Livable Streets as an Essential Quality of Social Life: The Case of 15 Ağustos Boulevard (Larnaca Road) of Famagusta, North Cyprus

Najmaldin Hussein Mohammed

Submitted to the
Institute of Graduate Studies and Research
in partial fulfillment of the requirements for the degree of

Master of Science
in
Urban Design

Eastern Mediterranean University
July 2016
Gazimağusa, North Cyprus

Approval of the Institute of Graduate Studies and Research

Prof. Dr. Cem Tanova
Acting Director

I certify that this thesis satisfies the requirements as a thesis for the degree of Master of Science in Urban Design.

Prof. Dr. Özgür Dinçyürek
Chair, Department of Architecture

We certify that we have read this thesis and that in our opinion it is fully adequate in scope and quality as a thesis for the degree of Master of Science in Urban Design.

Asst. Prof. Dr. Müge Riza
Supervisor

Examining Committee

1. Prof. Dr. Mukaddes Faslı
2. Asst. Prof. Dr. Müge Riza
3. Asst. Prof. Dr. Pınar Uluçay

ABSTRACT

Livable street serves people of all ages in a variety of ways, and, particularly in residential areas, should do more than acting as a transportation route for automobiles. The engineering standards that are the basis of street design were mostly developed over the past half-century, and are primarily based upon highway principles that enable the flow of motor vehicle traffic. Modern urban planning and therefore engineering standards developed over the past half century have shifted the focus on motorized transportation, mainly concentrating on motorway principles that enable the flow of vehicular traffic. As a result, the defining purpose of streets built in the modern city during the motor age has merely been reduced to accommodate automobiles at the expense of all other potential transportation means such as biking and walking. Naturally, this situation has discouraged social interaction in public spaces leading to unlivable streets.

On the contrary, the literature review conducted on the topic reveals that livable streets should serve people of all ages in a variety of ways, and, particularly in residential areas, should do more than simply transport automobiles. Consequently, this makes it necessary for urban designers come up with new ways of designing or upgrading streets in cities, ones which transform the streets into spaces that encourages social liveliness and establishes the street as a social place through walkable conditions that reflect a lively interaction.

This study concentrates on highlighting principles and measures behind what makes a livable and attractive street as part of a potentially wider lively public space that

becomes an integral part of the city. The aim is to discuss the importance of the livable street as a significant quality that enhances social life in public space and pinpoint the situations that create unlivable streets in need to establish attributes that change the streets into socially interactive public places. Another objective of the research is to regenerate principles and measures of a livable street so that social interaction in public space can be promoted to create public spaces with a sense of place. In order to be able to achieve this, the user's perception of what makes a livable street has been examined in the research.

This study is based on an inclusive literature review, structured questionnaire surveys, site surveys and observations on a selected case study –15 Agustos Boulevard (Larnaca Road) in Famagusta- which was assessed according to livable street criteria to highlight its existing problems and propose further solutions for its improvement. The results reveal that there are certain physical, functional and social problems which point out towards a lack of livability in the selected street space.

Keywords: Livable Street, Quality of life, Social interaction, Social activities, 15 Ağustos Boulevard (Larnaca Road), Famagusta

ÖZ

Yaşanabilir sokaklar her yaş grubundan insanlara hizmet veren, ve özellikle yerleşim alanlarında sadece otomobil kullanımını ön planda tutan bir sokak türü değildir. Son yarım yüzyıl içinde geliştirilmiş cadde tasarımının temeli olan mühendislik standartları, öncelikle motorlu araç trafiğinin akışını sağlayacak otoyol ilkelerine dayanmaktadır. Sonuç olarak, motorlu araç çağında, sokak tasarımını öncelikli belirleyen otomobil kullanımı olmuş ve diğer fonksiyonlar göz ardı edilmiştir. Son yarım yüzyıl içinde geliştirilen, çağdaş kentsel planlama ve dolayısıyla mühendislik standartları, araç trafik akışını sağlayacak otoyol ilkeleri üzerinde yoğunlaşarak, motorlu taşıt ulaşımını kolaylaştıran otoyol tasarımı üzerinde yoğunlaşmıştır. Sonuç olarak, cağdaş şehirler, otomobil kullanımına öncelik verecek şekilde tasarlanmış ve diğer, bisiklet, yürüyüş ve benzeri ulaşım şekilleri göz ardı edilmiştir. Doğal olarak, bu durum kamusal alanlarda sosyal etkileşimi kısıtlamış ve sosyal açıdan yaşanılamaz sokaklar yaratmıştır. Ancak, konuyla ilgili yapılan literatür taramasında, yaşanabilir sokakların, özellikle yerleşim alanlarında, sadece otomobil kullanımına değil, tam tersine her yaştan insanlara çeşitli yönden hizmet verebilmesi gerekçesi ortaya koyulmuştur. Sonuç olarak, kentsel tasarımcıların sosyal etkileşimi teşvik eden ve sokakları sosyal bir mekan olarak kabul eden kriterler aracılığıyla sokakları yeniden kugulanması gerekmektedir.

Bu çalışma, yaşanabilir sokak ilkeleri ve önlemlerine vurgu yaparak, kentteki kamusal alanın önemli bir parçası haline gelmiş canlı sokakları irdelemektedir. Bu çalışmada amaç, yaşanabilir sokakların, kamusal alandaki sosyal yaşamı geliştirmek açısından önemini tartışmak ve sokakların sosyal etkileşimi kısıtalayan özelliklerini

tespit ederek, sokakların sosyal mekanlara dönüşümü için gereken özellikleri tartışmaktır. Araştırmanın diğer bir amacı ise, öncelikle kamusal alanlarda ‘mekan hissi’ (*sense of space)* duygusunu vurgulayan, sosyal etkileşimi oluşturmayı amaçlayan ilkeleri ve önlemleri oluşturmaktır. Bu araştırma çerçevesinde, kullanıcının yaşanabilir sokak özellikleri konusundaki algısıda incelenmiştir.

Bu amaçla konu ile ilgili kapsamlı bir literatür taraması, anket ve saha çalışması yapılmıştır. Buna bağlı olarak, Gazimağusa kentinde bulunan 15 Ağustos Caddesi (Larnaka Yolu), mevcut sorunları vurgulamak ve sokağı geliştirilmek acısından, yaşanabilir sokak kriterlerine göre değerlendirilmiştir. Analiz sonuçları, 15 Ağustos Caddesinde (Larnaka Yolu), fiziksel, fonksiyonel ve sosyal sorunlar olduğuna işaret etmekte ve yaşanabilir sokak kriterlerinin yeniden ele alınması gerektiğini göstermektedir.

Anahtar Kelimeler: Yaşanabilir sokak, Yaşam Kalitesi, Sosyal etkileşim, Sosyal aktivite,15 Ağustos Caddesi (Larnaka Yolu), Gazimağusa

To My Beloved Family

ACKNOWLEDGEMENT

It would be absolutely impossible for me to conclude my thesis without the strong guidance of my supervisor, members of my committee, support from friends, and my family. I consider working under the able supervision of Asst. Prof. Dr. Müge Riza a great honour and therefore, I greatly cherish all her contributions by way of time, ideas and tolerance to ensure the success of my master thesis. Her highly spirited approach towards the research even at difficult moments was indeed highly motivating for me. I will forever remain grateful to have worked with such an excellent and successful woman who has touched my life greatly.

I also have to immensely appreciate Prof. Dr. Naciye Doratli and Prof. Dr. Yonca Hürol, experienced instructors for their unquantifiable and incisive critics and support which they gave me with constant and beautiful smiles always on their faces. Also, I like to greatly appreciate Asst. Prof. Dr. Pinar Uluçay and Prof. Dr. Mukaddes Fasli, members of my committee as well as experienced instructors, who also supported and encouraged me during the period of my studies and research. Indeed, I will forever remain grateful for their kindness.

Lastly, none of these would have been achieved without the love, support and endurance of my family that have always stood and supported me in all of my life pursuits. Also, I am extremely grateful to my dear friends Mojdeh Nikoofam and Rokhsaneh Rahbarian for their reliable and intelligent advice and support always.

TABLE OF CONTENT

LIST OF TABLES

LIST OF FIGURES

Chapter 1

INTRODUCTION

The street is an integral part of the physical elements that make up a city. Its main role is the hosting of various activities that bring people together. However, the street functions as a circulation channel, connecting one place to another as well as allowing people to be outside and providing access to their destinations. Not only is the street a means of circulation but it also acts as a platform for social interaction (Moughtin, 2003). According to Jacobs (1961), the street may be recognized as a public space used for social and commercial activity, for communication, for political activity, as well as a ritualistic and symbolic place in a city. However, as criticized by Moughtin in many cases, the function of the street as a place has been social neglected because it is normally considered just as a road for vehicles (Moughtin, 2003). Thus, nowadays there is a reduction in the pedestrian use of streets which leads to less lively spaces due to the dominance of automobiles in a lot of urban areas. In order to increase the quality of urban life, it is important that streets play a significant role as lively public spaces which attract people.

Additionally, Ben Plowden (2004) suggests that streets are somewhat just linear, narrow spaces enclosed by buildings on either side within settlements, which function as circulatory routes and sometimes other activities. Streets become more democratic in their functionality when the inhabitants are able to have some sense of control over them. They act as the setting for community life and therefore they

should allow for safe, quick, and well-organised pedestrian movement; and in addition they should provide spaces for thinking, shopping and playing (Sammas, 2008). An essential requirement of the city is to ensure that the streets are lively as one of the fundamental needs of human life is social interaction.

Streets host formal and informal activities alike; those formal in their nature mostly occurring within the buildings along the street, whereas the informal activities take place in the open spaces amongst the buildings. Informal human activities are the contributing factor to the manifestation of street culture which takes place in between the physical boundaries on either side of the street space; and this informality refers to all activities which are economic-based, social-based, and culture-based, as well as their combination. Street vending, social contact, and street performance are examples of these activities (Gehl, 2011).

Currently, vehicular traffic still dominates the streets with limited pedestrian and cyclist social activities. Traffic engineers and urban designers have been constantly trying to determine ways in which more people can be brought out onto the streets in order to allow the street to become a public space where neighbours and friends can interact with one another and thereby create livable cities. In this sense, planners are looking for ways to design and operate the entire streets in consideration of all users that are; bicyclists, public transportation vehicles, as well pedestrians of all ages and abilities. Keeping this in mind, it is imperative that societies are able to enjoy convenient, attractive and healthy environments which are personalized to their needs; as well as have free access to amenities in public areas along with safety and comfort away from pollution and noise. Nonetheless, streets are still preferred as

gathering spaces in which people may be as expressive as they need to be. (Yang, 2012).

According to Poerbo (2004), many European cities have urban realms attributed to parks, squares, or boulevards and the urban life occurs on the streets and along the sidewalks. This circulatory line in front of buildings as well as the livable sidewalks had become favourable spaces for movement and interaction with one another. However, unlike many European cities where urban life takes place on the streets; it is not the case for 15 Ağustos Boulevard (Larnaca Road).

Larnaca Road, as one of the main roads of Famagusta, North Cyprus, act as a living space for the city, which is located next to the historical walled city. This ancient walled city is famous for its sophisticated sea port which enhances trade and commercial activities in the city and connects both Greek and Turkish parts of the island. Currently, however, the road presents a very uninviting appearance. A street which has good physical and functional attributes may help in attracting more people of different levels, thus making it a suitable public space for social interactions and various activities in the city.

1.1 Problem Statement

In order to have livable streets, a number of social and recreational functions should take place on the street, without being interrupted by fast moving vehicles. A number of recent research findings have highlighted the value of pedestrian and cyclist routes in the street for its contribution towards the physical and mental health being of people. However, such concerns about designing lively streets for people, which is an aspect of place-making in the street, has been overlooked. Gehl (2010) argues that

the lack of concern for urban life and development trend of automobile use over the past decade has made it increasingly apparent that the livability in street has been overlooked.

A further look into research considerations shows that one of the main roads in Famagusta, Larnaca Road displays several problems concerning liveliness of the street as a public space which are as follows:

- Firstly, it is flooded with vehicular traffic to the extent that pedestrians and public life.
- The functions and spaces for social interaction on Larnaca Road does not help to create livable space.
- Furthermore, the Larnaca Road is designed in a manner that is unfriendly towards disabled persons as well as cyclists.

However, as problematic as the case looks, this street has a potential to change into a livable street which necessitates the thoughtful consideration of this research to analyze it as a case study in terms of physical, functional and social attributes. The study will also try to define these attributes in consideration to the case study, the Larnaca Road in Famagusta in order to make it more livable for residents and visitors.

1.2 Aim and Research Questions

This research will be discussing the importance of a livable street as an important towards improving the quality of social life. As mentioned, by Oktay (2002): “Streets and their sidewalks are its most important organs because the spaces can reflect the image of cities based on its qualities, for if a city’s street looks interesting, this

reflects on the city look as well and if they look dull, the city also looks dull". In order to create a livable street a lot should be considered based on many attributes such as; improving the physical settings of the built environment to encourage peoples' interests within a variety functions that brings a diverse set of people within a setting and a place where social life and social interaction evolves at different times and scales should be considered. These should create mixed uses, accessibility, street elements, greenery area, plazas, that should reflect a high degree of safety and comfort.

The main aim of this study is to create a livable Larnaca Road, which could add to the improvement of social life in Famagusta. In order to successfully achieve the primary aim, the research will be conducted under the main question and the following sub-questions:

The main research question is:

- What characteristics of livable streets can be used to improve social life in the case of Larnaca Road?

