different components; it is broad enough to be applied not only to crime but everyday life circumstances. Studies involving offenders being interviewed on motives, methods and target choices and research involving burglars, bank and commercial robbers and offenders using violence (Walsh, 1980; New South Wales Bureau of Crime Statistics and Research, 1987; Nugent et al., 1989; Morrison and O' Donnell, 1996). The Rational Choice perspective has provided a framework under which to organize such information so that individual studies produce more general benefits.

The Rational Choice Theory insists that crime is calculated and deliberate. All criminals are rational actors who practice conscious decision making, that simultaneously work towards gaining the maximum benefits of their present situation. Another aspect of rational choice theory is the fact that many offenders make decisions based on bounded/limited rationality, (Cornish and Clarke, 1987).

#### 2.2.1.2 Criticism of the Rational Choice Theory.

Ideas of limited rationality emphasize the extent to which individuals and groups simplify a decision because of the difficulties of anticipating or considering all alternatives and all information.

Bounded rationality relates to two aspects, one part arising from cognitive limitations and the other from extremes in emotional arousal. Sometimes emotional arousal at the moment of a crime can be acute, therefore would be offenders find themselves out of control, and rational considerations are far less salient, (Zey, 1992).

Crime can be influenced by opportunity. Opportunity of a crime can be expressed by the cost benefits, socioeconomic status, risk of detection, dependent on situational context, type of offence and access to external benefits. In addition, opportunities are dependent on the individual's current surroundings and consequential factors. Rational Choice theory better explains instrumental crimes rather than expressive crimes. Instrumental crimes involve planning and weighing the risks with a rational mind. An example of an instrumental crime can include: tax evasion, traffic violations, drinking and driving, corporate crime, larceny and sexual assault. On the other hand, expressive crime includes crimes involving emotion and lack of rational thinking without being concerned of future consequences. Expressive crimes can include: non-pre-meditated murder such as manslaughter, and assault. As a result, punishment is only effective in deterring instrumental crime rather than expressive crime, (Zey, 1992).

O'Grady et al. (2000) performed a study which examined the illegal sale of tobacco products to underage youth and showed that, with the use of a rational mind merchants and clerks weigh out the cost benefits and risk factors which are involved in selling cigarettes to underage youth. Due to the minimal risk of police patrol after 5pm, merchants and clerks felt a diminished sense of risk, therefore allowing them to sell their products illegally to underage youth. According to O'Grady (2011), the three main critiques of Rational Choice Theory include: Assumptions that all individuals have the capacity to make rational decisions; the theory does not explain why the burden of responsibility is excused from young offenders as opposed to adult offenders; this theory contradicts the Canadian Criminal Justice System. This theory does not support the idea that all individuals are rational actors because of cognitive inability. An example of individuals who lack a rational mind include those who are Not Criminally Responsible on Account Due to Mental Disorder (NCRMD).

### 2.2.2 Crime Pattern Theory.

Crime is not random, it`s either planned or opportunistic. Crime happens when the activity space of a victim or target intersects with the activity space of an offender (Brantingham and Brantingham,

1984; 1993). Their theory is based on crimes happening in physical space, though physical interaction of offenders and targets, and also though digital domain like internet and various electronic media. Crime pattern theory looks at a person`s activity space involves places (Nodes) of day-to-day actives, and the path/ route (personal path) a person takes to and from these nodes. The perimeter is a person`s awareness space involving nodes and personal path of daily activities, and criminal opportunities arise as criminals move to and from personal nodes using personal paths (figure 1, Crime pattern theory), (Brantingham and Brantingham, 1984; 1993).

Targets are selected from an offender's awareness space and assessed against the criteria of suitability (gain or profit) and risk (probability of being observed or apprehended). These targets are scanned for certain cues (visibility, unusualness, symbolism) that are evaluated in terms of fit to the individual's template. From the perspective of the offender, rational choices are then made and specific targets chosen for victimization. Such a selection process is consistent with the concept of an offender operating within his or her "comfort zone", (Keppel, 1989).

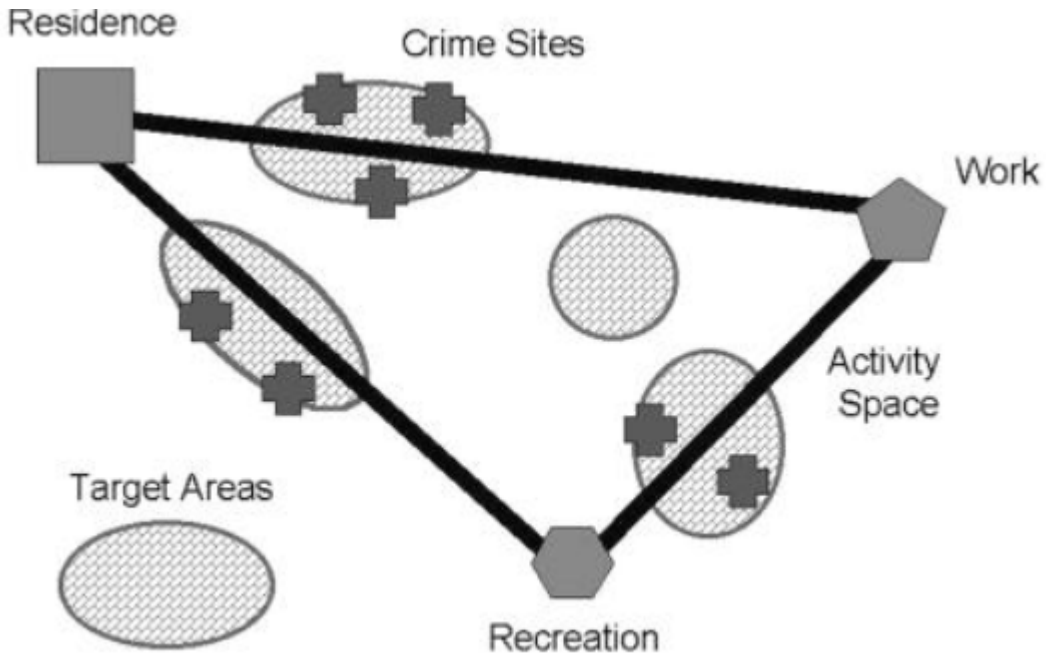


Figure 1: Drawing Illustrating the Crime Pattern Theory. (Source: Keppel,1989)

A person's awareness space forms part of his or her mental map and is constructed primarily, but not exclusively, from the spatial experiences of the individual. An awareness space is derived from, amongst other sources, an activity space, the latter being composed of various activity sites (residence, workplace, social activity locations, and others.) and the connecting network of travel and commuting routes. Well-known locations (landmarks, tourist sites, important buildings) may also become part of a person's awareness space without actually being a component of their activity space, (Brantingham and Brantingham, 1993).

Brantingham and Brantingham, (1993) propose a dynamic process of target selection, with crimes occurring in those areas where suitable targets overlap the offender's awareness space (Figure 1). Offenders then search outward from these areas, the search behaviour following some form of distance-decay function, (Brantingham and Brantingham, 1984, 1993; Rhodes and Conly, 1981).

#### 2.2.2.1 Criticism of the Crime Pattern Theory.

The theory focuses on preventing crime by changing the environment of the offender, being anti-social and looks at an individual not a community. Crime pattern theory focuses on crime as a complex event that requires many different elements for its occurrence and this places it in sharp contrast with traditional criminology, which is focused on the development of criminal propensity in offenders (Brantingham and Brantingham, 1981; 1984).

### 2.2.3 Routine Activity Theory.

This Theory's approach to the occurrence of crime suggests that humans are reasoning actors who weigh means and ends, costs and benefits, in order to make rational choices of, when, where and how to commit crime and they will only commit the said crime when the reward outweighs the risk in their conscious or subconscious estimation, (Felson and Cohen, 1979). Closely related to Theory of Deterrence, targets of crime, which can include people, homes, or businesses, carry a perceived reward as well as perceived gains (Siegel, 2015), the decisions to commit crime are weighed by considerations such as offender background factors, previous experience and learning, evaluated solutions, perceived solutions, and readiness, (Lersch, 2011). These factors are a prerequisite to the possibility of committing crime and vary from one situation to the next.

Routine Activity Theory assumes that a likely offender and a suitable target should be available in the absence of a capable guardian in the same place at the same time as so the criminal activity to

take place. Also termed as the crime triangle involving; the target or victim, offender and the absences of capable of guardian, (Felson and Cohen, 1979).

Felson and Cohen, (1980) postulate that criminal activities are structurally significant phenomenon, meaning that violations are neither random nor trivial events. In consequence, it is the routine activities people partake in over the course of their day and night lives that makes some individuals more susceptible to being viewed as suitable targets by a rational calculating offender. Routine activities theory correlates the pattern of offending to everyday patterns of social interaction. Crime is therefore normal and is dependent on available opportunities to offend. If there is an unprotected target and there are sufficient rewards, a motivated offender will commit a crime.

#### 2.2.3.1 Criticism of the Routine Activity Theory.

The approach does not consider random crime, some crimes can be influenced by opportunity being related to cost benefits, individual`s current surroundings and consequential factors. Routine activity theory only looks at instrumental crimes, crimes involving planning and weighing risks other than expressive crimes involving emotions and lack rational thinking.

The difficulty, according to LeBlanc and Frechette, (1989), is that some offenders make almost no preparation for an offence, something that is especially true for young offenders. This means that the offence is not the result of a calculated or well thought out process.

Doob and Cesaroni (2004) suggest that a distinction needs to be made between rational choice in the short term and consideration of the long-term implications. Youth do not consider the long term; they are impulsive and focus on the immediacy of the rewards associated with offending. Even if youth do think of the criminal justice consequences, they find them irrelevant as it is unlikely that they will be apprehended. In fact, in interviews with prisoners, Tunnell (1996) found that all 60 respondents reported that they simply did not think about the criminal consequences of their actions. Though they knew their actions were criminal, and therefore tried to avoid capture, more than half were unaware of the severity of the punishment for the offence.

Since most offenders do not think they will be caught, and in fact it is unlikely that they will be caught, increasing the penalty has no prolonged effect on the crime rate. It is the perceived risk of apprehension, not the severity of punishment that holds the greatest power to deter, though this

ability is limited as well. This is amply demonstrated by the Kansas City experiment, where it was found that variations in police patrol techniques had little effect on the crime patterns (Kelling et al., 1974). Regardless of the actual likelihood of apprehension, most offenders do not think they will be caught. This finding shows the relationship between the likelihood of being arrested or imprisoned and corresponding crime rates.

Originally postulated by Newman, (1972), Situational Crime Prevention is supposed to create defensible space, which suggests that crime can be prevented through the use of architectural designs that reduce opportunity. Situational crime prevention is aimed at convincing would-be criminals to avoid specific targets. It is thus held that criminal acts will be avoided if the potential targets are carefully guarded, if the means to commit crime are controlled, if potential offenders are carefully monitored, and if opportunities for crime are reduced, (Siegel and McCormick, 2006). The difficulty with situational crime prevention strategies in general, and closed-circuit television and public surveillance in particular, is that they tend to displace offending behaviour to locations that are not under surveillance. Instead of preventing crime, these often-costly surveillance strategies simply move crime to another location (Barr and Pease, 1990). This is exemplified by the 2003 police crackdown on illicit drug use in Vancouver. Rather than reducing drug offending, the only "success" the crackdown had was to disperse drug activity over a larger area. Wood et al (2004) asserted that since enforcement efforts do not address deeper issues such as poverty, health, harm reduction, welfare and housing, they are incapable of producing real reductions in crime.

Assuming a rational basis for committing a crime overestimates the extent to which people consider the legal consequences of their actions. This theory also focuses on individuals and their choices while ignoring the social constraints and conditions that shape an individual's circumstances, thought processes, and life chances. These exert considerable influence on people. Engaging in crime is not simply a rational decision. It is affected by the interaction of a number of factors and influences.

Furthermore, increasing the penalty also assumes that offenders were aware of the original sanction and felt it was worth the risk, while the new, more punitive punishment makes it no longer worth the risk in a cost/benefit analysis. This, again, is assuming that offenders are aware of the change in the severity of the sentence and rationally calculate their choice of action. Since this assumption is

not supported by the literature, both specific and general deterrence strategies have not yielded the results predicted by rational choice theorists.

### 2.2.4.0 Broken Glass Theory.

The theory states that, visible signs of crime, anti-social behaviours and civil disorder create an urban environment that encourages further crime and disorder including serious crimes. Policing methods that target minor crimes such as vandalism, public drinking and fare evasion, help to create an atmosphere of order and lawfulness, thereby preventing more crimes (Wilson and Kelling, 1982). Wilson and Kelling, (1982) further suggested that an ordered and clean environment or that is well maintained, sends the signal that the area is monitored and criminal behaviours are not tolerated, while a disordered environment that is not well maintained (broken window) sends the signal that the area is not monitored and that criminal behaviours can be tolerated.