Sub-Research questions are:

- How can we create livable street?
- What are the major attributes of livable streets?
- What are the strengths and weaknesses of Larnaca Road, Famagusta within the context of livable street?
- How can Larnaca Road transform to a livable street?

1.3 Scope of Research

The case study is Larnaca Road, also known as 15 Ağustos Boulevard, which is a main road in Famagusta, North Cyprus. The study area is limited to the distance in

between two roundabouts name the Zafer and Junction point between two streets which are Ibrahim Hasan and Anamur street. The research will focus on streets functioning as livable spaces where various aspects of livable streets will be evaluated in term of physical, functional and social attributes. Although a livable street can be analysed through environmental, economical and health issues, as well as consider the interior spaces of the buildings on the street.

1.4 Research Methodology and Structure

The study is basically conducted a mixed research method both qualitative and quantitative methods including literature survey, documentary survey and case study analysis. Data collection methods, including site analysis, site observation and questionnaire survey.

The structure of the thesis has four chapters. chapter one introduces the subject in general and the main aim and research questions of the study. Chapter two which is the theoretical framework include a literature review and the definition and classification of the streets, the importance of the street as a social space, definition and concept of livable street, concepts for creating livable street whilst protecting of pedestrians and cyclists. The last part of this chapter will focus on the major attributes of livable streets in terms of physical, functional and social attributes which are considered under livable street concept.

Chapter three is the case study, which is 15 Ağustos Boulevard (Larnaca Road) Famagusta where through the use of data collection methods such as; site-observation, site analysis (survey) and questionnaire with users of this street. The

analysis of Larnaca Road as the case study covers physical/natural, functional and socio-economic conditions of the area.

The conclusion and recommendation are presented in chapter four; and they will be highlighted for bringing livability to Larnaca Road, Famagusta. Figure 1 shows the methodology flow chart.

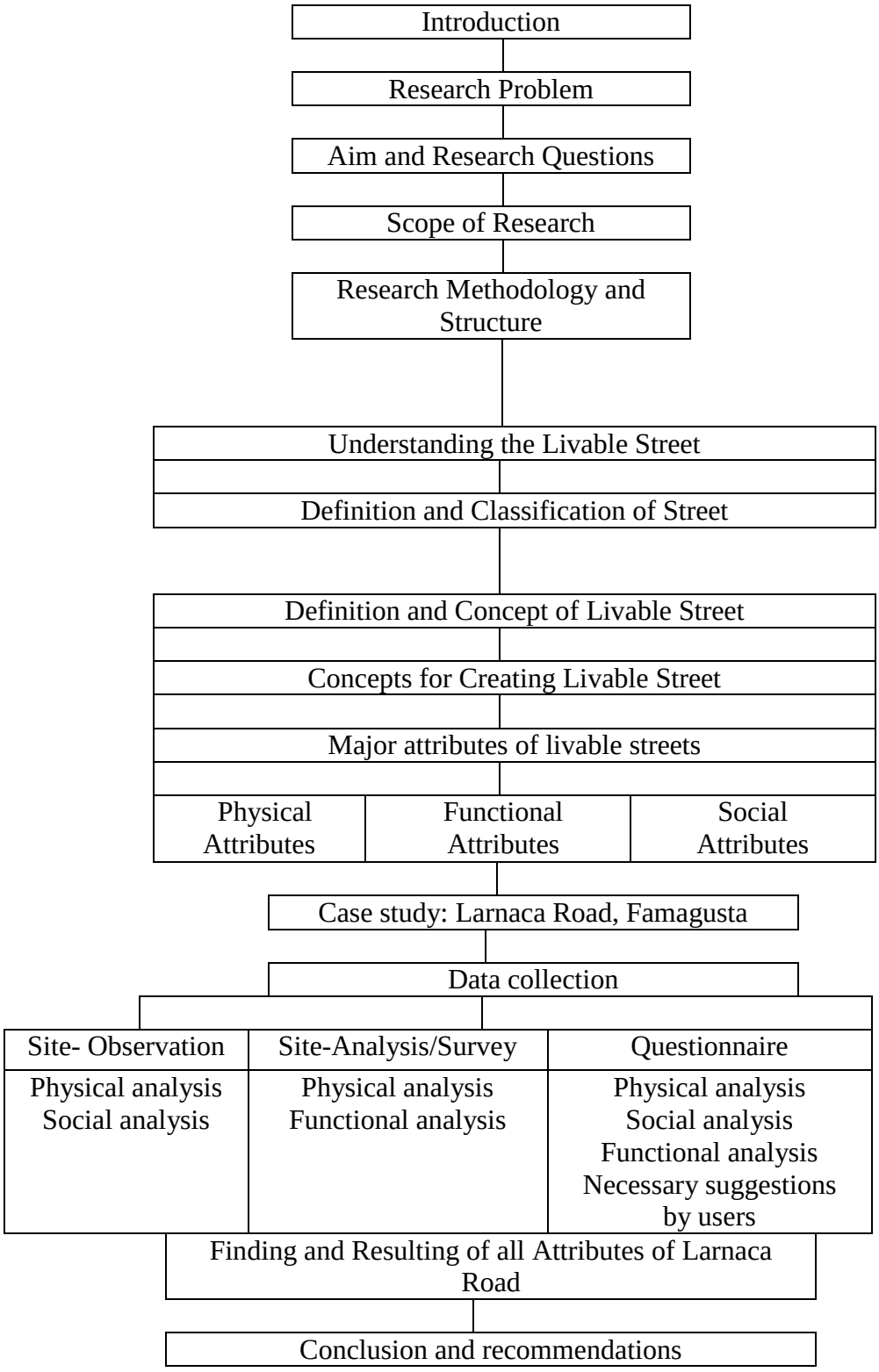


Figure 1: shows a methodology flow chart

Chapter 2

UNDERSTANDING THE LIVABLE STREET

The first part of this chapter classifies the definition and classification of streets as well as their usage. The following section focuses on the definition and concept of livable street and questions how livable streets are created. This is followed by the major attributes of livable streets, and these are three key groups; physical, functional and social attributes; which will be clarified in more detail. In the last part of the chapter a summary of the chapter will be provided.

2.1 Definition of the Street

According to Kostof's definition, "street" is an entity which has a road, usually a pedestrian path and bordering building." (Kostof, 1992; pp: 189)**.**

On the other hand, The Oxford English Dictionary defines street as "a road in a town or village, running between two lines of houses; usually including the sidewalks as well as carriageway". However, according to Moughtin (2003) there are differences between the road and a street even by their definition. A road is distinctively a line of communication between two locations used either on horseback, on foot or by vehicles; that is, a pathway to a journey with a destination. There is an emphasis on the transition from one place to the next, establishing communication lines between locations as a two-dimensional ribbon on the surface of the ground, over the ground by a bridge or beneath it by an underpass. Although a street may portray some of these characteristics, a more common definition of it is 'a road in a town or village',

where the circulation runs between a line of buildings on both sides; either two lines of homesteads or shops. It may also be considered as a three-dimensional space, enclosed by a dual line of neighbouring buildings; it is where one lives, a place that one may identify with. This is evident in the addresses of buildings, which show the buildings' position on a street. In addition (as shown in Figure 2-3) the streets are thoroughfares used by the public (Moughtin, 2003).

Streets, as Rapoport (1986) defines them, are linear spaces created in different settlements, used for movement as well as other activities in some cases. Rykwert (1988) highlights that the street is a delimited space which is a component of the urban grain, distinguished by a stretched area with buildings on either side. In addition, streets may be considered as spaces for social interaction and their names emerge through approval by the public. In the same way, the street may be perilous as a place and in addition to its architectural identity; it also possesses a social and economic importance (Rykwert, 1988). The outlook of the streets directly affects that of the city, that is, if the streets are interesting, so is the city and adversely, if they are dull then so is the city. According to Jacobs (1961), the street may be recognized as a public space used for social and commercial activity, for communication, for political activity, as well as a ritualistic and symbolic place in a city.

As a summary, it can be concluded that, streets provide a setting for social encounters with their names and function emerging through acceptance by the community. In addition, streets are important parts of livable attractive communities, and with this in mind, everyone, irrespective of their age, social status, ability or background, should have safe, comfortable and convenient access to public places

and facilities. Streets are not just for moving, whether driving, cycling or walking, they are also living spaces for social activity.

Figure 2: Pamplona road in Spain City, URL, 1

Figure 3: Manhattan Street, New York URL, 2

Rudofsky (1969) highlights that in previous years; streets were used to meet basic needs of living, communication as well as for recreational purposes while serving a number of civic, social, commercial, religious as well as political activities. People are still dependent on streets for different activities, especially in many city centres and mixed-use neighbourhoods (Jacobs, 1961; Appleyard, 1981; Gehl, 1987); even though in present-day developed civilizations, most of these activities have been relocated to virtual and private realms, or different kinds of public spaces (Brill, 1989). In addition to this, people are motivated to engage in new activities when they see others involved in them; consequently, even currently, as a social space the street can play a number of roles as well as offering social interaction, awareness, cohesion and learning.

2.2 Classification of the Streets

Different scholars categorise streets in different ways and these categories are either functional or formal. Moughtin (1992), who is one of the scholars who categorized

streets from the functional point of view, developed the following classifications of streets:

- **Civic Streets**: they are concerned mainly with civic buildings like government offices, concert halls, museums, theatres, etc, (Moughtin, 1992).

Figure 4: Buchanan Street, Royal Concert Hall, Glasgow in Scotland, URL, 3

- **Commercial Streets:** these deals with commercial activities; the functional aspect of a street such as this beautify the city and gives it an identity (Moughtin, 1992).

Figure 5: Camden Town street, London, URL, 4

- **Residential Streets**: these kinds of streets vary in that they may occur as inner-city high-density neighbourhoods or as suburban and rural districts. They require a safe and quiet atmosphere with low-density traffic, as well as play areas for children. (Moughtin, 1992).

Figure 6: Residential street, New York City, URL, 5

- **Multi-Functional Streets:** this category usually has several functions (Moughtin, 1992).

Figure 7: Times Square 42nd Street, New York City, URL, 6

Moughin (2003) names three types of streets which can be identified in a typical neighbourhood. They are classified as follows:

- **Minor Street:** These streets are limited in size and transport traffic from larger streets to individually owned plots of land. The singular purpose of these streets is to deliver entrance to adjoining properties. Such streets are generally made up of double lanes of approximate right-of-way widths ranging from 50 to 60 feet. The widths are usually sufficient for vehicular parking.

Figure 8: Minor Beale Street, USA, URL, 7

- **Collector Street:** These streets generally have three to four lanes ranging from 60 to 100 feet in width. They serve to join domestically inhabited areas to civic spaces. Commercial spaces are often located at the crossroads of the various street intersections.

Figure 9: Collector Street, in central Amsterdam, URL, 8

- **Arterial Street:** These streets carry a substantial amount of high density traffic and connect business districts with areas having industrialized functions. The right-of-way of such streets is not less than 100 feet. The lanes are often four or more in number with a clearly identifiable middle. Cross-access is restricted to intermediate disruptions in the road at intervals of not less than 500 feet gaps. Apartments are not usually placed directly facing these streets.

Figure 10: Arterial Road in Atlanta, URL, 9

Brian Grocock (2004) reveals his proposal for four types of streets as follows: those dominated by automobiles (Vehicle Dominant), those comprised of both humans and

automobiles (Pedestrian/Vehicular), those mainly used by humans (Pedestrian Dominant) and famous (Historic) streets. They may not however be paralleled with real streets.

- **Vehicle Dominant**: These roadways mainly serve to supply an entrance into urban centres and also to convey traffic through the centres. The buildings placed along these streets have different facilities and amenities for human patronage.

Figure 11: Traffic in the Streets of Bangkok, Thailand, URL, 10

- **Pedestrian/Vehicular:** These types of streets are usually located on the outskirts of urban centres. Both humans and vehicular traffic make adequate use of these streets without either being the most dominant.

Figure 12: Avenue des Champs-Élysées, Paris, URL, 11

- **Pedestrian Dominant:** On these streets, human traffic is more dominant while vehicular traffic is controlled, particularly in the centre of the city. Pedestrians have right of way and vehicles must move slowly so as to allow passage for cyclists and walkers.

Figure 13: Beijing Pedestrian Street, Guangzhou, URL, 12

- **Historic:** On these streets is found ancient, well renowned buildings of architectural distinction which are constructed of local materials. The streets are usually narrow necessitating slow movement of vehicles.

Figure 14: Graben Street, Vienna, Austria, URL, 13

2.3 Definition and Concept of Livable Street

Almost everyone in the world lives on a street. Streets have always been the central focus of cities and towns. However, streets have also been places of revolt and repression. “The street has always been the scene of this conflict, between living and access, between resident and traveller, between street life and the threat of death.” (Appleyard 1981, 1) as well as “Liveable streets are comfortable, welcoming and safe places where people can live, play, socialise, travel and shop. These streets bring people together and foster a strong sense of community” (GeoWorld 7 p 352).

The idea of livable streets has become quite popular since it was first brought to the limelight in (1981) by Donald Appleyard. Since then, many attempts have been made to define its characteristics. According to Appleyard, an ideal street should be a haven which provides a safe, healthy, green and enjoyable surroundings. He goes on to say that these streets should serve the surrounding neighbourhoods by providing play spaces and educational environments for children while being places that residents can identify with due to the distinct features of the streets (Appleyard, 1981, p. 243-244). Unfortunately, many streets have been associated with strife and

conflicts. Such street conflicts can be seen between those residing there and those transiting through, or between life in the street and the risks of death.

Eight features have been put forward by Jacobs (1995) as characteristics of good streets which can be identified as liveable streets such as; people should be able to stroll along them leisurely, they should provide some level of physical comfort while being clearly defined, they should have an aesthetic quality, have clarity between the inside and outside, harmonize with the surrounding buildings, should be well kept and have an excellent plan and construction. In reality, this can be interpreted as a better way of putting into a roadway design the requirements of pedestrians and local development goals. Providing an uninterrupted pavement system and integrating design characteristics that reduce the adverse effects of automobiles on human traffic, otherwise referred to as traffic calming, helps to improve the pedestrians' appeal of the street.

In addition, a number of authors have investigated how to reduce the undesirable effects of car movement on liveability and communal unity. One method studied by Bosselmann (1999) involved the use of tree-lined thoroughfares as a barrier between local and through traffic to see how these could enhance the liveability of those residing there. They determined that thoroughfares are able to successfully reduce the negative effects of heavy traffic. The presence of the line of trees physically separates the residents from traffic, making them less conscious of the traffic, thereby causing them to view their streets as a "special place " (Bosselmann, 1999). Berke and Conroy (2000), on the other hand, state that when physical spaces are adequately suited to the needs of the residents, communal bonding and sense of place is boosted thus producing a more inhabitable physical environment.

Another characteristic of a good liveable street is its potential for bringing people together. A book was written by Donald Appleyard in 1981 about a number of studies which he did of three individual streets in San Francisco. The streets chosen had similar, almost identical features differing only in the quantity of movement along them. The data he gathered was largely from two sources. Firstly, from discussions he had with a dozen residents in each block and secondly by critically looking at the movement of vehicles and people on the streets. His main concerns were: traffic risks, tension, sound rackets and air pollution, human interactions, seclusion and territoriality, as well as people's awareness of their surroundings (Appleyard, 1981).

Figure 15 demonstrates three different forms of social interactions that occur on the street: the different coloured lines show where people said they had friends or acquaintances, while dots show gathering spots (Appleyard, 1981). The image shows that where the least number of lines occur, there is heavy traffic, whereas more lines are seen in streets with moderate and light traffic. It can be said that people know more people and have more interactions in light traffic streets rather than in those with heavy traffic.

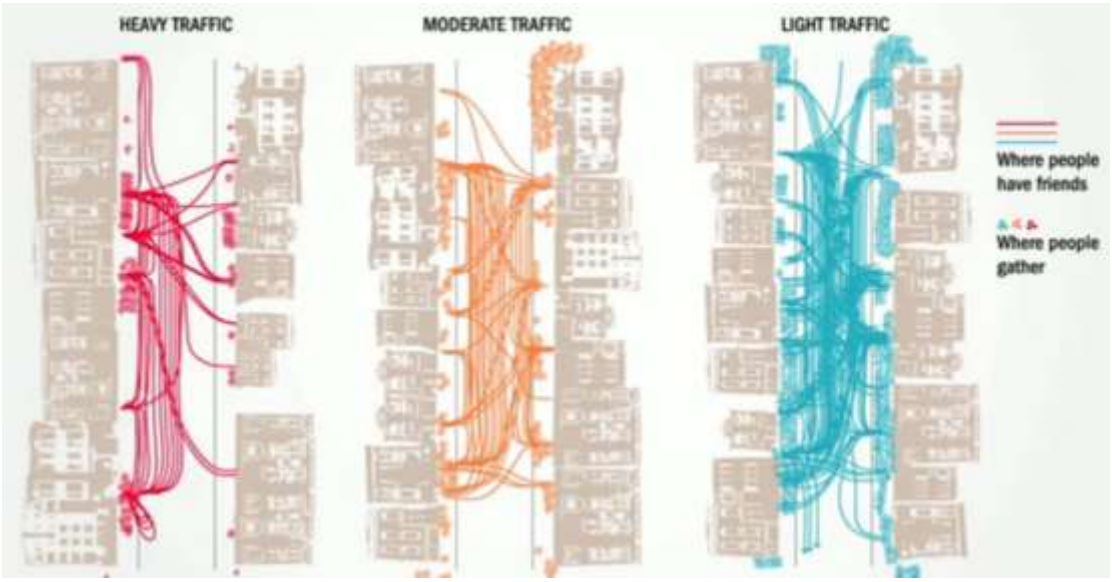


Figure 15: Social interactions on three streets-Neighbouring and visiting in San Francisco, URL, 14

Considering livable streets and social interaction, there are many concepts which could play an important role, such as; Traffic Calming, Shared Space, Living Street, and Complete Street, and each one will be discussed in the paper. These concepts create places which reduce the dominance of cars without eliminating their use totally, but rather making the them more dominated by pedestrians.

2.4 Concepts for Creating Livable Street

2.4.1 Traffic Calming

Traffic calming, according to Gehl (1987), is the best way to handle the invasion of automobiles, which prevents social interchange in many urban centres today. The concept of traffic calming was initiated in Europe as a way of slowing down and minimising automobile movement so as to make living situations better for residents (Yang, 2012). According to the Institute of Transportation Engineers, the mixture of predominant physical standards to minimize the adverse effects of automobile use, change attitudes of drivers and enhance the surroundings for pedestrians is another way of describing traffic calming (Lockwood, 1997).

Lockwood (1997) on the other hand, identifies the five main purposes of traffic calming as: reducing the rapid movement of automobiles, protecting pedestrians and giving them a sense of security, providing adequate accessibility for all forms of mobility, improving the street surroundings, minimizing the rate at which automobiles cut through urban spaces indiscriminately. Social concerns are an integral part of traffic calming. Existing open areas must be properly laid out for all those who will make use of them. Such users include youngsters, grownups, the aged, human and vehicular traffic, cyclists, people who reside there as well as tourists and passersby (Crouse, 2004). Figure 16 shows Traffic-calming on Raleigh's Hillsborough Collector Street.

Figure 16: Traffic-calming on Raleigh's Hillsborough Street in North Carolina, URL, 15

Traffic calming ensures proper planning of streets and setting of traffic laws so as to minimize traffic and hamper excessive speeding while ensuring the ability of pedestrian and cyclists to effectively share the streets. This is according to the

Neighbourhood Streets Network. The idea behind this is that communal areas are valuable and that everyone should have equal right of usage of them. Devises used for traffic calming are uncomplicated, cheap and easily suited for all forms of automobiles such as those used for emergencies and waste collection and for buses. Traffic calming also helps to minimize mishaps on streets, thereby enhancing security and protection for human traffic and other non-motorists. It also affords more play areas for children, eradicates disturbances caused by noise and pollution, improves the aesthetics of the environment, renews and stabilizes the environment while eliminating corruption and other vices.

2.4.2 Shared Space

Social activity in the public environment is extremely relevant to the quality of the constructed environment (Gehl, 2011). Also, he discussed that a common property of all alternatives, recreational and social activities, happens when the outside situation for exchange and transformation are appropriate or when the greatest benefits and the least negative points are recommended physically, psychologically, and socially; and when each aspect is suitable for that environment.

According to Gehl and Koch (2011), shared space, common surfaces and house areas can be considered in traffic engineering and street or road design concepts tried to achieve the goal of innovating more secure urban spaces and residential environments where the major focus is on place-making and walkers, not vehicular traffic transfer. The basic elements contain eliminating the traditional separation between mother vehicles, bikers, motorcyclists and walkers, and the deletion of normal lines, curbs, signs and signals. The major belief is to enrich road safety by making it compulsory for drivers to choose their destination through shared spaces at normal speed. Figure 17 shows shared space of Lyngby Hovedgade in Denmark.

The concept of shared space was coined by Hans Mondermanm, a traffic engineer from the Netherlands. Fewer accidents can take place via getting rid of sidewalks and traffic lights; public areas which make drivers to choose their way at lower speeds; guidelines to raise the consciousness; and more appropriate interaction (Monderman, 2006). Shared space is a street or area planned to improve walker's movement and relief by decreasing the privacy of cyclists and trying to provide opportunities for a walker to be able to share the area rather than obeying fixed rules applied by more traditional designs (Department for Transport UK, 2011a).

Public spaces do not have a ready recipe for their organisation, design and equipment of shared space. Only specific problems require designed solutions, otherwise there is a great range of basic elements concerned with the planning of people-space. To promote socially conscious behaviour, the design can be on the basis of local properties to motivate social awareness. Besides, each person must select as few as possible traffic engineering and regulation elements. Basic signals must be a priority to communicate. An essential reason of Shared Space is that the concrete common sense of dissatisfaction is created by eliminating traffic rules and by sharing road space. It can lead to a greater degree of consciousness and therefore more secure driving on the street (Methorst, 2007).

Figure 17: Shared Space in Lyngby Hovedgade, Denmark, URL, 16

2.4.3 Living Street

Living streets is a term which can be referred to the influence application of the common rules of way. In another work, living streets are increasing the applicability of these public corridors. Living Street can be initiated by keeping the basic significant influence of accommodating traffic, parking, and underground utilities, however, it can further develop accommodations for walkers, bikers and nature in the shape of street trees and rainwater gardens (Goellner, 2014).

Living streets are a kind of urban-building philosophy of collaborative cooperation to produce a line of streets, linked to adjacent land uses and constructions, which provide sufficient space for walkers, bikers, cars, and transform vehicles during providing more areas and spaces (Denver Living Streets Community Planning and Development, 2014).

Living Streets are lively spaces where all people: young, old, children, teenager with various physical abilities have pleasant feeling when they are using different kind of travelling. Living Streets are the same as perfect streets because they are designed to

prepare safe, vibrant, and comfortable trip for all people. Living Streets sound to be beyond the curb and sidewalk, and inform the main task that the use and shape of buildings have an essential role in the character of a street. Figure 18 shows a living street in New York City.

Figure 18: Living Street in New York City, URL, 17

2.4.4 Complete Street

Some transportation like walking and biking has not become useful because various communities in the USA have long been active in a position of "automobile dependence". Nowadays, there is a great tendency toward growing to complete the streets in communities across the country. Designers and engineers need to construct road networks that are more secure, more vibrant, and more welcoming to all people (Yang, 2012).

Roadways, designed and operated to enable safe, attractive, and comfortable access and travel for all users like walkers, cyclists, motorists and public transport users of various ranges of ages and skills are complete streets (Ritter, 2007). The particular design parts of Complete Streets are differentiated on the basis of context and due to

the National Complete Streets Coalition such as: Pedestrian infrastructure, Bicycle accommodations, traffic calming measures, and Public transit accommodations which is shown in Figure 19.

Other uses, such as sidewalk cafés, street furniture, street trees, utilities, and stormwater management are worthy to be considered in designing complete streets. According to the Complete Streets Advisory Committee, Complete Streets can make diversity and extreme positive points for communities by: providing healthy and vibrant neighbourhoods, providing safe and accessible streets for all ranges of ages and abilities, providing energetic and fascinating public spaces, offering people various transportation alternatives, developing environmental sustainability, and preserving economic success.

Figure 19: Complete Street in Toronto, URL, 18

2.5 Major Attributes of Livable Streets

The major attributes of livable streets will be looked at according to physical, functional and social aspects.

2.5.1 Physical Attributes of Livable Streets

The physical quality of a street can make a successful street in a city space which is attractive, accessible and safe and it occurs in all characters. Jacobs (1993) claims that the buildings, trees, walls or sometimes the combination of these; may be the defining elements, the street contains both vertical and horizontal attributes; these parts are especially classified in physical attributes of street (Jacobs, 1993).

There are many major physical attributes of livable streets that can be identified. These are characters such as; sidewalks, crosswalks, building continuity along the street, micro-climate and street elements; and they will each be described below:

2.5.1.1 Sidewalks in the street

The most important spaces in urban areas have sidewalks which are along and attached to the street. Sidewalks are present on the street to provide a pedestrian realm also they are some of the spaces in street which bring social interaction, activities, and offer safety in the street. According to Moudon (1987), recent standards require sidewalks to be precisely laid out beside streets. Jacobs (1993) associates well-designed streets with wide sidewalks which provide spaces for people to have leisurely walks. He also states that ideal sidewalks should offer safety from vehicular traffic while at the same time invoking in people a feeling of neither being alone, nor of being crowded which is shown in Figure 20-21.

Figure 20: Avenue des Champs-Élysées, Paris, URL, 19

Figure 21 The Kurfürstendamm avenuesin Berlin, URL, 20

In addition to space design, there are several physical parts which can also collaborate to build some more open comfortable spaces. Floor-scape in harmony and integration of public spaces is one of the main parts which deserve to be considered. Flooring in city spaces are divided into two major kinds; soft or hard landscaping. Hard landscaping or pavement is necessary in ensuring non-slip dry surfaces which can transfer both pedestrian and vehicular loads. The change in flooring material can be used to differentiate between the spaces where particular traffic loads can or cannot go (Moughtin, 1992).

The design of sidewalk environments has a vital role for every walker. It is also particularly essential to consider impaired people with restricted travel choices and depending on the pedestrian space. The properties of an appropriate sidewalk design are: approachability by all users, sufficient width, secure to use (Boodlal, 2004). Sidewalk users must not have the feeling of insecurity by traffic or by the environment. The continuity and connectivity, landscaping to create a buffer space between pedestrians and traffic and also creating shade, as well as social space can be considered as a central issue for design of the perfect environment for walkers to safely join in public life (Boodlal, 2004).