Broken Windows Theory considers four important variables:

i) Disorder,
ii) Fear of delinquency,
iii) Social control, and
iv) Crime.

An intricate suggestion of this theory is the perception of disorder and the suggested minor forms of public disorder (broken windows) that could lead to severe crime and a downward spiral of urban decay. To be more specific, a simple small disorder can get an even broader range of problems and can, in short order and inundate an area with severe victimizing crime (Skogan, 2008). Minor social disorder (littering, loitering, public drinking, panhandling, and prostitution), and physical disorder (graffiti, abandoned buildings, and littered sidewalks) when tolerated in a neighbourhood, may produce an environment that is likely to attract crime. So, for instance, the way to address disorder and to reduce crime is to increase the number of misdemeanour arrests (Harcourt and Ludwig, 2006). Jefferson (2015), mentioned that the successful application of this theory to advance neo-liberal growth in the city securing public safety. For example, only the police action against disorder could initiate quality life in New York City. However, the central claim of the broken windows theory, disorder, causes of crime by signaling community breakdown, is flawed. Moreover, “disorder” and

"the disorderly" lie at the heart of the problem but they do not have well-defined boundaries or settled meanings (Harcourt, 2001), restricting its application addressing disorders.

### 2.3 Built environment.

Built environment refers to the human-made surroundings that provide the setting for human activity, ranging in scale from buildings and parks or green space to neighbourhoods and cities that can often include their supporting infrastructure, such as water supply or energy networks. The built environment is a material, spatial, and cultural product of human labor that combines physical elements and energy in forms for living, working, and playing. It has been defined as "the human-made space in which people live, work, and recreate on a day-to-day basis" (Lee et al.,2008).

#### 2.3.1 Characteristics of the Built Environmental Elements.

i) Built environmental elements are everything humanly created, modified, or constructed, humanly made, arranged, or maintained,
ii) Built environmental elements are the creation of human minds and the result of human purposes.
iii) Built environmental elements are created to help us deal with, and to protect us from, the overall environment, to mediate or change this environment for our comfort and well-being.
iv) Built environment elements are defined and shaped by context, each and all of the individual elements contribute either positively or negatively to the overall quality of environments both built and natural and to human-environment relationships (Habraken and Teicher, 2000)

#### 2.3.2 Built Environment Elements.

**Products**; includes materials and commodities generally created to extend the human capacity to perform specific tasks: graphic symbols such as tools, materials, machines and many others.

**Interiors**; defined by an arranged grouping of products and generally enclosed within a structure. They include, workshops, bedrooms, classrooms, and others.

**Structures**; planned groupings of spaces defined by and constructed of products. They include, markets, developed play grounds, housing, schools, office buildings, churches, factories, highways, tunnels, bridges, dams, and many others.

**Landscapes**; Landscapes are exterior areas and/or settings for planned groupings of spaces and structures, such as courtyards, malls, garden parks, sites for homes or other structures; farms, countryside, national forests and parks, open play grounds and others.

**Cities**; Cities are groupings of structures and landscapes of varying sizes and complexities, generally clustered together to define a community for economic, social, cultural, and/or environmental reasons. Cities can father be subdivided into, subdivisions, neighbourhoods, districts, villages, and towns.

**Regions**; Regions are groupings of cities and landscapes of various sizes and complexities; they are generally defined by common political, social, economic, and/or environmental characteristics.

For the purpose of this study research, structures and landscape-built environment elements that were considered which include;

i) **Building structures** (commercial and residential, and mixed buildings):
   The built environment is made of mainly commercial and residential building structures. Residential infrastructures include, bungalow houses, high rise residential houses, low-income houses, farm houses, while commercial infrastructures include commercial shopping malls, apartments, office blocks, and many others. Infrastructures can also be of mixed use holding both commercial and residential activities at the same time, for example having commercial retain of the lower floors and residential on the upper floor.
ii) **Transport structures** (roads, routes, path ways):
   A sustainable transport system must provide mobility and accessibility to all users/residents in a safe and environment friendly mode of transport. This is a complex and difficult task when the needs and demands of people belonging to different income groups are not only different but also often conflicting. For example, if a large proportion of the population cannot afford to use motorized transport private vehicles or public buses, then they have to either walk or ride bicycles to work. Provision of safe infrastructure for bicyclists and

pedestrians may need segregation of road space for bicyclists and pedestrians from motorized traffic or reduction in speeds of vehicles. Both measures could result in restricting mobility of car users and this depends of the needs society.

iii) **Public structures** (markets, green and brown fields) and **support structures** (road signs)

**Importance of well-planned public spaces.**

i) Social and personal wellbeing.

Urban parks can contribute to social wellbeing by offering residents a place to relax socialize, and be in contact with nature (Maller et al., 2008). Maas et al. (2006), found that urban green spaces are linked to neighbourhood social cohesion (Figure 2, Green parks). Urban parks may also contribute to a reduction in crime and violence (Branas et al., 2011; Kuo and Sullivan, 2001). However, crime reduction associated with urban parks is typically dependent on their use of design principles associated Crime Prevention through Environmental Design (CPTED).

ii) Facilitating physical activity through active recreation

Access to parks provides an important means to undertake physical activity through active recreation (Kessel et al., 2009). In particular, park quality is correlated with increased park use for physical activity purposes (Crawford et al., 2008; Veitch et al., 2014)

Regular physical activity improves overall health and as a result reduces the risk of a wide range of non-communicable diseases. Physical activity also enhances psychological well-being: it relieves symptoms of depression and anxiety, and more generally improves mood (Berger & Motl, 2000). Conversely, a lack of physical activity is responsible for over three million deaths per year globally (World Health Organization, 2009).

Figure 2: Photograph illustrating Green Park. (Source: Pintrest.com/kingdom,2011)

A built environment is developed in order to satisfy residents' requirements which can be physiological or social and are related to security, respect, and self-expression. People want their built environment to be aesthetically attractive and to be in an accessible place with a well-developed infrastructure, convenient communication access, and good roads, and the dwelling should also be comparatively cheap, comfortable, with low maintenance costs, and have sound and thermal insulation of walls. People are also interested in ecologically clean and almost noiseless environments, with sufficient options for relaxation, shopping, fast access to work or other destinations, and good relationships with neighbours.

### 2.3.3 Built Environmental Elements and Informal Settlements Elements.

i) **Tinny dead ends**

Bhatt and Rybczynski (2003), through analysis of building patterns at micro-scale of informal morphologies discovered several tinny spaces (having dead ends as times), including housing extensions, workplaces, small shops and streets (corridors) linking different homesteads. Informal settlements are characterized with small tinny pockets of spaces or dead spaces that are sometimes left vacant or used. The path ways and roads are also not tarmacked, hence are very dusty, yet at times are diversion routes from the highway during traffic congestion hours

ii) **Mixed land use**

Bhatt and Rybczynski (2003), also elaborated that informal settlements are often places of working as well as living (mixed land use), and mall shops often emerge where pedestrian flows are greater than the other parts of a settlement. The general composition of building structures in informal settlements is a mixed type of buildings, having both residence and commercial network or having houses acting as both for business and staying for the users. Figure 3, shows a mud road through Kinawataka Nakawa division having a network of mixed buildings along the Road.

Figure 3: A Photograph illustrating a mud road through Kinawataka. (KCCA, 2001)

iii) **Privacy and interaction**

As suggested by Bhatt and Rybczynski, (2003) that informal settlements hold mixed use structures, Kellett and Tipple, (2000) also asserted that informal structures can be places of production as well as living, and also indicated that the mix of working and living may compromise the privacy of the households if working incorporates social interaction.

iv) **Activity zones**

Arefi, (2011) suggests that there is a relation between the location of retail activities and hierarchy of roads within the access network. Non-residential activities including retail, commercial and religious uses often emerge along the main roads. Arefi (2011), also found that the access network often follows the topographic conditions and encompasses a hierarchy of roads.

Figure 4: Photograph illustrating a charcoal vendor in the Kagugube zone. (KCCA, 2001)

v) **Major elements**

Ribeiro (1997) identified three major physical elements of pathways, fences and informal structures for defining spaces in informal settlements, and he showed that the main streets are often shaped based on the trajectories of existing pathways in these settlements.

Figure 5: A Photograph illustrating Street vending in the Kagugube. (KCCA, 2001)

vi) **Location**

Hillier et al. (2000) found that the spatial layout of an informal settlement and its location in relation to the urban network play a critical role in the extent to which the settlement has become consolidated. They argue that self-organized economic activities often escalate in informal settlements with strong economically active edges. Figure 5, shows the development of buildings along a major road in Kagugube Zone, Kampala district.

vii) **Materials**

The most common type of materials used for construction of the dwelling units in informal settlements are mud and pole for the wall (50%), iron sheets (54%) or thatch (44%) for the roof and rammed earth (77%) for the floor (UN-Habitat, 2007).

Tenements (mizigo) are dominant housing units, constructed either as one room standalone accounting for 63.8% or as hind extensions of commercial buildings or collectively in a chain format (locally referred to as a train) accounting for 16.3% with an occupancy of 5 to 7 adult persons and

the average size of '10 feet by 10 feet' per room, (Figure 6, KCCA, 2004); (United Nations Human Settlement Programme, 2004).

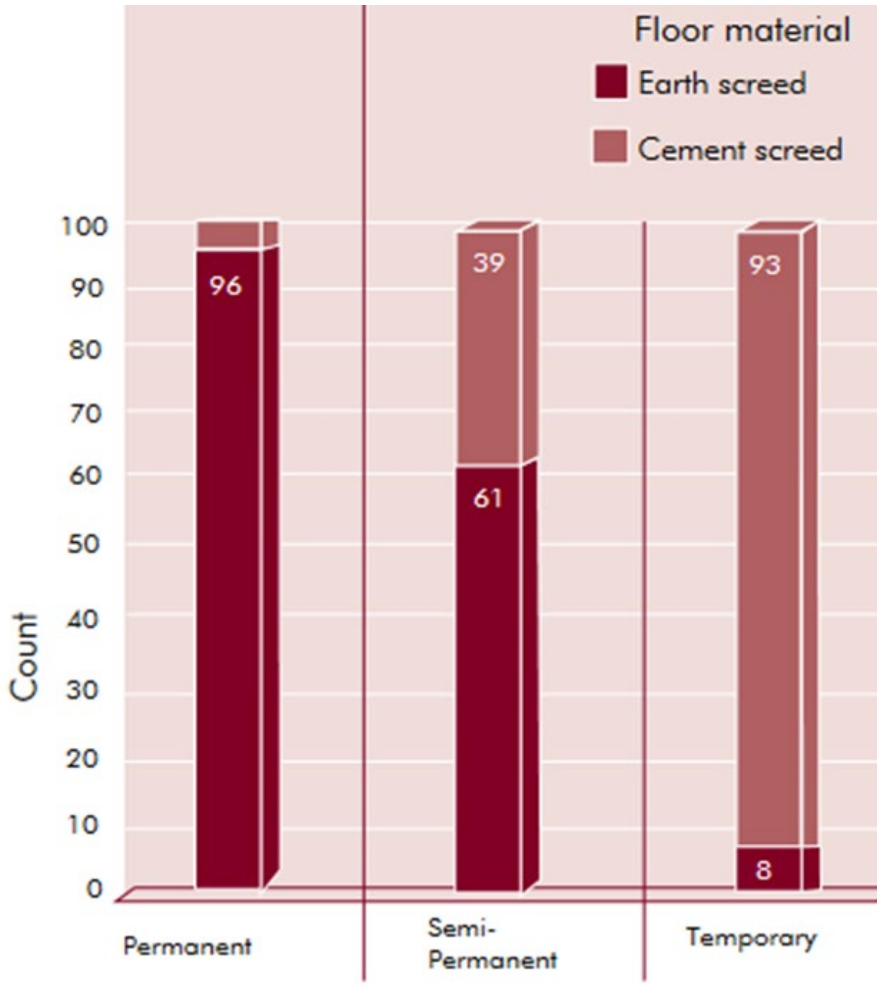


Figure 6: A Graph illustrating the Nature of buildings. (KCCA, 2005)

**2.4.0 Crime and the Built Environment.**

Crime or the fear for it, and the physical environment are related in a systematic, observable and controllable manner. Crime or fear for crime turns of some areas of the city into "no-go zones" in which law enforcers cannot enter. Often, slums take on these characteristics, with the resulting stigmatization and limited mobility of the residents there. In turn, neighbouring residents of more middle-class areas may be motivated to build walls or gated communities to protect themselves.

In some cases, even the transport infrastructure adapts to the fear of violence and crime, effectively isolating violent areas. Increasingly higher walls and barriers, more elaborate security systems, the

presence of private security, and, often, a stronger police presence in wealthier areas fragment public space and break down social cohesion in the city.