Figure 22: design of sidewalk environments, San Francisco-Street, URL, 21

The standard of sidewalk dimension is different for livable streets, it should be considered that sidewalks be at least 12 feet, which is a minimum because there is more pedestrian activity and outdoor seating demands, as well as to ensure people walk comfortably which is shown the section street below Figure 23.

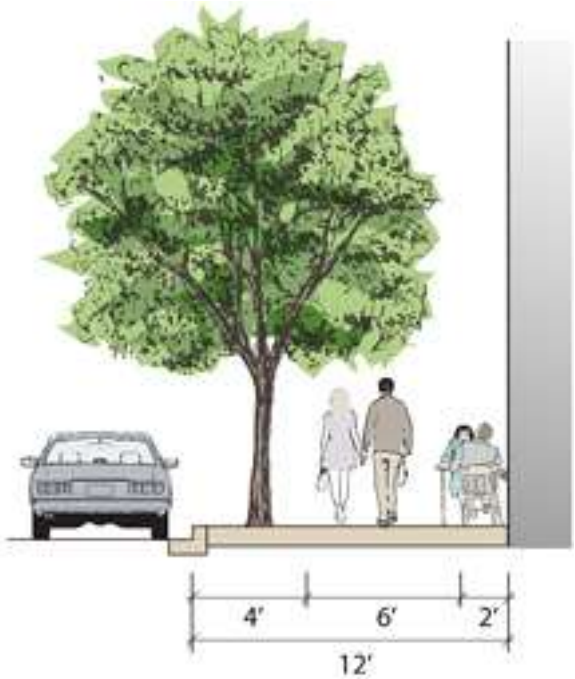


Figure 23: Sfbetterstreets a guide to making street improvements in San Francisco, URL, 22

2.5.1.2 Crosswalks on the Street

Crosswalks are one of physical elements required in streets. They should provide pedestrian accessibility for all age's people to allow easier and safer crossing of streets and also participate in traffic calming as shown in Figure 24.

Figure 24: Crosswalk on Tremont Street, Boston, URL, 23

According to The American Institute of Architects (2005), walking isn't convenient unless it is safe and easy to cross the streets. Besides, AIA classified Crosswalks into four main characteristics which can provide accessibility for all people on the streets in urban areas as follows:

- **Shortening the crossing distance:** Curbs that extend the sidewalk or the corner area in the roadway shorten the crossing distance and allow walkers to see and be seen before beginning to cross. A median refuge island also effectively shortens the overall crossing distance and protects pedestrians once they reach the middle of the street.
- **Slowing the approaching traffic:** Curb extensions and refuge islands, narrow the roadway at cross- walks, also small traffic circles or speed humps which helps to reduce the speed of traffic.

- **Locating crosswalks**: Sometimes the middle of the block is the safest place for a crosswalk because walkers do not have to compete here with turning cars.
- **Making curbs accessible:** must be provided from the sidewalk to roadway for those with disabilities.

Figure 25: Street crossing in Berkeley, URL, 24

Figure 26: Castro's Rainbow Crosswalks, San Francisco, URL, 25

2.5.1.3 Building Continuity along the Street

A prominent attribute of streets is the continuity of built frontages enclosing streets and squares, created to make building lines constant. Having a continuous frontage does not necessarily mean linear frontage; it may mean creating small points along the street by shifting buildings forward or backward, or by changing the road at certain points which are comfortable, in order to increase diversity and the readability of the street. In addition, to create good scenery on the street, it is fundamental that there is visual continuity. Connected or continuous building shapes such as house terraces can be definitely be useful for having significant influence to describe an extreme environment from squares and streets (Sammas, 2008).

Buildings can be placed straightly adjacent to the street edge to prepare comfortable public area, and to build a friendly area where the availability for vehicles is created to the side or rear, this kind of layout aid to decrease the priority of parked cars in residency. Window, facing the street, cannot totally increase privacy levels, which can be logically given to the limited view of pedestrian by. Therefore, placing the more private spaces of a construction away from the street frontage is also helpful as shown in Figure 27.

Figure 27 : Building Continuity along the street frontage (Sammas, 2008)

Positioning buildings a little further from the street edge may help to mirror local building patterns, thereby creating a space that may act as a buffer between a busy road and new developments. When buildings are set back from the edge of the street, it is important to ensure that the street's visual qualities are preserved and that the intermediate space is planned well. In addition to this, the street edge may be defined by plants, small walls or railings; these elements add to the visual continuity of the street while ensuring a clear distinction between private and public space. Landscaping can illuminate the areas around constructions by creating visual compound, height and continuity (Sammas, 2008). Shown in Figure 28 which shows the perspective view and a figure ground map of State Street, Central Historic Santa Barbara, California, USA).

Figure 28: State Street, Central Historic Santa Barbara, California, USA, URL, 26

2.5.1.4 Micro-Climate in the Street

Comfortable conditions are an important factor to keep and attract people in urban spaces. So existing good micro-climate in street participates in bringing social activities. Alexander (1993) declares that streets must be spaces to stay. Hence, appropriate conditions must be created to trigger people to be willing to stay. Besides, when streets are not comfortable, particularly physical cases, people are reluctant to use. Jacobs (1993) mentioned about the climate-related attributes of comfort. These characteristics are practically quantifiable and there is a requirement for them to be a section of street design.

Space comfort and protection from the natural parts and shelter creation is one of the vital mankind requirements. In other words, environmental comfort is a basic task of space creation (Maslow, 1954; Steele, 1973). Although, it is a fact that humankind can adapt to challenging environmental situations, the contentment of essential physiological requirement is in priority to higher humankind needs like esteem, cognitive, aesthetic needs and property (Maslow, 1943, 1954).

Previous background information about the impact of environmental elements on mankind's behaviour exploits that comfortable micro-climatic situations such as temperature, sunlight and shade, and wind, are essential in keeping alive outdoor activities (Pushkarev, 1975; Cohen, 1979; Gehl, 1987). It has been discovered in a new investigation of twenty cities and towns that the majority of social activities happened in areas with full of sunshine and full protection of the wind Hass-Klau, (1999). Sunlight is one of the main attractions in open public spaces (Whyte, 1980 & Liebermann, 1984). Whyte's (1980) study of plazas in New York City demonstrates that sunlight has a vital role in the spring, mankind tried to find sought shade from trees, awnings, canopies, and overhangs in summer (Mehta, 2006) as shown in Figure 29.

Figure 29: Midtown Atlanta streets, USA, URL, 27

Therefore, sensible micro-climatic conditions which will principally be of significance to the dynamics of artificial conditions, It is also worthy to mention that the natural climate is a basic requirement for supporting outdoor activities and liveliness especially in street in urban spaces.

2.5.1.5 Street Elements

Streets have a lot of elements, but there are five physical attributes which are most important. Quality of streets can be improved by the types of elements which are introduced into the streets. In regard to livable streets, they would be described as follows;

- **Street Furniture**

Street furnishings are important for a number of reasons: they provide settings where people can rest, eat, sit and interact socially with others. Elderly people and those with physical disabilities can especially benefit from such settings. Others who can benefit substantially are adults with small children. Deakin, (2007) is of the view that benches and tables, which are placed in open spaces also, have social significance besides their functional attributes. They are significant in that they provide conducive environments which pull people together. When 'urban furniture' are selected and placed appropriately, they make the outside spaces pleasurable and entice people to the outdoors. Main and Hannah (2010) state that the only challenge in such conditions is that of getting people to the outdoors where they can experience a feeling of involvement, relaxation and a welcoming atmosphere.

Suitably elected furniture can absorb humankind to the outdoor environment and increase the pleasant feeling about these areas; the major issue is making them come outdoors to have relaxed feeling, and getting amused. The standards of city areas highlight the creation of a sense of identity and the quality and placement of their street furniture which can be observed in different cities. For instance, London's red telephone booths and Paris' metro entrances are symbols of the identities of these cities (Frankel, 2010). Besides, icons of street furniture can also determine standards

and expectations of quality for the improvement of the environments (Carmona, 2010). They can also serve as talking points for designing (Gehl, 2010).

The furniture can be chosen and set up on the basis of an analysis of the site's current and desired patterns of use (as shown in Figure 30-31). Highly qualified furniture must be used where it is really necessary because it is expensive. Different strategies exist to choose or design street furniture, for instance, a similar choice brings the sense of firm tone to the streets and pedestrian ways; or different sections of the street-scape must be built in a way to seem as art (Crankshaw, 2012).

Figure 30: downtown King Street, Canada, URL, 28

Figure 31: Street Seats, the city of Portland, Oregon, URL, 29

- **Greenery of the streets**

Zhang (2015) state that greenery such as street trees, lawns, shrubs and other forms of vegetation have been identified for long as elements which are relevant for design in urban environments. They enumerate the advantages of such greenery in the urban environment as follows: they provide shade and create more enjoyable environments for walking since they help to reduce the effects of heat which tend to accumulate in large asphalt areas. They are also beneficial in creating cooler micro-climates and increasing oxygen content in the atmosphere thus making the environment more

comfortable. Apart from these benefits, the green colour is psychologically restful (Zhang, 2015).

Obviously, people's opinion of street greenery is an inevitable sensory function. As shown in Figure 32, city street greenery makes an important contribution to the beauty of streets (Schroeder and Cannon, 1983; Wolf, 2005; Bain, 2012). Vegetation creates more beauty for urban scenes. People exposed to landscapes of greenery agree that it seems to have a significant effect on their recovery from surgery and brings relief. Street greenery also creates a pleasant environment for students and teachers, and motivates outside play (Zhang, 2015).

Moreover, air quality is a very essential item particularly in outdoor spaces. All kinds of vegetation, including trees, behave as air-filters in such areas, while rain absorbs it. A condition such as this happens when air pollution causes detrimental damage and harms natural vegetation, especially in spaces with high condensation. It can be said that proper circulation of air around buildings and urban places is essential in vanishing air pollution. However, this harmony can be opposite of the feeling of enclosure in public outdoor areas (Carmona, 2003). Tree planting can provide shade in street to motivate society to walk and trigger group communication as well as providing an intimate atmosphere and purifying air and oxygen to produce pleasant environments to stay for a long time.

Figure 32: E25th Street, Portland, USA, URL, 30

- **Lighting of the streets**

One of the most important elements which are pertinent for providing safety and security in the urban environment, particularly in dark areas, is lighting. A well-lighted site provides clear perception for pedestrians and is necessary for brightening the environment so that the needs of users can be met on the site. Ramsey (2011) emphasizes the importance of such lighting elements by stating that they help pedestrians to find their way in the dark and are necessary for the creation of social spaces. He also states that they enable security requirements to be met while causing an interaction between the natural and built environment. It is therefore important that the design layout is done in such a way that users can adequately experience these functions.

There is a considerable attempt to focus on parks, plazas, streets, and other public spaces more, regarding to security issues. For instance, an appropriate design must be related to highlighting the usability of a special area in the evening or at night. Site lighting, beyond its practical functions, can be regarded in terms of the kinds of

lights, their place and their vehemence which can have significant influence on the method of perceiving and using the street (Yücel, 2013).

Site lighting can enhance colour and liveliness to environments at night aesthetically. The main priority of street lighting is to create the sense of security especially in darkness. Lighting is particularly vital for entrances, intersections, stairs, and sudden changes in grade, dead ends, and remote pedestrian ways. High criminal environments must be lit perfectly to bring up safety for citizens. In this way, citizens will feel more secure, although lighting does not have a strong impact on the decrease of crime (Yücel, 2013) as shown in Figure 33.

Figure 33: Shibuya Street, Tokyo, Japan, URL, 31

- **Bus stops on the street**

Bus stop is the main physical element in livable streets within the urban area. Location and accessibility, and safety are important for a bus stop on the street (shown in Figure 34). The National Association of City Transportation Officials developed the Urban Street Design Guide. A blueprint for designing 21st-century

streets, the guide unveiled the toolbox and the tactics cities use to make streets safer, more livable, and more economically vibrant. Specific guidance for bus stops includes the following:

- Bus stops must have safe access by means of sidewalks and appropriate street crossing locations.
- Transit curb extensions will be applied where offset bus lanes are provided, where merging into traffic is difficult, or where passengers need a dedicated waiting area.
- It is important that information provided to riders at a bus or transit stop includes an agency, logo or visual marker, station name, route map, and schedule.

Figure 34: Santa Monica's bus stop, California, URL, 32

- **Bike parking on the streets**

Another important feature which should be found in livable streets is bike parking. Such parks, which should be properly located and easily accessible, can lead to upsurges of cyclists within the city. Parking spaces for bikes ought to be as suitable

as those for cars, i.e. direct entrance from the street or bicycle lane should be provided. The access routes should however be planned in such a way that they do not cause conflict with the movement of people and cars on the road (Bicycle Victoria, 2004).

Providing bicycle parking encourages bicycle travel, and it can benefit the local economy by providing opportunities for bicyclists to secure their bikes while visiting main street businesses as shown in Figure 35. On-site bicycle parking should not be located in front of buildings unless the furnishing zone is wide enough that parked bicycles do not block the sidewalk. Ideally a rack area should be located along a major building approach line. Also contribute to the street's aesthetic character.

Figure 35: Bike parking in Third Streets, Hoboken, Washington, URL, 33

2.5.2 Functional Attributes of Livable Streets

Streets have multiple uses and they are active parts of the city. They attract different people and lead them to different destinations, which makes them lively public spaces that are not just about vehicular circulation, but also about the social activities

that they host. The role of the street – place – should not be overlooked; the street is as much a route for motor vehicles as it is a place for pedestrians (Moughtin, 1992).

In the past, when there were fewer cars using the street, it was considered as a place for vehicles. But in recent generations the street is seen as part of an urban community; a public open space just outside the home. In addition, with the increasing demands brought by the growing number of people, it is best that urban designers transform streets into social spaces. Rapoport (1987) describes streets as the long direct spaces flanked by houses which are often located in settlements and are used for movement, in addition to other functions (Rapoport, 1987, p. 81). It is apparent that streets are principally made to allow for the circulation of people. Many various activities take place simultaneously along the street.

Functional attributes of livable streets as it is apparent, are related to many features. There are major functional attributes of livable streets that can be identified. These are characters such as; accessibility and permeability; mixed use and density and active and passive edge; and they will each be described as follows:

2.5.2.1 Accessibility and Permeability in the street

These concepts offer people easier and more convenient access to urban public spaces and they also increase social interaction. According to Jacobs (1993), it is impossible to ignore the most significant purpose of the street as being its ability to allow one to commute from place to place, not only just within the same street, but also within the broader network of streets in the city, either on foot, bicycle, public transportation or via private motor vehicles (Jacobs, 1993).

Tibbalds (2001) defines permeability as the freedom one has to meander within an urban space and to observe it with ease. The number of pathways and block size leading to a place can be used to define permeability. All the pathways should be detectable. Having small block size enhances ability to see and move around because people are then conscious of the available routes. The implication then is that the increased rate of development may minimize accessibility and movement (Bently et al. 1985) the Figure 36 shows less and more permeability. Additionally, for a place to thrive, it must be connected to other areas within the urban landscape. This then asserts the importance of accessibility as one of the most important features of a public area; it enhances coming together of people by providing conducive spaces which are well used. Bentley, (1985) again stresses the importance of accessibility as a term closely linked with 'permeability' in that the level to which an environment allows passage is vitally important in urban settings and enhances human relationships.

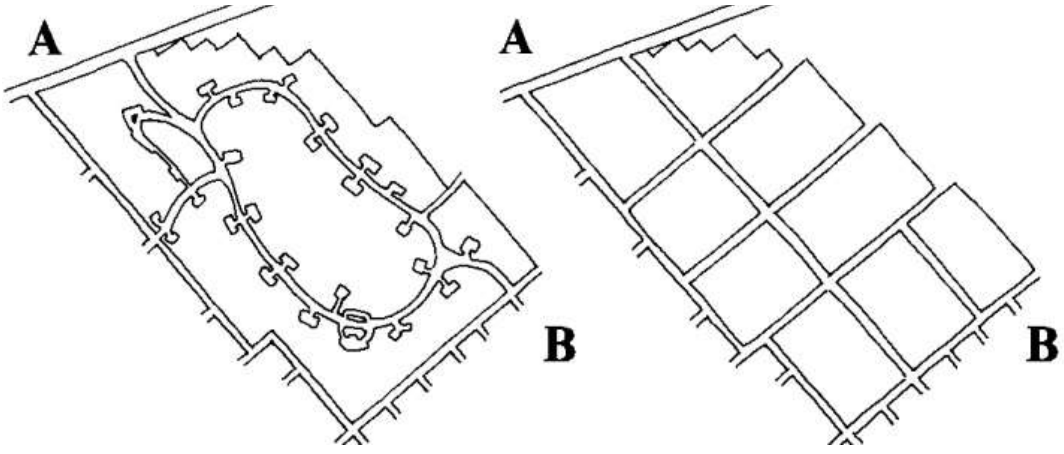


Figure 36: Less and more permeability (Bentley, 1985, p. 17)

According to L. Davies, (2005) it is useful when designing the pedestrian environment to employ what he calls the five C principles; Connections, Convenience, Conviviality, Comfort and Conspicuousness.

- **Connections**: Has to do with providing pedestrian routes that connect places where people will want to go;
- **Convenience**: Ensures that routes are direct and crossings are easy to use.
- **Conviviality**: Conviviality looks at making the walking experience exciting by providing a variety of pedestrian ways and ensuring that these are attractive, well-lit and safe.
- **Comfort:** Comfort looks at spatial dimensions for walkways and the quality of footways.
- **Conspicuousness:** This deals with the ease in finding and following a route, the surface treatment for pedestrian.

This points to the importance of carefully studying street planning and transportation systems which will connect future streets. Bentley (1985) suggests that this can be done by examining the merits of junctures between roads and ensuring that all entrance and exit points lead to the site. Adequate accessibility also means that pedestrians should find it easy to have entrance into the street. A Street, which is well planned will be easy to locate and access to it will be readily available, whether in a large metropolis or in a local area which is shown increasing accessibility and permeability for two main streets of Parramatta City in Figure 37. This ease of accessibility should be available to all the various means of transportation, including pedestrians. Jacobs (1993) emphasizes that ease of movement applies to all communal areas alongside streets, at junctions or intersections or public roads.

Figure 37: Increasing accessibility and permeability
for two main streets of Parramatta City, URL, 34

Furthermore, Jacobs states that the elemental sense of disabled access can be made possible by the addition of elements such as ramps to sidewalks where needed (Jacobs, 1993). It is Carmona's (2003) view that disabled people, pregnant women, and the elderly and small children in strollers may be prevented to use the public realm by physical barriers. However, an access for disabled people is also another necessary aspect of accessibility in the streets should be respected when they were designed as shown in Figure 38-39. These play an important role to create lively streets and they improve streets as social spaces in urban areas which should provide accessibility and permeability for all kinds of modes of transportation for all ages.

Figure 38 : accessible Palma Street for disabled people in Spain, URL, 35

Figure 39: disabled-friendly in Dubai, URL, 36

2.5.2.2 Mixed-use and Density in the Street

These two functions are of great significance in creating livable urban spaces, especially street, and they are necessities in increasing its vitality. The quantity of development of a particular piece of land, as well as its diversity in functions can be augmented by density and mixed-use strategies. The intensity of development is dependent on the density of the area, and can have an effect on a place's livability and character when combined with a healthy mixture of uses. For vitality, a sufficient density is required as it represents an effective way of making walkable, multi-functional and lively streets as shown in Figure 40. Jane Jacobs asserts that density has a critical role in the life of the city (Jacobs, 1961). Diversity is also a necessary factor as it increases liveliness by attracting different people with different backgrounds and purpose to the street. The excitement of a place is increased by the liveliness and a range of different activities generated by pedestrians (Jacobs, 1961).

As was stated by Jacobs, streets liveliness is directly related to the vast array of activities on it and it is important that there is knowledge of the city requirements when there is such a blend of functions. Jacobs also suggests that there are four factors which are essential in creating an exuberant diversity in city streets, and these

are; a mixture of buildings of different ages and conditions; short blocks allow frequent corners in the street; streets should accommodate more than two main functions, and last but not least; an appropriate concentration of people with different purposes must be achieved (Jacobs, 1961). Developing a healthy mixture of uses in the street is important in the improvement of liveliness.

According to Llewelyn-Davies (2000) mixed-use development ensures multiple advantages such as: an increase in the sustainability of urban amenities and the support for small business; improved sense of security due to more 'eyes on street'; more opportunities for social contact; improved accessibility to facilities; amplified urban vitality and street life; socially diverse communities; buildings which utilize energy resourcefully and well organized use of space, also better user selection of lifestyle, building location and style. In addition, developments with higher densities can also bring the following advantages:

- **Social:** positive social interaction is encouraged when there is higher density. There is also improved efficiency of community amenities and easier access to them.
- **Economic:** high density also expands the economic capability of development, while making the infrastructure more economic by design ideas like basement parking.
- **Transport:** with higher density public transportation has more support, as well as less use of vehicles and less need for car parking.
- **Environmental:** as it was previously indicated, good usage of liveliness is increased when there is a greater density. Resource wastage is simultaneously reduced, thus minimizing pollution and land needs.

When residential areas are very density, the spread of cities and outlying areas is reduced and when combined with the numerous services available, prospects are increased for travel, work or leisure. Moreover, those with no mobility are provided equal opportunities of having access to various facilities and services. Increased density also raises interaction levels between people due to the fact that there is less distance between people. Social capital is thus further developed, although living in close proximity to people can also cause tensions and clashes; conflict caused by noise has been identified as one of the most frequent types of conflict which often leads to people pulling away from each other. Bramley (2009) identifies another effect of high density. He states that it can lead to a merging of communities, though density might not be as strong a factor in forming social mixes as housing and tenancy type. The outcome of compactness of residential areas is less green spaces and play areas (Bramley, 2009).

Figure 40: Mulberry Street, Manhattan, New York City, URL, 37

2.5.2.3 Active and Passive Edges in the Street

Active edges should be considered as some of the most important aspects of the street. The buildings which define the street on either side should all provide active-passive edges, taking into consideration users from different age groups in order to bring life and vitality to the street. With the same sentiment Carmona says; openings on the building facades – windows and doorways – are a reminder of human presence; allowing passersby a view into the buildings and providing safety through the eyes on the street (Carmona, 2003 and Jacobs, 1993).

Active building edges on the street are livelier and they bring social interaction on streets. According to Alexander (1977) social life in open areas develops naturally along the borders of streets because that is the area most people are drawn to. He goes on to state that the border determines the potential of the space being a lively place; a place to pause and rest and not just to pass through. The border of a street should be viewed as more than just a line or edge with no dimension, but rather as an object or a place that has the capacity. A pre-requisite for a well-planned street is that its borders should act as tangible boundaries that enclose space (Alexander, 1977). Providing proper functions to street edges can improve the liveliness and the activities of the street.

Futhermore, Richard MacCormac (1983) shows some apprehension over the ‘osmotic’ character of streets. This involves permeating buildings with various activities and thus filling the streets with life. He asserts that the relationship between land uses and users of the street varies; some are weak while others keep people involved. This does not necessarily mean that less functional areas along the street have no place in metropolitan spaces. Shared functions, when introduced around

such areas create more exciting and eventful streets. Additionally, he believes that a variety of functions can elevate the liveliness of public areas. Functions could be introduced at either end of streets; at one end could be found street bazaars, cafes, bars, residences, eating places, bars, shops as well as minor workplaces (as shown in Figure 41). While at the other end might be found storerooms, parking spaces, large scale workplaces, superstores and rows of apartments (MacCormac, 1987).

Figure 41: Yonge Street, Toronto, Canada, URL, 38

2.5.3 Social Attributes of Livable Streets

Through history, physical planning has changed fundamentally considering the time when people created their first settlements as compared to the present day urban life. With this regard, it can be said that physical planning refers to the act of making a physical environment which would cater to the various needs of human beings. In this sense Gehl (1971) is of the belief that urban spaces are made to be lived in, and therefore they should be designed in a manner that encourages optional public use (Gehl, 1971).

According to Jacobs, the optimum place for social and commercial relations as well as exchange of any kind is the street because of the platform is offered where people can gather or meet. She buttresses the role of the street when she likens the street to an observer; it studies movement, peoples deportments, emotions and forms, attitudes and appearances (Jacobs, 1961). In order to create a place which makes people feel good, there must be social interactions so as to define the social attributes of the street and thereby make the street more livable. These attributes include: human activities, comfort and safety on the street. In the following the attributes will be introduced:

2.5.3.1 Human Activities in the street

According to Gehl (1971), anywhere two or more people come together; there is a tendency for a social activity to take place. Social contact takes place in various forms, which include meeting, seeing and listening to each other. The coming together of people leads to a widespread range of shared activity. This form of connectivity is vital when it comes to designing an urban landscape. Though the physical design itself might not determine the type, character and depth of human relationships, architects and those within the design team can, by their designs, influence the level to which people meet, see and hear each other. Activities carried out by people can be grouped into three. He groups such activities as those which are necessary, optional and social.

- **Necessary Activities**

Such activities are necessary and are usually carried out on a daily basis. They include activities, for example going to work, school or travelling. These activities take place due to their importance to daily life, irrespective of the state of the physical environment. Gehl (1971) states that good cities ensure that conditions are

conducive to the continuation of such activities not just at the present time but also into the future (Gehl, 1971) which is shown in Figure 42.

Figure 42: Necessary activities happening on the street, URL, 39

- **Optional activities (urban recreation)**

Such activities are carried out based on climatic conditions and according to the mood of people who want to carry out such activities. Often, they depend on the quality of the environment or condition of the surroundings and may take place only when the participants are satisfied that the quality of the place is high enough (as shown in Figure 43). Good cities also ensure the availability of these various kinds of activities. If a place is attractive and inviting, it tends to entice people who come there for specific periods of time. Gehl (1971) states that the length of time which people stay in a public space is an indication of the greatness of such a city (Gehl, 1971).

Figure 43: Optional activities happen on 3rd Street Promenade
in Santa Monica Street, California, URL, 40

- **Social activities**

Such activities take place where people meet and interact in the same environment and surroundings. They involve observing, hearing or taking part in other people's redundant or dynamic activities. A good city is a source of a wide range of activities and experiences and this is true because of the large number of people that are seen in cities. The more the people, the more the experiences that can be observed. This makes a city very energetic, dynamic and interesting (Gehl, 1971) as shown in Figure 44.

Figure 44: Social activities Hastings Street, Australia & Orchard Street, Singapore,
URL, 41

2.5.3.2 Comfort in the street

Being comfortable in the street is the main factor which attracts people and makes them stay, along with it, feeling at ease and feeling secure also provides good conditions for the people and creates livable spaces (shown in Figure 45). When these conditions are met, a certain quality of urban street living is achieved and pedestrians can have an enjoyable and comfortable experience. One of the features that describe a successful street is its level of comfort (Carr, 1992). This is a central need and it may be evaluated based on the amount of time that people spend there.