Jacobs (1961) viewed natural surveillance (eyes on the street) as good deterrent of criminal activity. In a similar manner (Jeffery, 1971) argued that the crime prevention strategy with the greatest potential involved heavy reliance on design and physical changes that could help reduce criminal opportunities in the environment. The theoretical discussions of Jeffery, (1971) drew attention to the importance of investigating the relationship between the built environment and public safety.

Jeffery (1971) explored that on city planning and criminality, it may be observed that theories generally included in the socio-architecture, like environmental determinism, stress that the specific urban environment has a capacity to influence individuals' behaviour and their acceptance of social rules. Jeffery (1971) affirmed that in more developed areas, crimes and the use of illegal drugs would be relatively common, because of the detrimental effect of mean, uncaring functionalism of both aesthetical look and practical distribution of spaces in poorer zones, or because of an insufficient availability of individual space that would cause a continuous psychological pressure.

Brantingham, and Brantingham, (1981) studied the geometry of crime model in environmental criminological theory and discovered that a concept coined as the "Behavioural Geography Perspective" which suggests that people, offenders and non-offenders are likely to move through an activity space in their daily lives. They go to work, home, shopping, and visit friends and so on. Regularly used paths connect them to different nodes of activity. Putting all these paths and nodes together generates an activity space but also an awareness space. These activity spaces and awareness spaces are overlaid on an environmental backdrop, a fabric of varying residential, non-residential and natural features through which individuals move. Brantingham, and Brantingham, (1981) suggested that the intersection between the environmental backdrop and an individual's activity space creates variations in risks of criminal victimization, hence asserting that the occurrence of crime is partly because of the existing conditions of the built environment.

### 2.4.1 Fear for Crime.

Fear for crime refers to fear of being a victim of crime as opposed to the actual probability of being a victim of crime (Jacobs, 1961). Jacobs (1961) suggested that urban vacant buildings, empty open

public spaces and their deterioration relate to crime, such crimes could be prevented by reducing conditions of anonymity and isolation in those areas of dense down towns.

Crime flourishes when people do not know or meaningfully interact with their neighbours, for they would be less likely to notice an outsider who may be a criminal surveying the environment for potential targets or victims. In addition, Jacobs (1961) also described the effects of street surveillance by neighbours and claimed that high levels of natural surveillance created a safe environment.

Jacobs (1961) also stated that streets should have the required three qualities in order to make it safe:

i) A clear demarcation between public and private space.
ii) Diversity of street use.
iii) Fairly constant side walk uses which translates into eyes on the street.

The idea of the Active Street Life is supporting the rise natural surveillance within the community as opposed to quiet and deserted places which are likely to breed criminal activity.

In a study by Skogan (1987), it was observed that a number of factors contributed to fear for crime in communities namely;

i) Actual criminal victimization;
ii) Second hand information about criminal victimization through social media;
iii) Physical deterioration and social disorder;
iv) The characteristics of the built environment; and
v) Group conflict.

Victimization perspective is based on the principle that fear of crime within a community is caused by the level of criminal activity or by what people hear about activity, either from conversations with others or from the mass media (Bennett, 1990).

#### 2.4.1.1 The Consequence of Fear of Crime.

Fear fractures the sense of community and neighbourhood, and transforms some public places into no-go areas (Morgan, 1978). Fear for crime leads to more citizens protecting themselves and their property, or moving from the neighbourhood. This crime incidence may be displaced onto those already suffering from other social and economic disadvantages. Fear of crime can lead to increase on inflicting punishment by reducing the appeal to liberal penal policies (Cullen et al, 1985). If courts are seen as being soft, fear may undermine the legitimacy of the criminal justice system, leading to conditions which vigilante justice may flourish (Scheingold, 1984). Fear of crime has detrimental psychological effects especially when the neighbourhood's physical and social environment is poor, although generally these effects seem to be weak (White et al, 1987).

#### 2.4.1.2 Reducing Fear for Crime; by Changing the Built Environment.

The nation that Crime and fear of crime might be related to the built environment suggests strategies for reducing fear (Burby and Rohe, 1989; Fisher and Nasar, 1992). The idea of 'defensible space', developed by Newman, (1972), is that crime and fear of crime are caused by a lack of informal social control itself brought about by poor physical designs which afford isolated, out of sight areas which are difficult to oversee.

Confused space is impersonal, belonging to no one and the clear responsibility of no one (Rock, 1988). Rock (1988) provides a clear summary of initiatives which had been influenced by these ideas; all claim successes in reducing crime rates, and similar effects could be expected for fear. The improvement in physical environment, the decentralization of housing services and management to the estate level, the devolution of repairs and maintenance and the improvement of relationships between service providers all have a role to play in this process (Rock, 1988). In many of the projects the police have been involved, providing more extensive and sympathetic policing that has contributed to tenants being more 'willing to report damage or challenge hooliganism' (Burbidge, 1984).

Vrij and Winkel (1991) explored the environment and fear relationship and conclude that places which are poorly lit will induce fear. On the basis of experimental results, Vrij and Winkel, (1991) strongly advocate measures to improve street lighting. However, a similar study of an attempt in Scotland to reduce victimization and fear by environmental improvement on street lights reported

no improvements, (Nair, et al., 1993). Although many street lighting projects have been carried out in the United States, these have usually been implemented with other measures such as increased police presence which makes exact evaluation of their impact difficult. However, the review of fifteen such projects by Tien et al., (1979) does provide some collaborative evidence of lighting's fear reducing capacity.

### 2.4.2 Crime and Housing Typologies

Newman (1996) stated that buildings with a large number of families sharing a single entry do experience higher crime rates than those with few family numbers, they are also vulnerable in regard to additional types of criminal activity. Most of the crime experienced by single family buildings is burglary, committed when members of the family are either away from home or asleep. By contrast he notes that the residents of large, multifamily dwellings experience both burglaries and robberies. The higher crime rates experienced by residents in large multifamily dwellings are mostly attributed to the occurrence of robberies in the interior common-circulation areas of multifamily buildings. These are also the areas where criminals wait to approach their victims and force their way into apartments for the purpose of robbing the residents. Newman (1996) notes that the physical factors that correlate most strongly with crime rates are, the height of the buildings, which in turn correlates highly with the number of apartments sharing the entry to a building and the total number of dwelling units per building.

### 2.5.0 Crime prevention

Crime prevention is the anticipation, recognition, and appraisal of a crime risk and the initiation of some action to remove or reduce it (National Crime Prevention Institute, 1986). Many solutions to prevent crime such as:

i) tighter security, (police and other security agents),
ii) tougher criminal laws,
iii) and stiffer imprisonment.

These approaches have been largely employed to deter criminal activities in most communities. However, whether these approaches can solve the problem is questionable. Felson (1998) believes that the actual time that a patrol officer can devote to guarding one’s home against crime is minimal

and estimated that less than 1% of criminal offenders are “caught in the act” by a patrol officer who happens to be driving through a neighbourhood at the right place and the right time, (Lersch, 2004). A local pedestrian or security member might be present in one of places in an area, but they may not have received enough training or recognition to deter crime.

Offenders, targets, and the absence of capable guardians together may form a triangular relationship for a crime to occur. If one of these conditions is modified, it could prevent a crime from happening or at least reduce its occurrence. As a result, there are basically two ways to prevent crime and delinquency.

i) One way is to reduce criminals’ propensity to offend. An approach from the Social Control Theory assumes that the propensity to offend depends on the individual's degree of self-control and social bonds to conventional society, (Gottfredson and Hirschi, 1990).
ii) The other way is to reduce the presence of crime situations. The recommendations of environmental crime prevention are somehow related to altering the situation to make criminal activities more difficult and riskier, and the targets less attractive for attack by a motivated offender. Some of these “target hardening” approaches are on a small scale, such as adding more streetlights and installing more windows in houses that face the street, vegetation control, and building designs. Other methods are on a large scale and involve planning models for buildings, communities, and districts under the driving principle of improving guardianship and reducing opportunities for criminal activities, (Lersch, 2004).

### 2.5.1 Crime Prevention Theories

i) Defensible space.
ii) Situational Crime Prevention.
iii) Crime Prevention Through Environment Design. (CPTED)

### 2.5.2 Defensible Space

Newman, (1972) first made a research-based case in his book Defensible Space: Crime Prevention Through Urban Design to prove that site configuration and building design can be defended against potential crime and fear of crime. The term 'defensible space' refers to a residential environment designed in order to allow and encourage residents themselves to supervise and be seen by outsiders

as responsible for their neighbourhoods, (National Crime Prevention Institute, 1986). Newman, (1972) questioned the effectiveness of Police control and stressed the important role of informal community control for crime prevention. He also felt that the physical environment elements should be redesigned in order to strengthen the perception of ownership and to encourage guardianship by legitimate users, (Lersch, 2004). Although Newman's Defensible Space Theory was mostly focused on public housing sites, he produced four crucial factors of physical design relevant to different kinds of projects: territoriality, natural surveillance, image and milieu.

**1. Territoriality:** The meaning of territoriality is defined as "the capacity of the physical environment to create perceived zones of territorial influence: mechanisms for the subdivision and articulation of areas of the residential environment intended to reinforce inhabitants in their ability to assume territorial attitudes and prerogatives, (Newman, 1972)." Newman considered human beings as territorial animals who perceive areas and spaces as their own, and that places would be likely to be protected and defended if the inhabitants felt their own space was intruded upon. Thus, people defend their proprietary "ownership" of public or semi-public space through usage, maintenance and surveillance. Newman (1972) proposed a number of practical design suggestions that serve to reduce anonymity and increase the sense of territorial by demarcating the zones of influence. To subdivide a public space by creating paths and recreational areas outside private apartment units can establish residents' concern and responsibility with the activity taking place and clearly indicate that inappropriate users would not be allowed. To restrict vehicle movement and access of streets design can enhance a form of continuous natural surveillance, as well as formal police patrol. Also, a visual cue or boundary can indicate the zones of transition from public to private space. With a proper design, the construction of real and symbolic barriers was found to increase the sense of territoriality. Real barriers included high walls, fences, locked gates and doors. Symbolic barriers included such things as open gateways, lighting, and changes in the texture of the walkways, a short distance of steps, or the use of plantings (Newman, 1972).

**2. Natural surveillance:** Newman, (1972) defined the concept of natural surveillance as the "…capacity of the physical design to provide surveillance opportunities". A building with good surveillance opportunities, with the entrance faced by many apartment windows and being visible from a busy street, would reduce feelings of fear for the residents. The residents can easily view public areas and make motivated offenders aware that areas are being watched. In order to enhance

natural surveillance, (Newman, 1972) argued that buildings should be oriented in such a manner that there is a well-lit lobby area in front of the buildings from which the residents can easily observe the outside street. As an example, (Newman, 1972) tested three categories of buildings in relation to a street in a Bronx, New York housing project. He found that the places where all buildings were facing within 50 feet of the street and with good lobby visibility had less crime than those with fewer buildings facing the street and without any lobby visibility. Additionally, (Newman, 1972) indicated that fire escapes, windows, floor plans, and roof landings could all be altered to enhance the ability of residents to monitor activities and thereby discourage crime, (Lersch, 2004).

**3. Image and Milieu**: Newman, (1972) felt that the image of the environment conveys a sense of security. Most high-rise public housing projects were designed to be very visually identifiable from the surrounding community. The low-income housing projects that used cheaper materials on the facades and lack of outdoor balconies may allow easy invasion. To reduce crime, Newman, (1972) argued that lower-income housing projects should be designed in such a manner that they better fit in with the surrounding buildings. In the spirit of Jacobs, (1961), Newman, (1972) felt that housing projects built in commercial and industrial areas with intense vehicular and pedestrian movement were generally viewed as being safe as a result of the high value of "eyes on the streets," (Jacobs, 1961; Newman, 1972). However, Newman, (1972) suggested that the placement of commercial and institutional facility projects must be critically evaluated in accordance with the nature of the business, the hours of operation, the intended users of the business, and the identification with residency area, the periods of human activity, and the presence of concerned authorities. Not all institutional and commercial areas can automatically enhance the safety of surrounding neighbourhoods. Some bored teenagers may hang around schools and pool halls, for example; the existence of such public and commercial establishments may increase the level of criminal activity in the neighbouring areas. So, the concept of site choice and site configuration is crucial for assuring the security of the surrounding neighbourhood.

#### 2.5.2.1 Criticisms of the Defensible Space.

The arguments of Newman, (1972) sometimes appear to be contradictory. For example, in some places, he argues that making spaces more private can reduce outsiders' access to these areas and hence improve safety. He further argues that closing off streets through housing projects can lead to

an increase in crime by reducing the natural surveillance that comes with busy thoroughfare than others.

The results of the many studies of the defensible space designs reveal inconsistent findings. The varying methodological approaches used to test the theory as some focus on the building level, while others focus on the block or neighbourhood level. Some examine the impact on residents' territoriality and surveillance, while others directly study offender patterns. Some of the studies were conducted in sites where the only difference between communities, or the only change in a community over time, was in the physical design of the area. In other places, the changes in the physical environment were part of a broader, multifaceted plan to reduce crime. In these cases, it is difficult to distinguish the effects of the changes in physical design from the effects of the other elements in the plan.

A number of studies question the assertions of Newman, (1972) mainly about physical design and territoriality, as they suggest that it is not a clear and consistent with the relationship between the physical design of an area and territoriality or informal social control. Such studies suggest that the relationship between physical design and territoriality may vary across communities and across different populations. For example, Merry (1981) studies on public housing project found that defensible space designs had very limited influence on the residential social climate while on the other hand, a study of Fowler and Thomas, (1982) one urban neighbourhood reported that defensible space features were related to increased territoriality and informal social control, and that in the short term, there was a lower rate of crime in the area. Patrick and Charles (1997) examined the effectiveness of a Newman-directed plan that created small, distinct mini-areas in one urban neighbourhood by closing off streets that significantly reduced cut-through traffic, and appreciated Newman, (1972) argument that these mini-neighbourhoods would see less crime since these areas would become more private, neighbours would get to know each other better, and look after their neighbours more closely. Both property crime and violent crime went down dramatically immediately after the plan went into effect. The decline was not due to increased residents' territoriality or surveillance, but there was no change in residents' territoriality or informal social control after the plan was implemented. The plan appears to have a direct effect on offenders since the large reductions in crime were due primarily to reductions in crimes committed by persons who lived outside the neighbourhood. The street closing plan reduced outsiders' opportunity to become

familiar with the area by reducing access to the area. It may also have increased the perceived risks of being caught by reducing potential exit routes from the area after crimes were committed. It also led to a decrease in unpremeditated, opportunistic crimes by reducing routine drive-through traffic.

Many later approaches to criminological theory and crime prevention incorporate ideas and concepts presented by Newman, (1972) that have become significant in the role that the physical environment plays in shaping crime. Routine activity theory focuses on three factors, availability of suitable target, the lack of a suitable guardian to prevent the crime, and the presence of a likely offender, all of which are affected by physical design, territoriality, and surveillance, (Felson, 1998). The Rational Choice Theory assumes that offenders weigh the potential benefits and costs of their offenses. They weigh the likelihood of their offense being observed and interrupted and of their being caught. Again, each of these factors are affected by their perception of the physical environment, (Cornish and Clark, 1986). Crime prevention through environmental design and situational crime prevention approaches provide a broader perspective on the physical environment, (Clarke, 1997). These studies reveal a number of conceptual difficulties which the Defensible Space Theory cannot explain but rely on the design principles as a way that can reduce crime.

### 2.5.3 Situational Crime Prevention.

Situational Crime Prevention is another theory that bases part of its research in the model developed by Newman, (1972). However, it focuses more on reducing the opportunity for crime by increasing the efforts and risks an offender must make, and also by reducing the rewards gained by the Criminal activity. While CPTED focuses mainly on natural design features, Situational Crime Prevention emphasizes a holistic prevention approach (Murray, 1980). Situational crime prevention has been defined as "…the use of measures directed at highly specific forms of crime, which involve the management, design or manipulation of the immediate environment in as systematic and permanent, a way as possible. It is sometimes referred to as "primary prevention" or "opportunity reduction". Situational Crime Prevention includes "target hardening" that implies use of locks, screens, steel doors shatterproof glass, fences, barbed wire, gated communities and privatization of public spaces as showed in (Figure 7, Google). Its approach focuses on reducing opportunities for crime through environmental change, (Geason and Wilson, 1989).

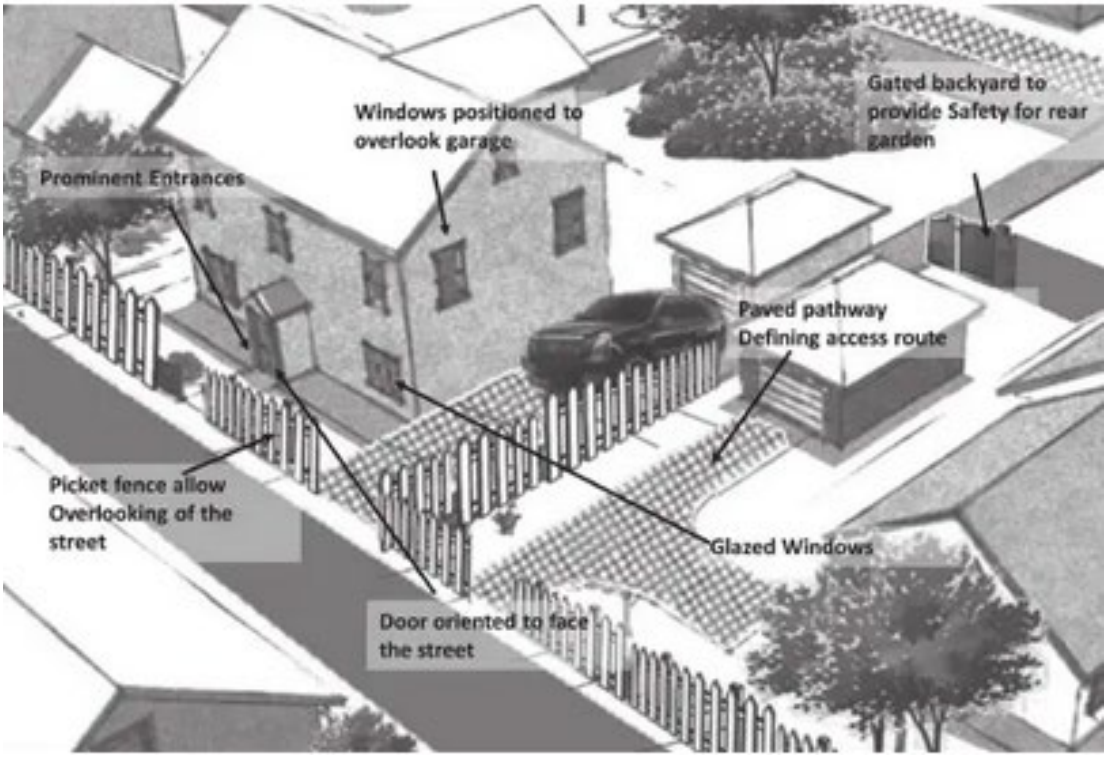


Figure 7: An illustration showing the 'Target Hardening' techniques. (Source: Hannah et al.,2015)

### 2.5.4 Crime Prevention through Environment Design. (CPTED)

Crime prevention through environmental design (CPTED) is centered on (Newman, 1972)'s Defensible Space. Jeffery's (1961) theory was based on the idea that the crime control policies being used were ineffective and argued that the best way to reduce crime was to directly organize environmental conditions prior to the punishment for an offense. Jeffery (1961) states the importance of creating a sense of territoriality among residents, and providing natural surveillance through environmental design. Wilson and Kelling (1982), Taylor (1997), and Crowe (2000) redeveloped and popularized CPTED as a socio-physical perspective to emphasize that environmental design-affects-crime. According to (Crowe, 2000) the design principle of CPTED was that "the physical built environment can be manipulated to produce behavioural effects that will reduce the incidence and fear of crime thereby improving the quality of life. These behavioural effects can be accomplished by reducing the propensity of the physical built environment to support

criminal behaviour." CPTED is based on three strategies for physical design programs that overlap in their practical use, including access control, surveillance and territorial reinforcement.

**1. Access control:** Access control is a CPTED concept focused on limiting opportunities for a motivated offender by denying access to potential targets. When a potential target is perceived as being hard to get access to, then the offender may give up taking the risk or move on to a different target. Access control strategies usually include informal/natural (e.g. spatial definition), formal/organized (e.g. security guards) and mechanical (e.g. locks and key pad entry system or swiping identification cards before access). A well-designed space with good natural access control, limiting the number of entrances or exits can prevent unauthorized access to buildings and restricted interior areas. In communities, natural access may involve using fewer through streets as access routes and, instead, relying on more cul-de sacs and dead-end streets to limit traffic flow (Crowe, 2000).

**2. Surveillance:** Surveillance is a design concept aimed at keeping potential offenders under easy observation. Proper location and use of design features and activities may create a perception of increased risk of detection for offenders and of increased safety for legitimate users. Different types of surveillance are typically classified as natural (e.g. windows and lobbies that enhance the monitoring of the outside streets; carefully placed park benches; well-designed landscaping), organized (e.g. police patrols) and mechanical (e.g. street lighting and CCTV) as showed in (Figure8, Google).

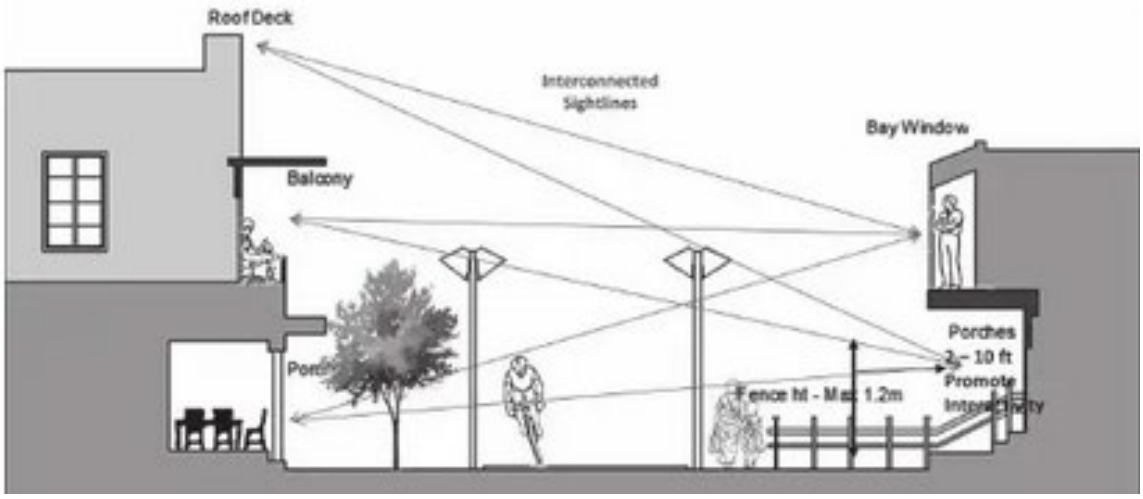


Figure 8: Drawing illustrating the sightlines of a neighbourhood. (Source: Hannah et al.,2015)

**3. Territoriality.** The concept of territoriality suggests that physical design elements can contribute to a sense of territoriality (Crowe, 2000). Legitimate users develop a sense of ownership, thereby reducing the opportunities for potential offenders. Figure 9, shows the use of physical features can express territorial influence and delineate public, public-private and private spaces. Different forms include symbolic barriers (e.g. signs and pavement treatments) and real barriers (e.g. fences or low walls, landscaping and artwork) which promote territorial behaviour and proprietary concern for

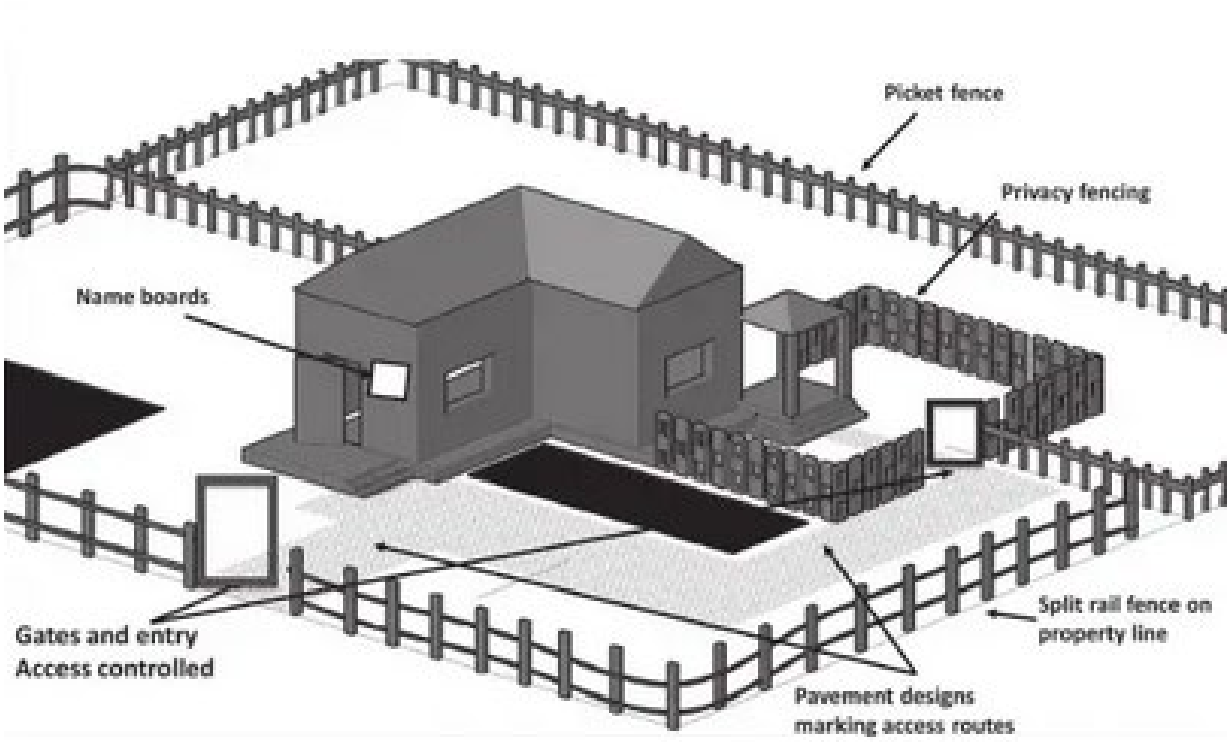


Figure 9: Drawing illustrating features of Territoriality. (Source: Hannah et al.,2015)

space, in addition to promoting opportunities for surveillance. Natural access control and surveillance will also contribute to a sense of territoriality by promoting legitimate users' informal social control and greater perception of risk by offenders.