A description of comfort offered by Lang (1994) indicates that, at the very least, comfort signifies an absence of discomfort in every scope of environmental experience. He further says that comfort, as it affects the body, is based on how a person evaluates the amount of stimulus which a body is exposed to. Whyte (1980) on the other hand is of the opinion that important qualities of a comfortable street are composed of infiltration of sunlight, the beauty of the space, as well as the physical dimensions of the space. Outdoor areas have much significance in urban settings due to the fact that they have to endure constant human traffic in addition to many other activities. Thus, they make cities exciting and vivacious. When a large number of people are brought to the streets and outdoor communal areas, the value of the city is enhanced in terms of the physical, environmental, fiscal and social aspects (Jacobs, 1972; Whyte, 1988).

Another factor which determines the quality of open areas is the micro-climate. While those using various transportation systems have protection from the weather elements, the same cannot be said of pedestrians. They are directly exposed to the effects of sun, wind and other weather conditions. Hence, the people's perception of

well-being and warmth is determined by the local weather conditions. The weather also impacts decisions of space usage. In a study done by Gehl (1971) titled ‘‘Life Between Buildings: Using Public Space,’’ Gehl observed the effects of local climatic conditions on outdoor life by taking note of the total people who were resting in spaces exposed to the sun and those who were seated in shaded areas. He was able to determine that the amount of exposure to the sun affected peoples wish to remain or leave (Gehl, 1971).

Figure 45: Murray Street, City of Perth, UK, URL, 42

2.5.3.3 Safety in the street

The streets in the city are not just roads for motor vehicles, they are also public spaces in which people meet, shop, walk and take part in functions which make urban living enjoyable and therefore they should be safe and secure for all people. According to Vasilevska (2013), physical qualities are the most important aspects concerning feeling safe, belonging in an open space as well as the amount of care and attention which is given in order to have well maintained streets (Vasilevska, 2013).

In increasing the amount of people on the street and bringing more life to the street, lighting up the city, reducing lost spaces, designing new buildings which are observant of open public spaces, thus providing ‘eyes on the street’; the street may achieve an improved quality of pedestrian safety (Gehl, 2002). In addition, Jane Jacobs (1961) suggests that when there is adequate safety on streets and sidewalks, the sense of liveliness, charm and diversity is increased. For safety to be ensured, it is vitally important that activities are not carried out just during the day, but also into the night (as shown in Figure 46). This therefore implies that night time hours will also witness high levels of social life, thereby reducing dullness in the streets and helping to improve public interaction (Jacobs, 1961).

Figure 46: Third Street Promenade, Santa Monica, California, URL, 43

2.6 Summary of the Chapter

This chapter defined and classified streets in terms of livable streets, followed by an understanding and explanation of more details concerning livable streets.

Highlighting concepts which create livable streets from different perspectives. The main finding is livable streets can be evaluated under three main attributes: Physical, functional and social attributes. The physical attributes relate to objectives such as conditions of sidewalks, crosswalks,..etc. The functional attributes are considered accessibility and permeability and functions of streets. The last attribute is considered the social factor of the street. Table 1 below shows brief descriptions of the attributes highlighted in the literature review, which will be used to evaluate the attributes of Larnaca Road as a livable street.

Table 1: Summary of the attributes of livable streets

	Attributes of Livable Streets	Main attributes that should exist
Physical Attributes	**Sidewalks in street**	• Approachability by all users • Continuity and connectivity. • Accessible for all groups, ages people. • Using colourful materials • Landscaping to create a buffer space between pedestrians and traffic to create safety. • Sufficient width of 4.0m minimum
	Building Continuity along Street	• Creating a public realm • Constant building lines with suitable functions gives a sense of place • Making visual continuity which is attractive and comfortable for users. • Creating private and public spaces with suitable Landscaping • Creating suitable and continuous active edges
	Microclimate in street	• Increasing comfortable conditions of places. • Creating a space for staying and social interaction with appropriate micro-climate conditions such as temperature, sunlight and shade, and wind. • Keeping outdoor activities alive
	Elements of Street	• Provide settings where people can rest, eat, sit and interact socially and outdoor environment and increase the pleasant feeling and relaxing with others for all ages and groups people. • Proper quality of lighting elements for making the street safe. • Appropriate quality of bins to keep the street clean. • Planting trees in various kinds and sizes for providing beautiful and colourful as well as good micro-climate conditions which attracts people to stay and walk on the street. • Providing bicycle parking encourages bicycle travel. • Providing Bus stops at safe access points and appropriate street crossing locations. • All elements can be the symbols or icons of the identity of the street
Functional Attributes	**Accessibility/Perme -ability**	• Increasing quality and number of access points to the street. • Easily accessible to all kinds of transportation such as; walking, biking, buses, car. • Creating small size buildings block along the street. • Providing accessible sidewalks for all kinds people by making Connections, Convenience, Conviviality, and Comfort. • Creating obvious pathways. • Reducing high traffic. • Increasing connectivity with other areas. • Providing enough car parking
	Mixed-use and Density	• Representing an effective way of making walkable street • Increasing liveliness by attracting different people with different backgrounds and purpose to the street. • Increasing a range of different activities. • Continuity of buildings with Variety of functions along street. • Making active edge along the street. • Short blocks allow frequent corners in the street. • Increasing sense of security by having more ‘eyes’ on the street. • Influencing the street to work as a living public space for social interaction.
	Active-Passive Edges	• Existence of various kinds of proper functions on street edges such as restaurants, Café. • Mixed-use buildings with continuity and with proper functions such as shops, mall and Boutiques along street. • Working and opening ground floors 24 hours • Existing buildings with various functions along street.
Social Attributes	**Human Activities**	• Availability of various kinds of activities with suitable environmental quality of social activities • Availability of necessary, optional and social and cultural activities • Existence of a wide range of activities suitable for various ages with proper facilities and various groups of people • Existence of various kinds of activities all different times on days, nights, weeks and seasons.
	Comfort	• The beauty of the places and socializing facilities • Infiltration and protection of users from the effects of the sun, wind and other weather conditions. • Bringing a large number of people brought to the streets and outdoor life and communal areas. • Providing enough elements of street, especially sitting elements which people can use for resting and relaxing.
	Safety	• Existing of enough light to provide safety and security at night • A crowd of people to make eyes on the street at 24 hours • Improving quality of pedestrian safety and with separating car way • Increasing traffic calming

Table 2 shows summaries the findings through literature review on physical, functional and social attributes of the livable streets. The case study in chapter 3 will be analyzed according to the following attributes as highlighted in Table 2 below.

Table 2: Attributes of livable streets

Physical Attributes	**Functional Attributes**	**Social Attributes**
• Sidewalks along the street • Crosswalks on the street • Building continuity along the Street • Micro-climate conditions of the Street • Street Elements	• Accessibility and Permeability along the Street • Functions (Active-Passive edges) and Land use along the Street	• Human activities in the street • Comfort on the street • Safety in the street

Chapter 3

CASE STUDY: 15 AĞUSTOS BOULEVARD, FAMAGUSTA, NORTH CYPRUS

The third chapter investigates case study the 15 Ağustos Boulevard (Larnaca Road), as a livable street in the city of Famagusta. Based on the second chapter Analysing the physical, functional and social aspects of the street for what makes a livable street.

3.1 The Methodology

The fundamentals of methodology in a study of theoretical and empirical reviews. In regard to the case study at hand-15 Ağustos Boulevard (Larnaca Road), three methods of evaluation will be used and these are; physical analysis at the site through observation and questionnaire, which find their basis in a theoretical framework. These methods are used to analyze physical, functional, and social attributes, including natural features which are part of the physical context.

In terms of physical attributes, sidewalks, crosswalks, building continuity along the street, micro-climate and street elements, are evaluated. Issues of accessibility and traffic, land use and active and passive edges are measured when analyzing functional attributes and last but not least, those features that are analyzed under the social context includes; human activities comfort, as well as safety.

The observation method is used to collect data which is primarily focused on the physical aspects of the street. It has been carried out in a week, observing people's behavior during the day at different times and, at night in order to analyze the effect of the functions in the street as well as the socio-economic necessities.

The method of site analysis is used mainly in the analysis of functional aspects of the street, though it may also apply to the physical ones as well such as building continuity along the street. The functional attributes are usually evaluated by use of photographs and drawings.

The questionnaire survey is used for analyzing the social dynamics of the street as well as measuring the satisfaction of the users, that is, what they expect from the street, as well as clarifying problems that may already be existing. This method also applies for socioeconomic evaluation, by measuring how efficient and appropriate to the functions found in the street are as well as clarifying what the user's needs. The questionnaire used on Larnaca Road includes 20 questions and it covers 115 people users of the street. The following table illustrates the analysis of the attributes of the street, data collection techniques and also the tools which are used during the analysis.

Table 3: Analysis of the attributes, techniques and tools

	Analysis of the attributes of the street	**Techniques**	**Tools**
Physical Attributes	Sidewalks	Observation Questionnaire survey	Photographs Reports Charts
	Crosswalks	Observation Questionnaire survey	Photographs Reports Charts
	Building Continuity along the street	Site analysis Observation	Maps Photographs
	Micro-climate	Observation Questionnaire survey	Photographs Reports Charts
	Elements of Street	Observation Questionnaire survey	Photographs Reports Charts
Functional Attributes	Functions and Land use Active and passive edges	Site analysis Observation Questionnaire survey	Maps Photographs Reports Charts
	Traffic, Accessibility and Permeability	Site analysis Observation Questionnaire survey	Maps Photographs Reports Charts
Social Attributes	Safety	Observation Questionnaire survey	Photographs Reports Charts
	Comfort	Observation Questionnaire survey	Photographs Reports
	Human activities	Observation Questionnaire survey	Photographs Reports

3.2 Introducing the Case Study: Larnaca Road, Famagusta

The case to be studied is Larnaca Road, which is also known as 15 Ağustos Boulevard, located in Famagusta, North Cyprus which is one of the main roads in Famagusta. Cyprus ranks as the third largest island in the Mediterranean sea and Famagusta, a city in Northern Cyprus which is also the third largest. This city is situated near the eastern coastal part of Northern Cyprus and hosts to a sea port that enhances trade and commercial activities in the city as well as the whole of Northern

Cyprus. Besides, having an economically influential port, the city also accommodates the biggest university in Northern Cyprus, namely the Eastern Mediterranean University (EMU), which has been the major driver of economic activities in Famagusta. This has not only influenced the economy of the city, but the infrastructural development as well. In addition to all these, the presence of a high student population and the influx of tourists on a daily basis because of its rich historical background of being a wall city has created a lively social environment. For this reason, it is necessary to create more public spaces, especially in the existing streets.

As an influential axis, Larnaca Road acts as a connecting line from the Zafer roundabout close to the Walled City of Famagusta, all the way towards Larnaca city, in the Southern part of the island. The research focuses on the area between the Zafer roundabout and the junction point between two streets which are Ibrahim Hasan and Anamur street shown in the coloured map below. The function of the Larnaca Road is mainly residential with very little commercial use, which displays a lack of proper planning. Apparently there are a number of functional and physical problems concerning this street, and thus it is not a space viable for social activity.

Figure 47: Location of Larnaca Road, Famagusta

Though this may be the case, Larnaca Road still has the potential to become a livable and lively space in Famagusta due to its closeness to the Walled City which is a historical area the island and it also holds the possibility of reconciling the North and South part of Cyprus. Improvements in the physical and functional aspects of the street may help in attracting more variety of people, including locals, students and tourists who would make it a public space which is livable and suitable for social interactions and other various activities.

3.3 Analysis of the Physical Attributes of Larnaca Road

The Larnaca Road such has been analysed in terms of sidewalks, crosswalks, building continuity, microclimate conditions and the existing street elements.

3.3.1 Sidewalks of Larnaca Road

Sidewalks are one of the most important parts of the street for pedestrians which have been evident in history. This makes it very essential to have good designed sidewalks. Especially on Larnaca Road, where the sidewalks are in bad condition and one of its major problems based on the width of the sidewalks are a variable along street which changes from 0.5m-2m, (see Appendix A, P1). This makes it difficult for two or more people to walk together conveniently in many parts along the street. In addition, the quality of pavements in front of the buildings is poor and not well designed. There is no continuity in the pattern of the street, instead there are lots of height variations, which make walking very difficult, not only for disabled pedestrians but for everybody as shown in Figure 48 below.

Figure 48: Poor quality of pavements and height variations in sidewalks

Other problems include: Sidewalks blocked by rubbish bins, lighting elements being placed on the sidewalks in a way that creates obstacles for passerby. Moreover, Sidewalks are blocked by cars due to inadequate car parking spaces. In addition, there is also lack of space for social interaction and people spending leisure time and so on. Furthermore, the sidewalks on the street have no well defined place with ramp

or any special materials for physically and visually disabled people pass the street and sidewalks easily and safely.

These shows that sidewalks which are blocked with cars, lighting elements and rubbish cannot be used by disabled people as shown in Figure 49.

Figure 49: Blocked sidewalks by cars, rubbish and lighting element of the street

However, according to the research survey questionnaires, 44% of users believe that the condition of sidewalks is poor and a further 52% state this condition as fair as shown in Figure 51. 84% of users think that the sidewalks along the Larnaca Road are not properly designed and therefore 68% of the users are not satisfied with the sidewalks.