Another strategy called the "broken windows" theory was added to CPTED (Kelling and Coles, 1996). The theory states that when a building is left with a broken window, graffiti, trash, etc., a few more windows could be broken by vandals. The situation may get worse while the building is unoccupied, and vandals may even break into it. Therefore, properties should be well maintained to ensure the continued use of space for the proper purpose and to increase the sense of safety for users.

For instance, trees and shrubs should be trimmed, and litter and trash should be noticed time. In addition, it should be ensured that exterior lighting works properly at night.

**2.6 Summary.**

Built environment elements seem to have an inseparably close relationship with crime. Crime theories and Environmental Crime prevention approaches that could have bridged the gap between crime and built environmental elements, are firmly rooted within the Western Countries (USA and Britain) and mainly adopted in the West as illustrated by CPTED guidelines for several western cities other than African developing countries with Uganda in context where the crime rate is increasing due to the rapid increase in its favoring factors, (Jeffery, 1971). Crime prevention strategies are not popular in Naguru Go-down, and for a few areas where they are used, there is little or no evidence to support the effectiveness of incorporating design changes to reduce crime as the social and economic factors seem to also play a big role in the occurrence of such crimes and violence.

In a review of built environmental elements with properties such as, low levels of lighting at night, high walls/fences, or thick trees or shrubbery which can provide concealed opportunities for burglars, particularly when close to points of access such as windows and doors, (Weisel, 2002). Many authors have gone ahead to investigate the crime occurrence in built environments but not particularly looking at the informal settlements of developing countries that may have other social and economic factors leading to such crimes and violence (Jeffery, 1971; Newman, 1972; Jeffery, 1961; Crowe, 2000; Wilson and Kelling, 1982; Jefferson, 2015; and many others).

In conclusion there is little evidence to indicate that crime theories and crime prevention strategies are actively being used in Ugandan informal settlements particularly Naguru Go-down, and no literature can fully explain the relationship between crime and built environmental elements of which this study was intended.

# CHAPTER THREE; RESEACH METHODOLOGY.

## 3.1 Introduction

The fundamental purpose of research is to find answers to questions that can only be resolved via study, as well as to learn new information in a sector where there is a knowledge gap. In this chapter, the approach used to conduct the research study is described, along with the steps taken to methodically solve the research topic.

## 3.2 Research Design.

A study's research design is a detailed outline of how the analysis should actually happen. Yin (1984) goes on to state that it is a logical plan for getting from here to there, where here could describe to the initial questions and there are some conclusions about these questions. A research design enables the researcher to collect relevant evidence with minimal effort, time, and money.

The study's research was conducted using a qualitative research design. The research looked into the meaning of people's lives as they are lived in the real world. The research will document participants in their daily roles at the informal settlements.

According to Yin (1994), a case study is appropriate when the researcher intends to incorporate the perspectives of the actors, or those who are part of the study area. According to Yin (2003), a case study approach is appropriate when the study focuses on contemporary events occurring within the informal settlement and when the researcher has no control over behavioural events that occur within the study area.

## 3.2 Data Collection.

The data collected included both primary and secondary data which was to be obtained from primary and secondary sources. Methods of data collection are elaborated below.

## 3.3 Methods of Primary Data Collection.

i) Questionnaires Administration.

This involved the handing out of written questions to respondents so that they can fill in the required

information. The questions were designed for households, business owners and law enforcers. The data collected through this was intended to be the challenges faced by residents due to crime occurrence, behavioural aspects of criminals, nature of crime and the residents' coping mechanisms.

i) Interviews

This involved one on one dialogue with key respondents. The key informants selected for this study included the village chairpersons, youth groups' leaders and the chief. This helped identify the policy regulations and enforcement efforts from the administrations as well as incidences of crime reported.

ii) Observation

The research involved observing peoples' behaviour and forms of interaction to assess the level of cohesion within the settlement. Observed the transformation within the two selected villages; took photos of building character, building orientation, street formation and general infrastructural alignment.

### 3.4 Methods of Secondary Data Collection.

This basically involved literature review. It entailed reading of books, journals/periodicals and reports written by previous researchers on crimes dynamics and other related and relevant areas. Other relevant documents reviewed included the legal and institutional frameworks and policies.

### 3.5 Data Analysis.

The data collected was processed and analyzed to make comprehensive interpretation from it. Qualitative data was analyzed through logical reasoning while quantitative data was analyzed using the spreadsheet software and Microsoft Excel.

### 3.6 Data Presentation.

The analyzed data was presented using different presentation techniques which included pie charts, graphs and numerical data.

## CHAPTER FOUR: DATA PRESENTATION, ANALYSISAND DISCUSSION.

### 4.1 Introduction.

This chapter presents and discusses the findings of the study on built environmental elements and crime in Naguru Go-down. Considering the selected built environmental elements, in and around them, the findings include; Crime typologies, causes of crime, level of safety, frequency of crime, crime hot spots, perpetrators and victims of crime, temporal factors in relation to crime, crime reporting, most common ways of executing crime, alternative methods of dealing with crime other police efforts are also presented as the main findings of the study.

### 4.2 Age Distribution.

This chat looks at the age for people amongst which the research interview was carried out in Naguru Go-down. Those aged between 26-35 years of the respondents were 50% followed by those aged 15-25 years at 22%. Those aged 36-45 years stood at 18% while those aged 46-100 years at 10%.

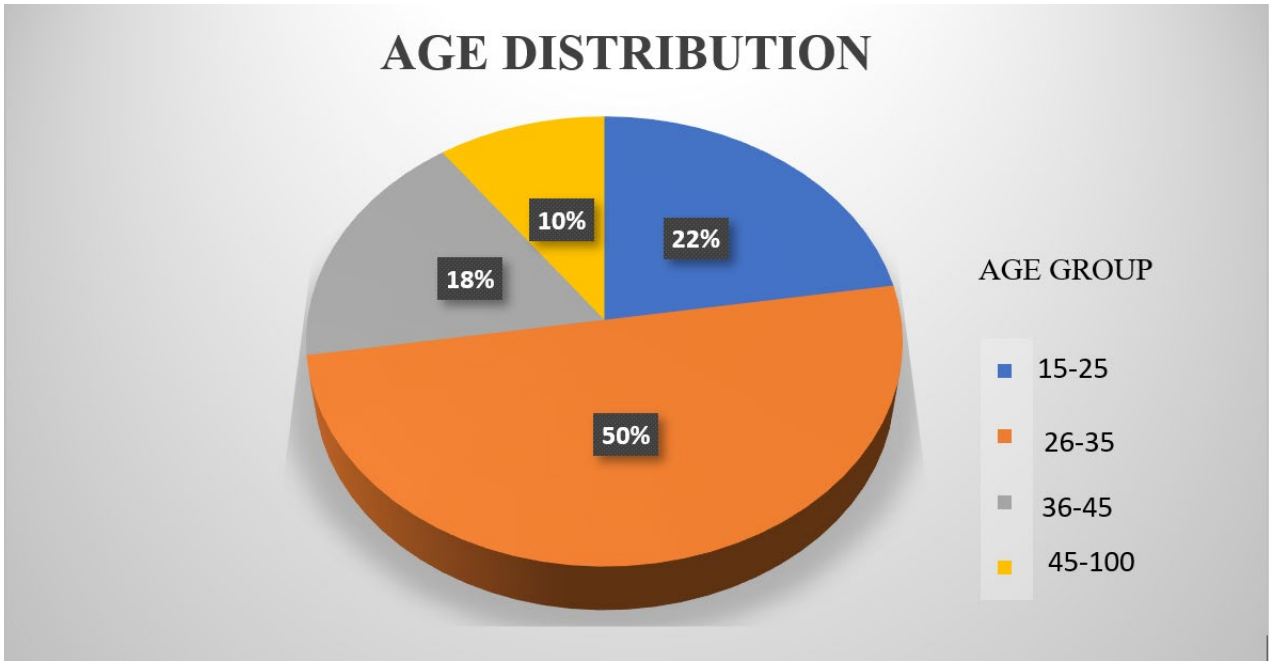


Figure 10: A Pie Chart showing Age Distribution in Study Area. (Source: Author)

This implies that the largest proportion of the population of the study area consists of the young and the working group. This also shows that a large proportion of the people is under active labor force which when active at their places of work leave the area of study deserted thus the little or no natural surveillance that will facilitate in guarding the properties.

The least number of respondents comprised of those aged 46years and above who made a total of 10%, this can be interpreted to mean that the youth between 18 and 35 years constitute almost 70% of the Naguru Go-down population, according to the World Bank in 2010). The youth are associated with the unemployment problem thus most engaging in the crime offences which they commonly commit in or around the built environmental elements in Naguru Go-down.

Effects to reduce crime within the youth, should be centered on creation of jobs for the youth deterring possible criminals around the built environmental elements and increasing of the natural surveillance around the selected built environment elements in study.

**4.3 Marital Status.**

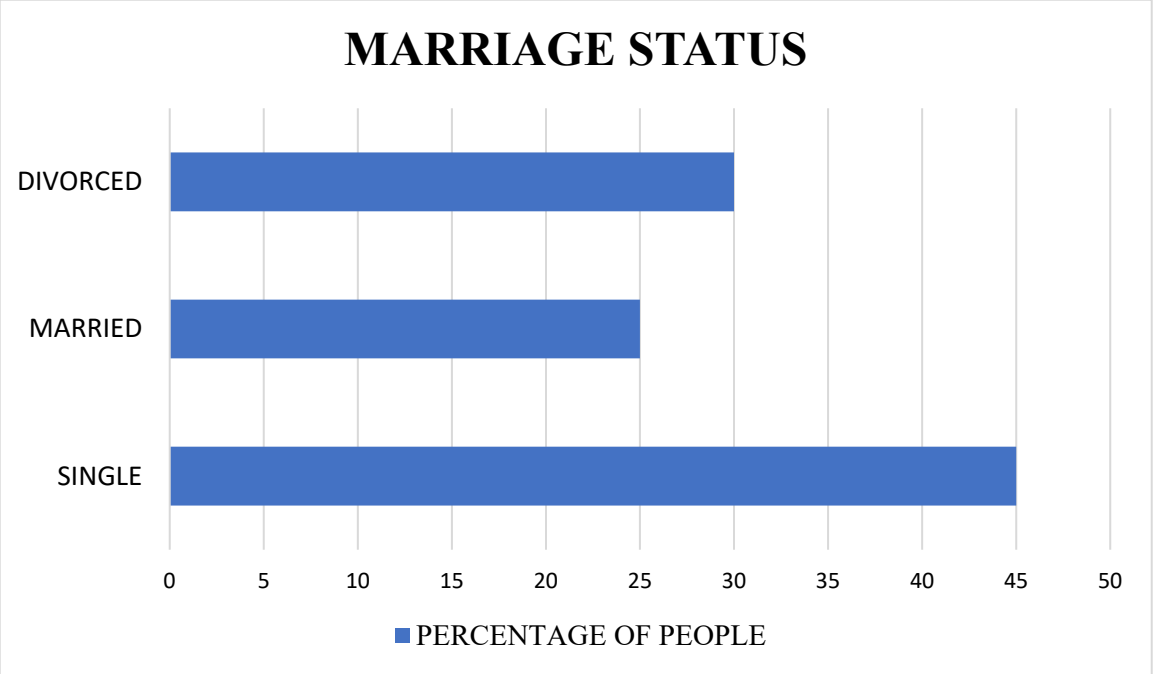


Figure 11: Marriage Status in Study Area. (Source: Author)

The graph above shows that 30% of the respondents are divorced, 45% are single and 25% are married.

The analysis shows that most people in Naguru Go-down are not married, crime is done least by married people because

i) Marriage creates a change in criminal behaviour which occurs in response to the attachment or social bond that forms as a result of marriage. The social tie of marriage is important because it creates interdependent systems of obligation, mutual support, and restraint that impose significant costs for translating criminal propensities into action (Sampson and, 1993).
ii) Marriage influences desistance is because it leads to significant changes in everyday routines and patterns of association with others. It is well established that lifestyles and routine activities are a major source of variation in exposure to crime and victimization (Hindelang et al., 1978).
iii) Marriage leads to gendered desistance because of the direct social control exerted by female spouses. Men reduce the time they spend time together with other guys, hence reducing the time to plan and execute crime as also stated by Umberson, (1992).

This means most criminal cases are not imported from the neighbourhood, but rather by the local citizens staying and living in Naguru Go-down informal settlements.

**4.5 Gender.**

| Gender | Percentage number |
|---|---|
| **male** | **40%** |
| **female** | **60%** |

Table 1 Gender Distribution in Study Area. (Source: Author)

This implies that, Naguru Go-down holds more ladies than men. Men provide more security around public environmental elements like road junctions and routes while, female mainly considered as stay home mothers provide surveillance around homes and markets during day times. The respondents asserted that some had physically witness crime and violence against women (theft, sexual related crimes) from gangs of men who walk around the community both during day and night. The smaller number of men, implies less security in the community.

### 4.4 Education Level.

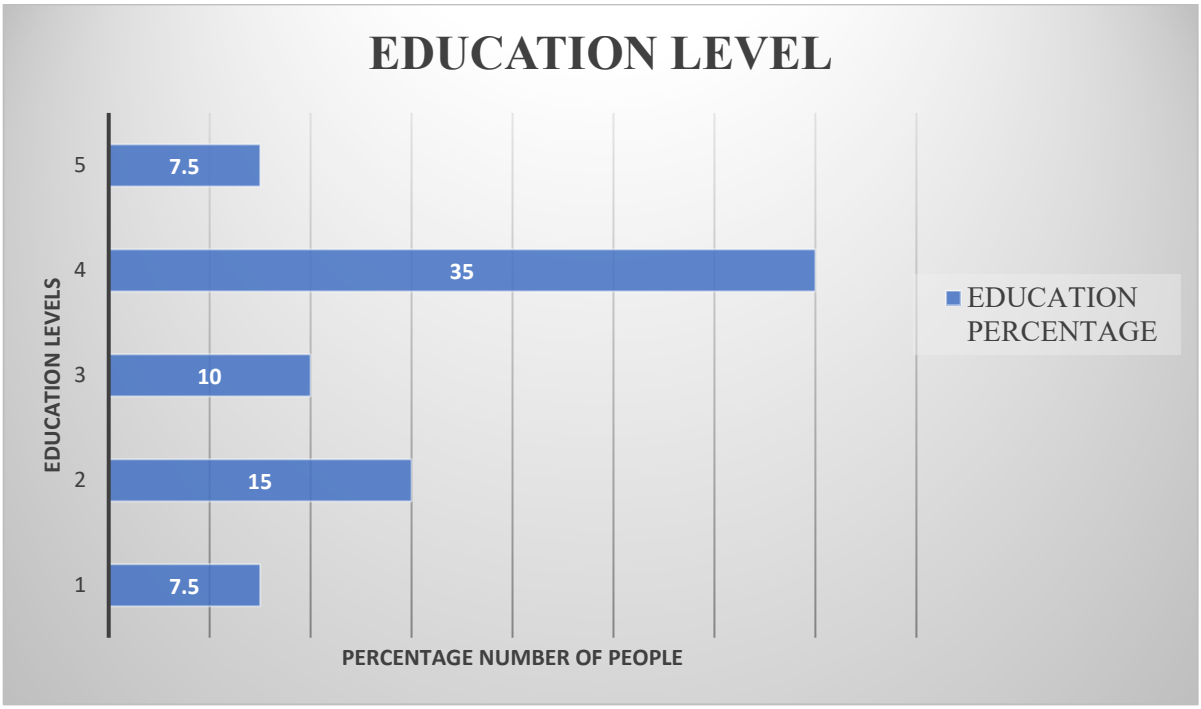


Figure 12: Education Levels in Study Area. (Source: Author)

The study area population could be described as semi-literate. About 50% of the respondents had primary and secondary school level of education, 10% indicated that they had pursued college or tertiary education. While 7.5 % showed that they had pursued university education, 7.5% had no formal education. The respondents that had completed secondary level (from the nearby secondary school) had attained low grades with little or low general education.

These findings show that most people living within Naguru Go-down went to school but luck the required education and experience for most careers in Uganda, resulting in high levels of stay home people and idlers.

The low levels of education that are obtained by the residents within the community results into decreased individual wage rates, low individual rates of time preference or risk aversion, thereby decreasing the opportunity costs of crime and resulting into people committing of crime and violence as the case in Naguru Go-down, (Becker and Mulligan, 1997).

| Blocks | Education level |
|---|---|
| 1 | No formal education |
| 2 | Primary level |
| 3 | Tertiary level |
| 4 | Secondary level |
| 5 | University level |

Table 2: Education Levels in Study Area. (Source: Author)

**4.6 Reason for Stay**

This looks at the reasons for which the respondents interviewed were staying in Naguru Go-down. 45% of the respondents were residents of Naguru Go-down while 25% of them were in Naguru Go-down for business, 20% of the respondents were visitors and passers-by while 10% had come to Naguru for other reasons such as administration and tour purposes.

The number of non-residents in Naguru at a particular time is 30%, this implies that most of the criminal cases around Naguru Go-down are not imported from other neighbourhoods. The number of people from neighbourhood providing natural surveillance or looking for targets around the built environment elements particularly public places is less, meaning that most of the crimes are committed by the residents in Naguru Go-down as the number of possible residents at that particular time was 70%.

The respondents asserted that although they are possible low-profile offenders who migrated from the nearby slums of Mbuya, Kamwokya, and also high-profile offenders from Ntinda, Kololo areas, most crimes and violence around Naguru go–down are committed by male youth criminal gangs of

Naguru Go-down who have different names such as, Members, Black guards, Kikumi-Kikumi, and many others.

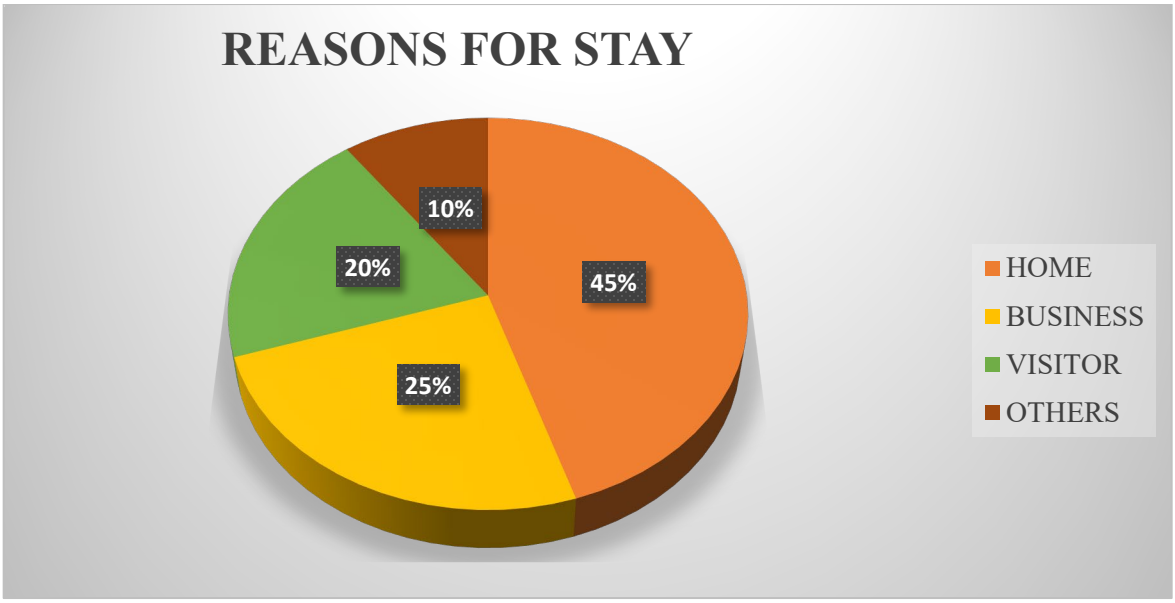


Figure 13: A Pie Chart showing Reasons for Stay in Naguru Go-down. (Source: Author)

### 4.7.0 Crime Situation and Built Environment Elements.

This study looked at both results from survey interviews of respondents and also authority records, like local leaders, crime preventers, security guards and police officers. The number of respondents was 40 people and those that had experienced or having relatives who had experienced crime and violence in Naguru Go-down was 35 people. This implies 87.5% of people with in Naguru Go-down had experienced crime and violence.

### 4.7.1 Types of Crime and Violence Experienced.

The respondents were asked to generally state the common type of crime experienced in their area. This was done by interviewing technique to evaluate which crimes were top-of-mind and those that were not. In this study, top-of-mind crimes were viewed as those which the respondents could remember easily, hence it was considered possible to determine types of crime which were either very recent and/or very severe.

| Type of crime and violence | Percentage number of people affected |
|---|---|
| Theft | 31.4% |
| Sex related | 11.4% |
| Assault | 17.1% |
| Kidnap | 2.9% |
| Burglaries/house breaking | 28.6% |
| Others | 8.6% |

Table 3: Types of Crime and Violence in Study Area. (Source: Author)

Crimes experienced in the Naguru go down include, theft at 31.4% followed by house break-ins at 28.6%, assault at 17.1%, sex related crimes at 11.4% and kidnap at 2.9%. Other crimes experienced make up a total of 8.6%.

| Type of crime and violence | Percentage number crimes reported in 2017 | Percentage number crimes reported in 2018 |
|---|---|---|
| Theft | 35% | 37% |
| Sex related | 10.4% | 8.8% |
| Assault | 20.5% | 22% |
| Kidnap | 8.1% | 5.5% |
| Burglaries/house breaking | 17.5% | 20.5% |
| Others | 8.5% | 6.2% |

Table 4:Crime and Violence statistics in study area for 2017 and 2018. (Source: Police records)

This was also attributed to current environmental structural elements situation and the different alternative measures of protection that the residents had adopted in ensuring their own security or

may be some just chose to abstain from answering the question due to the sensitivity attached to security matters not only Naguru Go-down but in all Uganda.

Police records show that theft is the highest crime committed with an average of 36%, while Assault is second at 21.25% and house breaking third at 19%. Sex related crimes at 14.1% while kidnap at 6.8% and other crimes at 7.35%. The study also established that an overwhelming increase in crime percentage, meaning the respondents had witnessed increasing crimes being committed in the recurring years. This can be inferred to mean that almost everyone in Naguru Go-down had either been affected (may be within the family) or personally experienced some form of crime. Based on study and considering the dire social and economic realities that bedevil Naguru Go-down, it can be drawn that rampant poverty and depressed income levels must be the primary drivers of localized crimes.

### 4.7.2 Crime and violence hot spots.

| Environmental built elements | | Number of crimes | Percentage crime rate |
|---|---|---|---|
| **Public open spaces** | **Green fields** | **4** | **11.4%** |
| | **Brown fields** | **1** | **2.9%** |
| **Buildings structures** | **Low-income houses** | **9** | **25.7%** |
| | **Vacant buildings** | **2** | **5.7%** |
| **Transport infrastructure** | **routes** | **8** | **22.9%** |
| | **Roads and junctions** | **6** | **17.1%** |
| **Service facilities** | **Open drainage channels** | **4** | **11.4%** |
| **Others** | | **1** | **2.9%** |

Table 5:Built Environment Elements with high crimes and violence in study area. (Source: Author)

The study shows that most crimes in Naguru happen around green open fields low incomes houses at 25.7%, followed by the transit routes within the low-income houses at 22.9%. Roads and junctions make 17.1% while green fields and open drainage channels make 11.4%. Vacant buildings and

brown fields are very few around the study area and contribute the least percentage crime rate at 5.7% and 2.9%, with other buildings elements making 2.9% of the crime rate.

Most respondents asserted that most crimes around built environment elements are due to luck of surveillance around the said areas and that these crimes increase with time during the day. Most crimes happen in the early hours of the day between midnight to 7am as most built elements are out of watch, attracting potential criminals. Between 1pm to 6pm, respondents stated that the Naguru Go-down experiences very few crimes at this time zone, because number of people around Naguru is always high creating an increase in the natural surveillance around the built environment elements

The interview results of the study show that Kigombe, a local village in Naguru Go-down has the most crime rate and its most feared zone during all times of the day for conditions of its existing built environment elements. All respondents asserted that the marked-out areas had become a hub for crimes and violence around Naguru Go-down. This was mainly due to luck of natural surveillance, poor lighting, areas having no territorial boundaries, and the zig-zag passage routes.