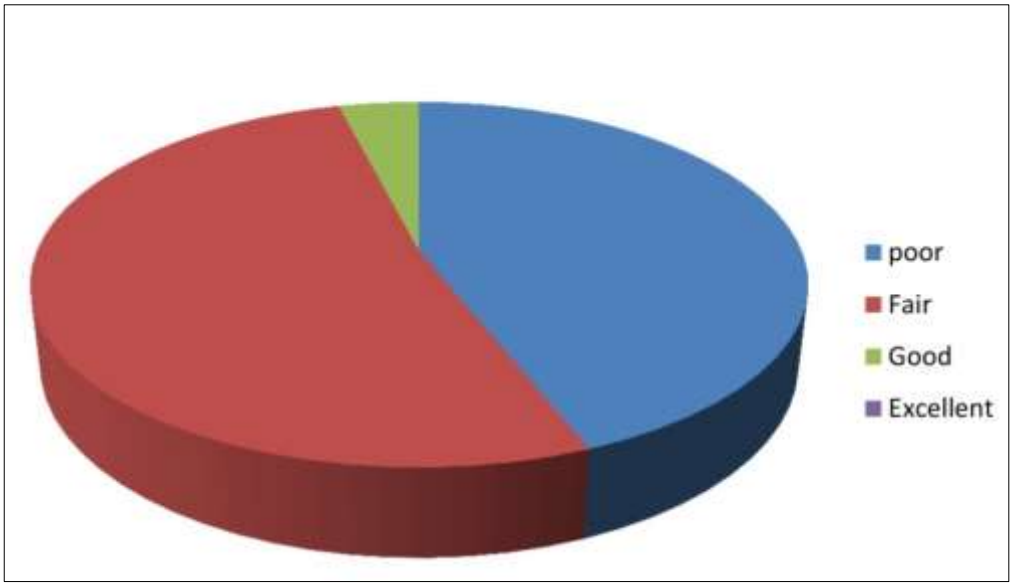


Figure 50: Rating the condition of pavements of sidewalks along Larnaca Road

3.3.2 Crosswalks on Larnaca Road

In urban streets, crosswalks have a significant place-making function as well as a transportation function. They emphasize pedestrian, safety and comfort as an important physical element of the streets, helping towards traffic calming as well as safe crossing for pedestrians of all ages. For Larnaca Road, it is evident that there only exist two crosswalks which are shown in Appendix A, P3; one of which of them is located at the beginning of the street (which is difficult to cross because of its position near the Zafer roundabout which has heavy traffic) and the other one close to the middle of the street, located in front of the kindergarten which is not well designed (distance between them is too much) and also not very visible to drivers and pedestrians. It lacks any signs to make crosswalkers and drivers become aware because of the lack of traffic calming in the street. In addition, it lacks a certain sense of clarity that affects the travel lane users (drivers/pedestrian). Furthermore, in its existing situation it is unsafe for pedestrians while crossing the street as shown in Figure 50.

Figure 51: Lack of any signs to aware crosswalker and drivers

According to, the survey questionnaires 68% of respondents think that the safety of pedestrians along the crossings on Larnaca Road is poor, whereas 20% of the users believe that it is fair (which is shown the chart below). 48% of the users believe that the rate of traffic calming is poor while 40% of users think that it is fair.

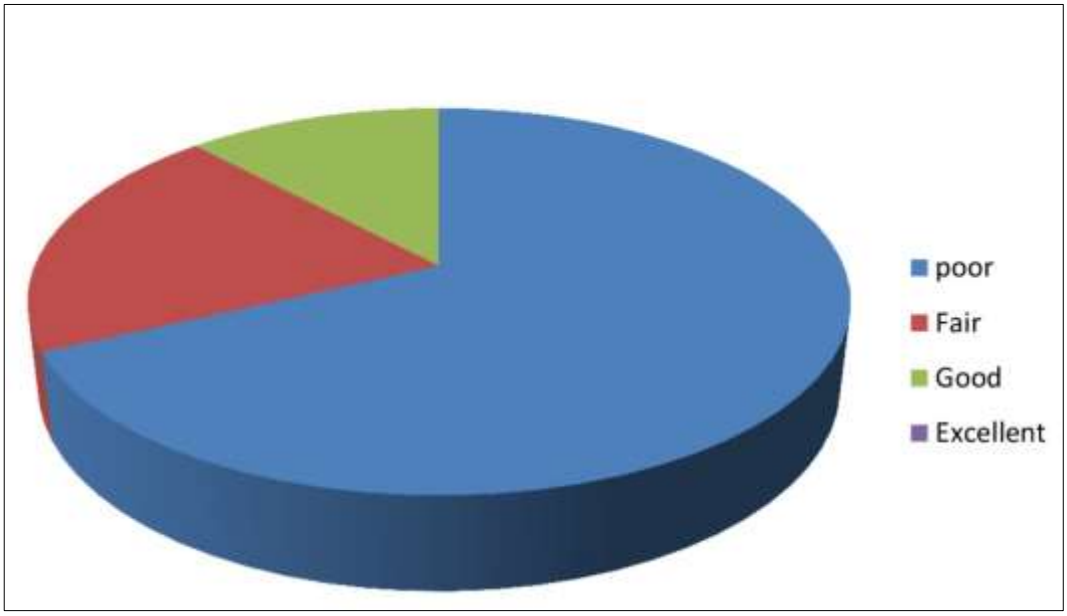


Figure 52: Rating the safety of pedestrians while crossing the Larnaca Road

3.3.3 Building Continuity along Larnaca Road

Building continuity is a physical attribute of the street and it is one of the most significant ones which establishes a continuity of functions and built frontage, and provides enclosure that defines the street and other public spaces. This is consistent with building lines and makes a sense of place and enclosure based on the width of the street and height of the existing buildings. One of its significant roles is to provide a suitable sense of space in the street, in addition to making it appropriate for social activities such as walking, sitting, shopping and so on. Also the building façade and skyline should define such street with a shade that makes it pleasant for walking. The Figure 52 and in Appendix A, P9, show the lack of continuity of the building on Larnaca Road, which is a result of the following four main reasons:

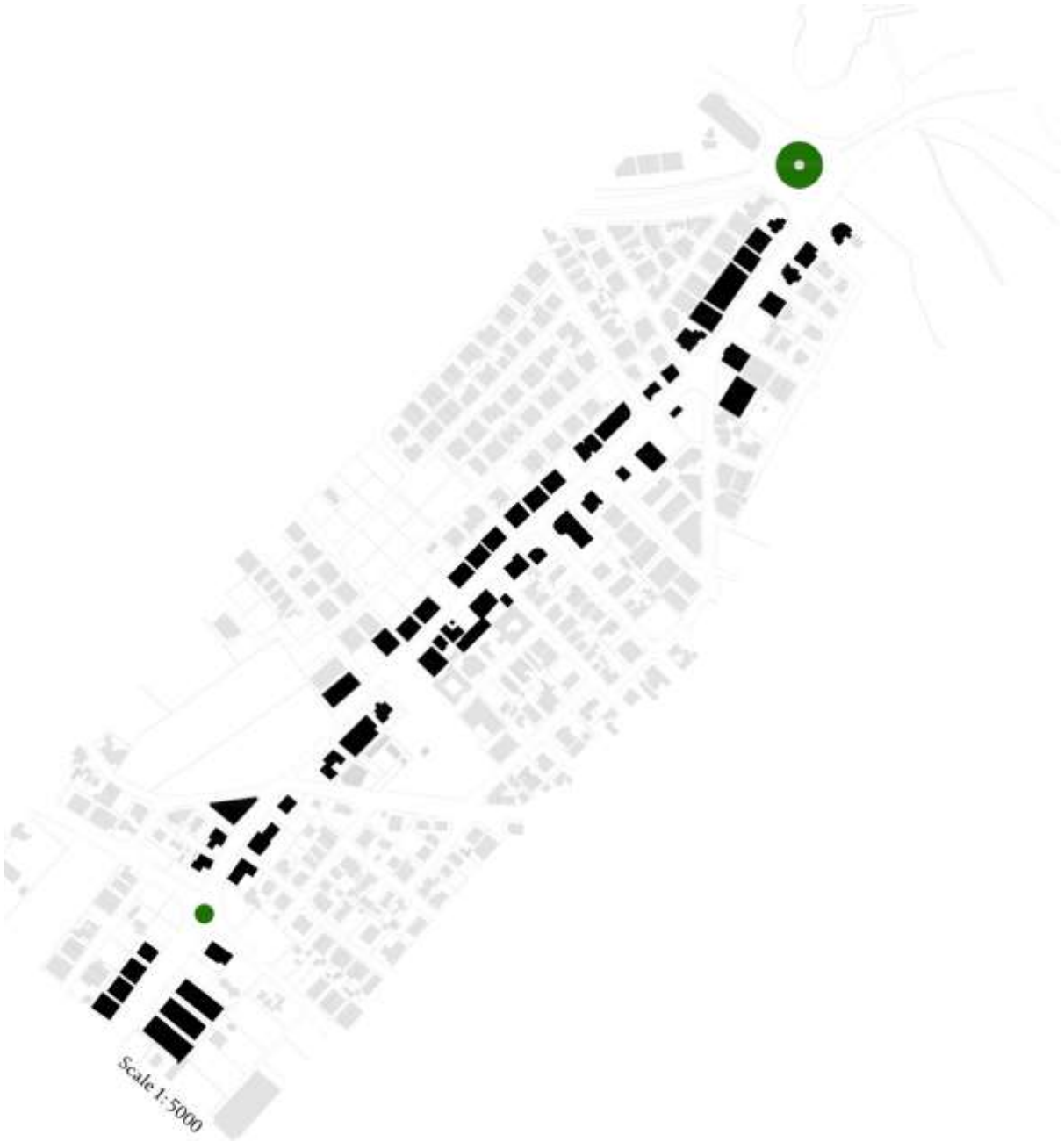


Figure 53: Figure-Ground analysis of Larnaca Road

- The existence of lost spaces affects and decreases the level of walkability and social activities along the street.
- The connectivity to the street by auxiliary roads creates a partial continuity of the street buildings.
- Building heights vary along the street and does not create a strong sense of place and enclosure.

- The Street edge is not well defined and also reduces the degree of visual enclosure and sense of space that helps define a pleasant place for people walking on the street.

In general, it can be argued that Larnaca Road lacks a sense of physical continuity along its route which is shown in Appendix A, P2, whereby the public and private spaces are not clearly defined (as shown in Figure 53). However, the promotion of continuous street edges and space enclosure can be achieved when the developments along the street are clearly defined as private and public areas.

Figure 54: lack of building continuity along Larnaca Road

3.3.4 Micro-Climate Conditions of Larnaca Street

Comfortable conditions in urban spaces are required, that attracts people. In addition, a good micro-climate in the street helps increase social activity. The island of Cyprus is located in the warmest part of the Mediterranean Sea and it experiences short, mild and wet winters, with long, hot and dry summers. The monthly mean minimum and maximum temperatures over the year in Famagusta, Cyprus which is shown in the figure below.

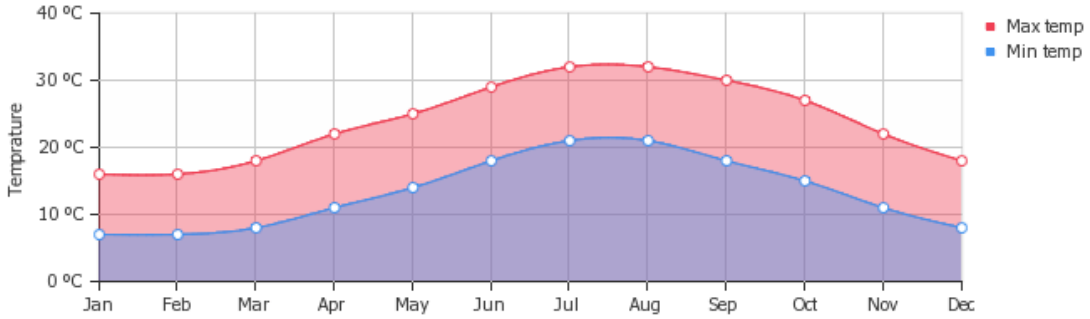


Figure 55: Average min and max temperatures Famagusta, Cyprus (www.weather-and-climate.com

One can conclude that in such a climate, a lot of shade is needed in order to shelter people not just from the sun but also from the rainy days in winter. Because Larnaca road is mainly a residential street, the users and inhabitants need comfortable conditions. For instance, they are able to enjoy morning and evening walks because of the angle of the sun would still be low, however, at noon the street is very uncomfortable because it lacks any street shading elements which is shown in the Figure 55 and in Appendix A, P8. The density and position of the buildings on Larnaca Road is not enough to cast dense shadows during the hot summer days.

Figure 56: lacking a good Micro-climate conditions along Larnaca Road

The questionnaire survey results show that 52% of the users felt that the shading along the street is poor, whereas 40% thought as fair, as shown in the chart below. Additionally, the wind flow is not enough to reduce the high temperature during summer except through the gaps in between the buildings. This gush of wind that flows through the large gaps between buildings is uncomfortable to the users while they are walking, especially during windy days in winter. Consequently, given the conditions mentioned before, Larnaca street is not other comfortable for walking nor sitting through the trees lining the street may provide little shade in small parts of the street.