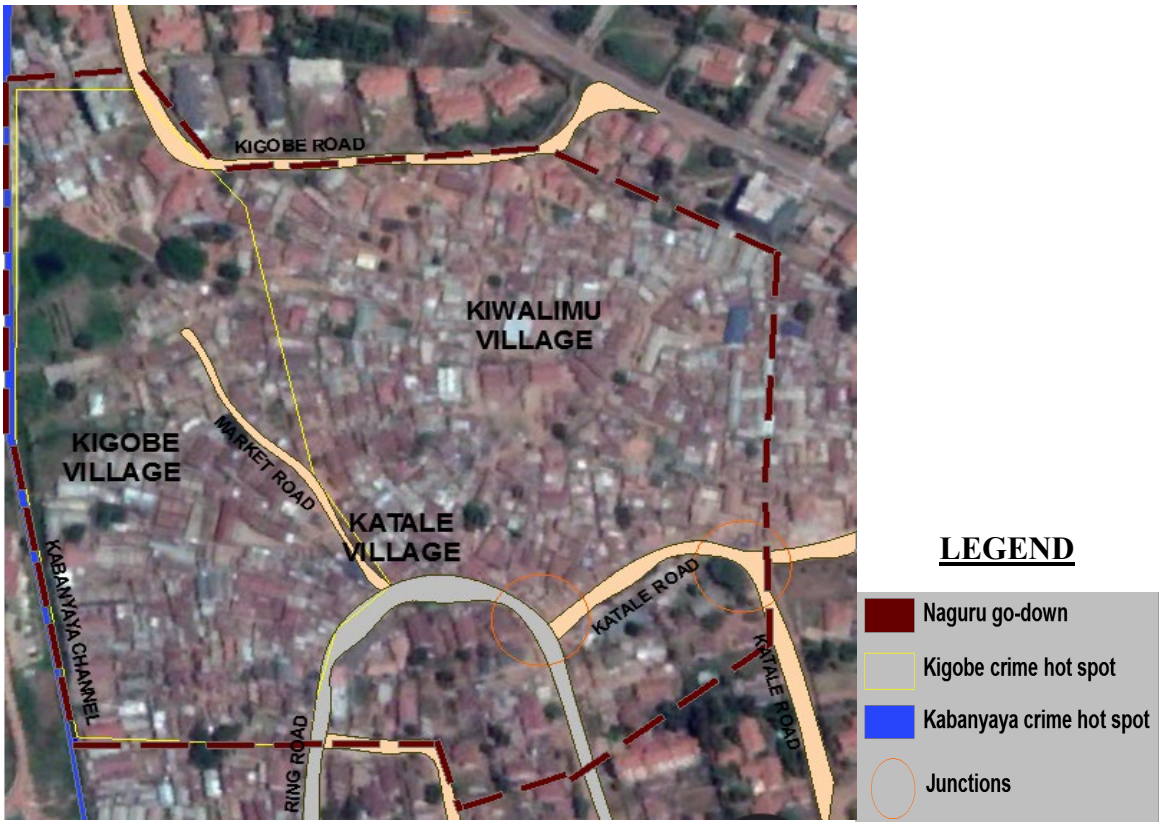


Figure 14: A Satellite Map showing Crime and Violence Hot Spots in Study Area. (Source: adopted and modified from maps.google.com)

### 4.8 Built Environment Elements Characteristics (Hot Spot areas).

The study Scrutinized at the characteristics of the selected Built Environment Elements of study and synthesized how they relate to crime and violence around them. The selected elements included brown fields, low-income houses, drainage channels, transport transit roads, junctions and routes, and vacant or unoccupied housing structures.

#### 4.8.1 Open areas.

Naguru Go-down is distinguished by a few open areas, which pose a challenge to the local residents because they have become a hub for criminal and criminal activities over time. During the day, the youth criminal gangs use these fields as a hiding or relaxing place as they hide under the boundary tree shades. These gangs use the Kololo senior secondary playground and the Kigobe brick laying site as traps for their targets at night. Kololo Senior Secondary School Sports Center and Naguru Go-down (Kigobe village) brick laying site are two of the major brown fields with the highest percentage of crime and violence.

Figure 15:Kololo Senior Secondary School Play Ground. (Source: Author)

Figure 16:Kigobe Brick Making Site (Source: Author)

The study of the brown fields in Naguru revealed that they are characterized by; Open boundaries, the study established that most brown fields have no fences with others having their fences tampered with, this means the fields can be accessed from any point and controlling the people entering and leaving at any particular time is impossible. Respondents around stressed that most brown fields are characterized by foot made passages linking to the fields and that its such passages criminal take.

Open views towards the brown fields. Respondents asserted that all brown fields have clear views from the immediate neighbouring environment such as, the big trees surrounding Kololo senior secondary school playground, potential criminals take advantage of the clear wide views observing potential targets using the brown fields at different times of the day.

Lighting. The study shows that during day time, the brown fields are very clear with natural lighting and that at such times there are few crimes and violate case as compared to night hours when the brown fields are dark with the seasonal moon light being shielded off by the neighbouring tree canopies.

**4.8. Informal Houses.**

The study shows that most crimes and violence around Naguru Go-down do happen around the low-income houses and their characteristics have a relation with the activities of crime and violence around them.

Respondants asserted that the image of Naguru Go-down creates a fear for crime with in the locals and the pass-by citizens and also attracts potential criminals, as they assume possible hidding spaces and potential targets. This has been the major reason for an increasing number of potential criminals as reported by the Local Council authorities. The famous “batebenyi” pretending to be hawkers were reported to be the major criminals taking people things as they hide in the dead ends and corridors during day. The members gang which was reported to monitor activities within the Naguru Go-down most so at night, demanded protection fees from the residents and strangers who would be robbed at the slightest resistance.

Figure 17:A view of Naguru Go-down Low-Income Houses. (Source: Author)

#### 4.8.2.1 Organization of the Low-Income Houses.

The study reveals that there are different types of organistion of the low income houses including, Linear arrangment, with housing units arranged facing an element or in most cases a passage route as shown in figure 22, study shows that there are higher chances of crime and violence cases happening in the semi-public spaces created by such arrangment, as the passangers and the house

occupants share the same immediate space after the door way. With this arrangement there is no privacy from the passage route to the interior of the housing units.

Figure 18:Linear Arrangement of Low-Income Houses. (Source: Author)

Regarding Central Organistion, the study reveals that housing units with a central organisation have less or few criminal and violence case as the doors and windows are oriented towards the common courtyard, increasing the eyes observing the common enterances and creating a sense of community within the housing group. This makes it hard for would be criminals to access such common places as the occupants are always observing and in most cases have an idea of the members.

Figure 19: Centralized Arrangement of Low-Income Houses. (Source: Author).

Clustered Organisation.

Most of Naguru Go-down buildings are clustered and compacted. The study reveals that a group of housing units with clustered arrangement is characterised with various entrance points, dead end points that are never used as indicated in *figure 20*.The respondents asserted that this kind of arrangement is responsible for creating hidding spots for criminals and also creating zig-zag transit routes with in Naguru Go-down.

Figure 20:Dead end of a path. (Source: Author)

**4.8.2.2 Materials Used for Informal Houses.**

Respondents revealed that much of the crime around informa houses has a direct relationship with the materials used, as some of the materials attract criminals and their criminal behaviour. Materials like wooden doors, old rusty iron sheets used for wallings, old rotten earth bricks, rotten wooden walls are most of the materials that attract potential activities. The study shows that most of the materials used with in the informal houses has contributed to the increase in crime and violece rates in Naguru Go-down.

Figure 21:Disintegrating materials on some Informal Houses. (Source: Author)

The study shows that some materials rotting off some houses are often used in committing crimes. This was asserted by locals, that in some cases earth bricks are used in the attacks against pedestrains using the paths within Naguru Go-down.

### 4.8.3 On-Going Construction Projects.

As part of informal developments in Naguru Go-down, open vacant buildings are mushrooming around the area, most of which are either under construction or are under demolition.

Incomplete buildings in Naguru Go-down create with hiding pockets both during day and night, that are used by potential criminals as hiding spots. Respondents asserted that often times, people's property has been stolen and collected or hidden in these vacant buildings and these act as refreshment points for criminals after committing crimes before leaving the village.

Responses from Police assert that often times, criminals use the vacant and abandoned buildings as their meeting points before both and after committing crimes and that some of such vacant houses very close to the local housing units, imposing a fear for crime within the locals.

Figure 24:Unfinished Vacant Houses. (Source: Author)

Locals living around the vacant houses asserted that as thieves go to vacant buildings to steal materials like windows, wooden poles that are used in the buildings, some of them end up diverting to people's houses and committing crimes.

Figure 23:Unfinished House. (Source: Author)

Figure 23:Half Demolished House

### 4.8. Circulation Routes

The study shows that some spots along the paths and roads turn into crime hotspots for both crime and violence, this is mainly during when passengers and vehicles are very few on the roads and routes.

Figure 25:Some of the Routes in Naguru Go-down. (Source: Author)

### 4.8.1 Pedestrian Paths.

Pedestrian Paths in Naguru Go-down are commonly narrow corridors either bounded by housing units or housing units and open drianage channel. The routes are usually less than two metres wide, with dark zones during night.

The zig-zag narrow routes with dead ends at different points with no lighting at night, act as run away routes for criminals at night. Respondents asserted that criminals hide within the corners of

Figure 26:Access Routes formed between House Boundaries. (Source: Author)

the passenge ways and wait for potential targets. The passenger ways are normally semi-public spaces shared with the housing units, there is normally for sense of ownership of the spaces around and any one seen on the way is assumed to be a suitable user.

### 4.8.2 Roads and Junctions.

The study shows that three major roads used by residents in Naguru Go-down, Naguru-ring road, Naguru-Katale road and Naguru-Kigobe road. These roads are characterized with open deep drainage channels along them of which some are broken down, sharp T-junctions with very limited angle of sight.

Figure 28:Naguru-Katale Market Junction. ( Source: Author)

Figure 27:Naguru-Katale Lane. (Source: Author)

The lighting on these roads is very poor, having lights by the neighbouring residence home particularly at night with only one camera point at Naguru market junction. According to police, the camera that was installed, cannot work properly because of the lighting problem around the target junction.

According to residents, the roads and junctions pose a high threat to security as there are considered no-go zone during the night hours leading to an increase in both fear for crime and actual criminal actives around Naguru Go-down.

### 4.8.5 Open Drainage Channels.

Naguru Go-down is generally steep with deep drainage channels created to allow flow of storm water. Respondents asserted that most of the channels are misused by dumping rubbish into them while others are not well maintained having grown into bushes, the drainage channels then are used as hiding places for potential criminals during day and night.

Figure 30:Open Drainage Channel along Naguru-Katale Lane. (Source: Author)

Residents in Kigobe (Naguru Go-down) village were most of these channels are deep and lead to the major Lugogo drainage line, asserted that, these not only pose a high rate of fear for crime around the area but also, they have actively been used by hard core criminals around the whole of Naguru Go-down.

Figure 32:Kabanyanya Drainage Channel (Source: Author)

Figure 32:Open Drainage Channel (Source: Author)

The study reveals that open drianage channels in the upper part of Naguru Go-down are used by most criminal teenagers who hide within them while observing the pedestrains and potential homes with no occupants around.

# CHAPTER FIVE: CONCLUSIONS AND RECOMMENDATIONS

## 5.1 Introduction

In this final chapter, conclusions are drawn and recommendations are made for improved design and planning of built environment elements. The conclusions and recommendations of the study are in light of the study objectives. Areas of further study regarding the subject are also included.

## 5.2 Key findings

In answering the research questions, the study examined the different built environment elements in Naguru Go-down and how they relate with the different types of crime and violence. Answers to the issues raised have been deliberated in the foregoing chapters and will be examined in summary form in this chapter.

The built environment elements selected included, open drainage channels, informal houses, Circulation Routes, Open Areas and Incomplete buildings in Naguru Go-down. This was because of the bigger crime and violence percentages these elements were having as per the police and residents' reports.

### 5.2.1 Brown fields.

Brown fields in Naguru Go-down are characterized by being with no barriers, multiple access points, no night security light, with tall dark tree canopies at the boundaries which had resulted into a very high crime rate both during night and morning hours, with night hours turning into a horror periods around and within the brown fields. Sexual related crimes and robbery in and around brown fields were at climax during the study period as residents of Naguru Go-down, majorly those staying and living around Naguru Katale primary school playground reported that such spaces were very dangerous crime spots and hiding places for offenders, drug gangs and idlers.

### 5.2.2 Open drainage channels.

The study showed that these are characterized with, deep and narrow physical dimensions, with poor maintenance having broken and decaying parts and brushes in and around them. Open drainage channels are a hub for potential criminals at all times of the day in Naguru Go-down, Kigobe main

drainage stream hubs drug gangs, potential offenders and idlers hiding around Kabanyanya crime hotspot pretending to be washing cars as they survey for any potential prey within their crime pattern. The places around Kigobe main drainage stream and other drainage channels had been characterized with a high sense of fear for crime within the residents and pedestrians as such areas were no go zones both at night and day hours.

The area chairperson (Biyonyi zone), conformed that due to the high sense of fear for crime around areas surrounding Kigobe drainage channel, residents or possible residents never wanted to stay near or within such areas causing both rental houses and commercial business units loose rental value. This led to more vacant housing units around Naguru Go-down, which in turn created more hub for criminals

### 5.2.3 Circulation Routes.

These included, roads, routes and the road junctions, all having no security lights, poor angles of sight at the corners, and the routes having multiple connections. Roads and other transport transit system, though not very clear and well planned seemed fairly safe during day than in the night. During the night they turned into hubs for criminals who hanged around them waiting for potential targets, a clear example, was the market roads on which people and gangs could stand holding small meetings in the evening hours with a watch at the pedestrians passing by. Residents asserted that such gangs of people are always watching for loose holes of both sexual and robbery crimes and in many cases the targets were always women having gone for market shopping.

### 5.2.4 Informal houses.

Informal houses are mainly Kiwalimu zone and Kigobe zone with decaying houses, very close to each other, and highly populated had the highest threat to security in Naguru Go-down because of the building organizations, that support uncontrolled movements of both pedestrians and occupants, with little natural surveillance and materials that are permeable, rotten, encouraging potential criminals at all time of the day. Additionally, the social and economic factors further escalated the crimes around these zones as people or residents became sought for basic human needs and using all possible means to achieve their human needs.

### 5.2.5 Vacant and unoccupied houses.

These include, broken houses, unfinished houses, and unoccupied houses. These are used as hiding

and refreshment points by criminals during day and night hours. During the study it was found that criminal gangs had black houses (headquarters) within some of the formally vacant houses to which most criminal could have a daily report with the other members. Local leaders around Naguru Go-down also asserted that these black houses had grown in numbers and the area police was aware but fearing to engage as most criminals were local residents who would threaten the security personnel of taking their lives.

### 5.3 Conclusions.

In accordance with the study and respondents, the current situation of the built environment elements had contributed to the increasing crimes and violence around Naguru Go-down. This study asserts that crime patterns are not uniformly distributed depending on relevant environmental built elements. The result of the study demonstrates that some of the built environmental elements conditions have a strong impact on crimes, while others do not. Areas having poor and disorganized built environment elements were characterized with poor night lighting, poor natural surveillance, poor sense of community, high level of fear for crime, poor territorial sense, and had permeability problems, which had resulted into higher criminal and violence cases.

This research provides a general understanding of crime and its relationship with the physical environment. The understanding involves the idea that criminal events can be prevented by environmental designs that alter the situation to make crimes riskier and targets less attractive for attack by potential criminals

In conclusion, the study clearly states that the crimes and violence cases are related to the built environment elements in Naguru Go-down and can be prevented or a voided though a well-planned use of environmental design such as design for natural surveillance, solar lighting for streets and routes, communal design of house with proper building materials, design to install a sense of community with proper controlled natural access.

### 5.4 Recommendations.

The study reveals that most houses in Naguru Go-down are occupied by low income earners and therefore all solutions to curb potential criminals should be cheap in installing, durable and manageable in maintenance.

All measures taken should consider the residents and improve on their wellbeing as opposed to exporting crimes to other areas by forcing residents out of Naguru Go-down though reducing on the built environment elements with housing in particular.

### 5.4.1 Solar street lighting.

Sufficient lighting is necessary for people to see and be seen. From a security point of view, lighting that is strategically placed can have a substantial impact on reducing the fear of crime. A basic level of lighting should allow the identification of a face from a distance of about 10 meters for a person with normal vision. All roads, routes and junctions, should improve with installing solar lighting so as to reduce the fear for crime and actual potential criminals hiding within the dark around the roads and routes.

### 5.4.2 Natural access control.

Natural access control relies on doors, fences, shrubs, and other physical elements to keep unauthorized persons out of a particular place if they do not have a legitimate reason for being there. In its most elementary form, access control can be achieved in individual dwellings or commercial establishments by the use of adequate locks, doors and window barriers.

However, when one moves beyond private property to public or semi-public spaces, the application of access control needs more care. Properly located entrances, exits, fencing, landscaping and lighting can subtly direct both foot and vehicular traffic in ways that decreases criminal opportunities. Access control can be as simple as locating a front office to a warehouse.

While access control is more difficult on streets and areas that are entirely open to public use, there are other techniques for controlling access in these circumstances. For example, non-physical or ‘psychological’ barriers can be used to achieve the objective of access control.

These barriers may appear in the form of signs, paving textures, nature strips or anything that announces the integrity and uniqueness of an area. The idea behind a psychological barrier is that if a target seems strange, or difficult, it may also be unattractive to potential criminals.

Because any strategy that fosters access control is also likely to impede movement, careful consideration should be given to access control strategies. Such strategies may limit the opportunity for crimes, but should not hinder the mobility of potential victims.

### 5.4.3 Territory. (Use of green wall and house arrangement)

People naturally protect a territory that they feel is their own, and have a certain respect for the territory of others. Clear boundaries between public and private areas achieved by using physical elements such as fences, pavement treatment, art, signs, good maintenance, house arrangements and landscaping are ways to express ownership. Identifying intruders is much easier in such well-defined spaces. Territorial reinforcement work when a space, by its clear legibility, transparency, and directness, discourages potential offenders because of users' familiarity with each other and the surroundings.

### 5.4.4 Natural surveillance.

The fundamental premise is that criminals do not wish to be observed. Surveillance or the placing of legitimate 'eyes on the street' increases the perceived risk to offenders. This may also increase the actual risk to offenders if those observing are willing to act when potentially threatening situations develop. So, the primary aim of surveillance is not to keep intruders out (although it may have that effect) but rather, to keep intruders under observation.

Natural surveillance can be achieved by a number of techniques. The flow of activities can be channeled to put more people (observers) near a potential crime area. Windows, lighting and the removal of obstructions can be placed to improve sight lines from within buildings.

### 5.4.5 Materials of construction.

Materials such as, burglar proof, proper rocks, strong, cheap and durable walling materials like clay bricks should be used.

### 5.4.6 Proper planning.

Low income houses should be properly planned and organized to reduce on the densities, by creating high rise facilities and increasing on the green common spaces. This creates a better image and proper roads and routes as opposed to the dead spaces created within compact current arrangement of the houses in Naguru Go-down.

This is related to the neighbourhood's sense of 'pride of place' and territorial reinforcement. The more dilapidated an area, the more likely it is to attract unwanted activities. The maintenance and

the ‘image’ of an area can have a major impact on whether it will become targeted.

Another extension of the concept is that territorial concern, social cohesion and a general sense of security can be reinforced through the development of the identity and image of a community. This approach can improve not only the image of the population has of itself, and its domain, but also the projection of that image to others.

With clear spatial definitions such as the subdivision of space into different degrees of public/ semi-public/ private areas and the raising of standards and expectations, the level of social estrangement would decline. This is known to be related to reduction in opportunities for aberrant or criminal behaviour, such as vandalism.

Maintenance and management need to be considered at the design stage, as the selection of materials and finishes will impact on the types of maintenance regimes that can be sustained over time. For example, plant material should be selected for its size at maturity to avoid blocking of sight lines.

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## APPENDICES

## APPENDIX I: QUESTIONNAIRES

**MAKERERE**  **UNIVERSITY**

COLLEGE OFENGINEERING, DESIGN, ART&TECHNOLOGY

SCHOOLOFBUILT ENVIRONMENT

DEPARTMENTOFARCHITECTURE ANDPHYSICALPLANNING

BACHELOR OFARCHITECTURE

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# QUESTIONNAIRE

*An investigation on how built environmental elements relate with crime in informal settlements; case of Naguru Go-down, Kampala*

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This research study titled "*An investigation on how built environmental elements relate with crime in informal settlements; case of Naguru Go-down, Kampala***"**is undertaken by Kyambadde Joseph at the College of Engineering, Design, Art & Technology. School of Built Environment. Department of Architecture and Physical Planning to assess the causes and impact of these discrepancies on the quality of residential developments.

Please answer **all** questions below.

***Thanks in advance for your co-operation and help!***
***Sincerely,***

***Kyambadde Joseph***

**NOVEMBER 2019**

**Part A: BACKGROUND INFORMATION**

1. Date of the interview:

   ……..

2. Respondents name (optional)

   ……

3. Respondent age:

   …….

4. Respondents physical conducts:

   ……..

5. Sex of the respondent:

   (1) MALE…….. (2) FEMALE…….

6. Respondent level of education:

   (1) Non……. (2) Primary Level…….

   (2) Secondary level ……., (3) University level…….

7. Marital status:

   (a) Single……. (b) Married……(c) widowed…… (d) Divorced……

8. Which of the following best describes your purpose of stay in Naguru Go-down?

| **Purpose** | **Tick one** |
|---|---|
| home | |
| business | |
| visitor | |
| Other | |

a) If your answer above was other, please specify:

   ……...

b) Your current position in your home/business:

   ……

c) Period of stay or operation in Naguru Go-down (please tick one):

 Less than 5Years

 5-10 Years

 10 Years and above

**Part B: CRIME SITUATION**

1. a) Have any of your family member or you been a victim of crime and violence while in Naguru?

(YES)…. ……  (NO) ……

b) If yes, which type of crime or violence did they or you experienced?

| **crime** | **Tick one** |
|---|---|
| Theft | |
| Sex related | |
| Assault | |
| kidnap | |
| Burglaries/house breaking | |
| Other | |

c) State, if otherwise.

……..

2. a) where did the crime of violence occur?

| **Environmental built element** | **Tick one** |
|---|---|
| Green and brown fields | |
| Vacant or abandoned buildings | |
| Low-income houses | |
| Drainage elements<br>-trenches | |
| Transport elements<br>-roads<br>-junctions | |
| Communication elements<br>-signage posts | |
| Security elements<br>-wall fences | |
| Other | |

b) Please specify the exact area?

……..

c) Do you think there is any relationship between the crime or violence and the area in which it was committed?

(YES)…..... (NO) ….

c) What is the relationship between the crimes experienced with the area?

……

3. a) which time of the year did the crime or violence occur?

| **Period of the year** | **Tick one** |
|---|---|
| January- April | |
| May- August | |
| September-December | |

b) Which time of the day did the crime or violence occur?

| **Purpose** | **Tick one** |
|---|---|
| 1am-6am | |
| 7am-12mid day | |
| 7pm-6pm | |
| 7pm-12 mid night | |

**DECLARATION: INFORMATION GIVEN HERE IS CONFIDENTIAL, WILL BE TREATED WITH ULTIMATE**

**CONFIDENTIALITY AND WILL BE USED FOR ACADEMIC RESEARCH PURPOSES ONLY**.

**INTERVIEW SCHEDULE FOR POLICE OFFICERS AND LOCAL ADMINISTRATORS**

1. a) what are the crimes and violence within the Naguru Go-down?

| **crime** | **Tick** |
|---|---|
| Theft | |
| Sex related | |
| Assault | |
| kidnap | |
| Burglaries/house breaking | |
| Other | |

b) What are the perpetrators and the targets within the Naguru Go-down?

| **Age group** | **Tick one** |
|---|---|
| 1-15 years | |
| 16-30 years | |
| 31-45 years | |
| 46-60 years | |
| Other | |

c) What types of crime are most frequently reported?

| **crime** | **Tick** |
|---|---|
| Theft | |
| Sex related | |
| Assault | |
| kidnap | |
| Burglaries/house breaking | |
| Other | |

d) Why do you think the above types of crime are prevalent in the area?

…….

2. a) Which parts of Naguru Go-down do most crime occurs

| **Environmental built element** | **Tick one** |
|---|---|
| Green and brown fields | |
| Vacant or abandon buildings | |
| Low-income houses | |
| Drainage elements<br>-trenches | |

| | |
|---|---|
| Transport elements<br>-roads<br>-junctions | |
| Communication elements<br>-signage posts | |
| Security elements<br>-wall fences | |
| Other | |

b) Please specify the area.

……..

c) Why are these parts more prone to crimes?

……..

d) Do you think there is any relationship between the crime or violence and the area in which it was committed?

(YES)….  (NO) ….

e) What is the relationship between the crimes experienced with the area?

……

3.a) which time of the year did the crime or violence occur?

| **Period of the year** | **Tick one** |
|---|---|
| January- April | |
| May- August | |
| September-December | |

b) Which time of the day did the crime or violence occur?

| **Purpose** | **Tick one** |
|---|---|
| 1am-6am | |

| | |
|---|---|
| 7am-12mid day | |
| 7pm-6pm | |
| 7pm-12 mid night | |

4) What measures have you taken as police unit to curb the problem of crimes in the area?

……

5) What would you as police unit suggest as a way of dealing with insecurity in Naguru Go-down?

…….