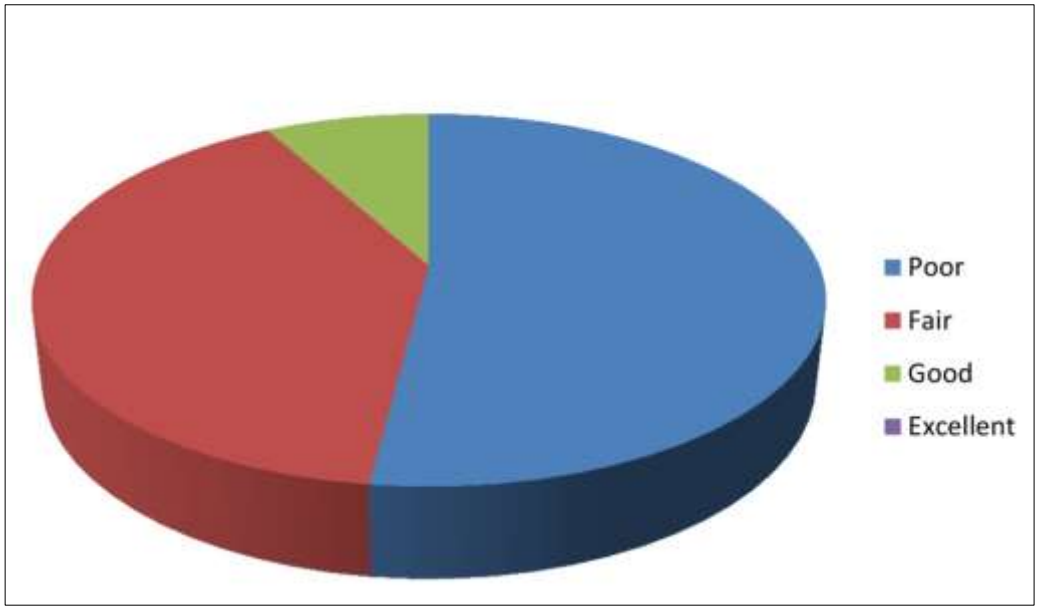


Figure 57: The condition of shading elements on Larnaca Road

3.3.5 Street Elements on Larnaca Road

Street elements are of great significance in ensuring the comfort of people in all public spaces, especially in the streets. Larnaca Road lacks elements such as sitting, shading elements, bus stops, bike lanes and parking, barriers to keep people safe, as well as public facilities such as; public toilets and public phones which is shown in Appendix A, P7. The lack of shading elements and trees makes it difficult to enjoy the street during hot summer days. There is a small number of trees planted on this street, mainly in the yards of existing houses; they are wide-spread and have no order along the street; and these types of trees along Larnaca Road include Palm, Pine, Ficus Benjamina and Eucalyptus as shown in Figure 57, and in Appendix P8. Additionally, according to the questionnaire survey, 76% of the users agree to the poor condition of greenery on the street and 20% believe that it is fair (as shown in Figure 58) and also it would not shelter people from rainy days, making the street less enjoyable to walk through.

Figure 58: Different kind of trees along Larnaca Road

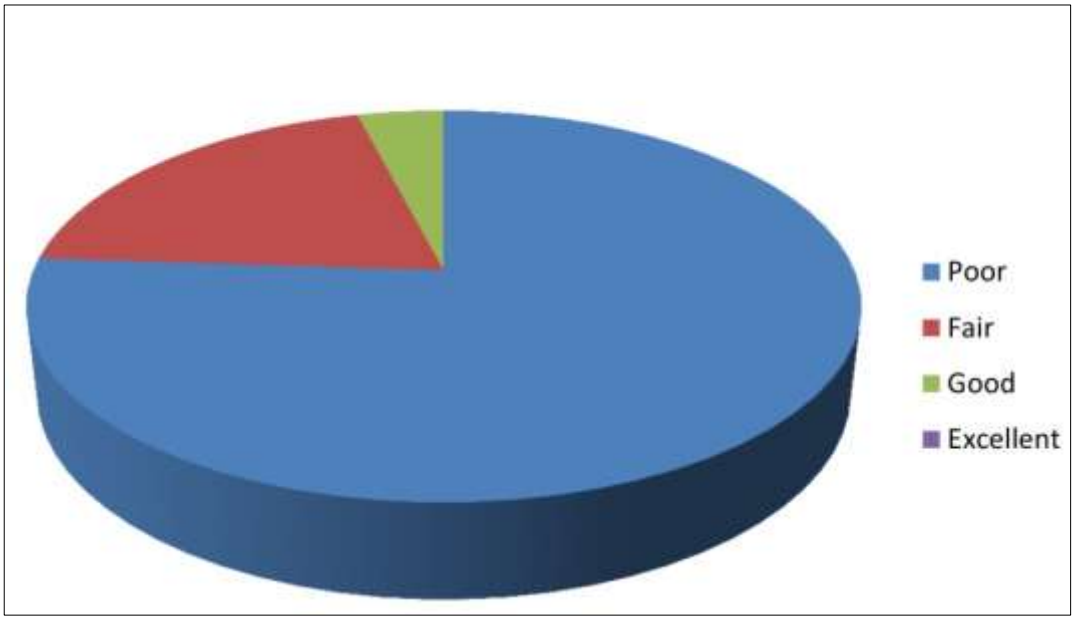


Figure 59: Rating the greenery along Larnaca Road

Besides, existing lighting elements are located only on one side of the street and they are in poor condition. Therefore, there is not enough light provided on the street and sidewalks during night time, which is shown in Figure 59 and in Appendix A, P7. According to the survey questionnaire 48% respondents said that the street lighting is poor and 40% of the users think that it is fair which is shown in the Figure 60.

Figure 60: Insufficient lighting at night along Larnaca Road

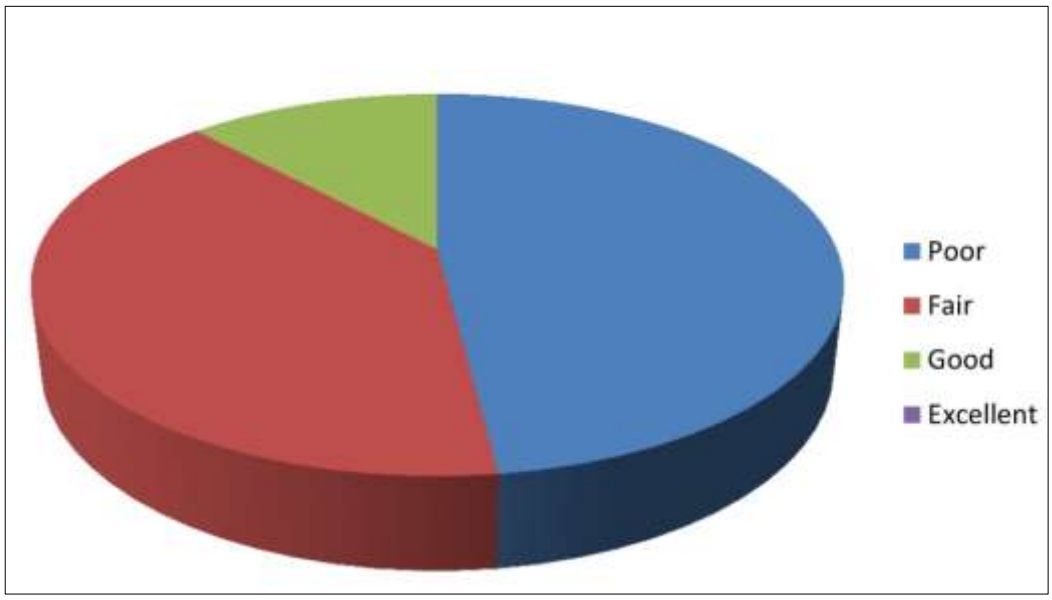


Figure 61: Rating the lighting along Larnaca Road

Furthermore, another street element which is required along the street to keep the street clean is the availability of enough bins. Larnaca Road has two kinds of bins; stable and movable, the existing moveable bins are in poor condition which gives the road a bad image. There is not enough bins along the street and their positioning on both sides of the street proves to be problematic for pedestrian use (as shown in Figure 61).

Figure 62: Quality and position of bins on the street

Also, according to the survey questionnaire, 64% of the users were dissatisfied with the lack of seating elements, bicycle parking and bus stops, which are also necessary to make streets more livable, the Larnaca Road has very poor quality of street elements and it also lacks many street elements which are necessary for livable streets.

3.4 Functional Attributes of Larnaca Road

Functional attributes of Larnaca street can be analyzed in term of accessibility and permeability and land use (active-passive edges) along Larnaca Road.

3.4.1 Accessibility and Permeability along Larnaca Road

Transportation offers people easier and more convenient access to urban public spaces. Larnaca Road is one of the primary streets of Famagusta city and in term of accessibility has fair located in the city. The Figure 63 and Appendix A, P3; which are shown an analysis of traffic and linkage of Larnaca Street, which connects the old city to the junction point between Ibrahim Hasan and Anamur street and generally it connects the North to South Cyprus. Larnaca Road is a primary dual street collector where street pavement quality is suitable for vehicular traffic. Both entrances to Larnaca Road start from two roundabouts which one of them is Zafer roundabouts and the junction point between Ibrahim Hasan and Anamur street. In addition, these

entrances are not clear to users and it can also be said that they are not well defined which is shown in Figure 62.

Figure 63: Entrances of Larnaca Road

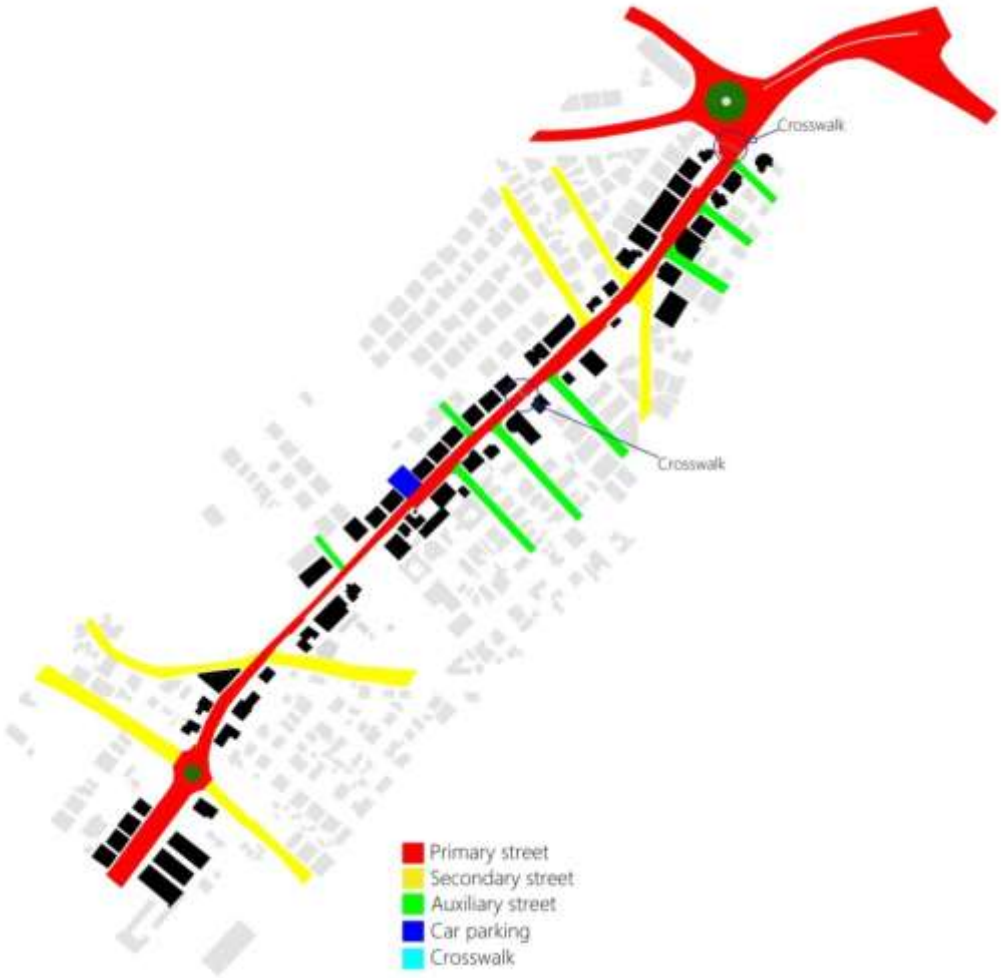


Figure 64: Traffic and Accessibility along Larnaca Road

Larnaca Street has high traffic because of the width of the street is not suitable for a two-way street which is shown in Figure 64. In addition, most trucks pass through this street and cause traffic congestion and environmental pollution in the city. Another problem of the street is there are too many intersections and not enough of crosswalks along this street this situation decreases safety along the street as mentioned previously in detail under the crosswalk section.

Figure 65: Vehicle Traffic along Larnaca Road

The Figure 63 and in Appendix A, P3 deals with the analysis of accessibility in Larnaca Road. The number of secondary and auxiliary streets which are connected to the Larnaca road help to increase the permeability of the street. According to the questionnaires, 48% users think that the accessibility is good along the street. In addition, 96% users are using private cars which cause a problem along the street because it lacks enough car parking space. As a result, users park on vacant land and these empty lots on the street which are apparently insufficient.

Additionally, a lot of cars which are parked on the sidewalks restrict the pedestrians' way and in accordance with the questionnaire survey, 80% of the respondents are not pleased with this situation as shown in Figure 65. The Figure 66 shows that 4% of

users are using public transportation, which is mostly nonfunctional along Larnaca Road. Another problem of the street is that most users are using private cars and also no one uses bicycle according to the questionnaire survey; and the lack of bike lanes along the street is due to the width of the road not being suitable to create bike lanes. Furthermore, the accessibility of Larnaca Road does not consider disabled people, which is explained more in the previous part of sidewalk analysis and in Appendix A, P1.

Figure 66: Parking cars on the sidewalks along Larnaca Road

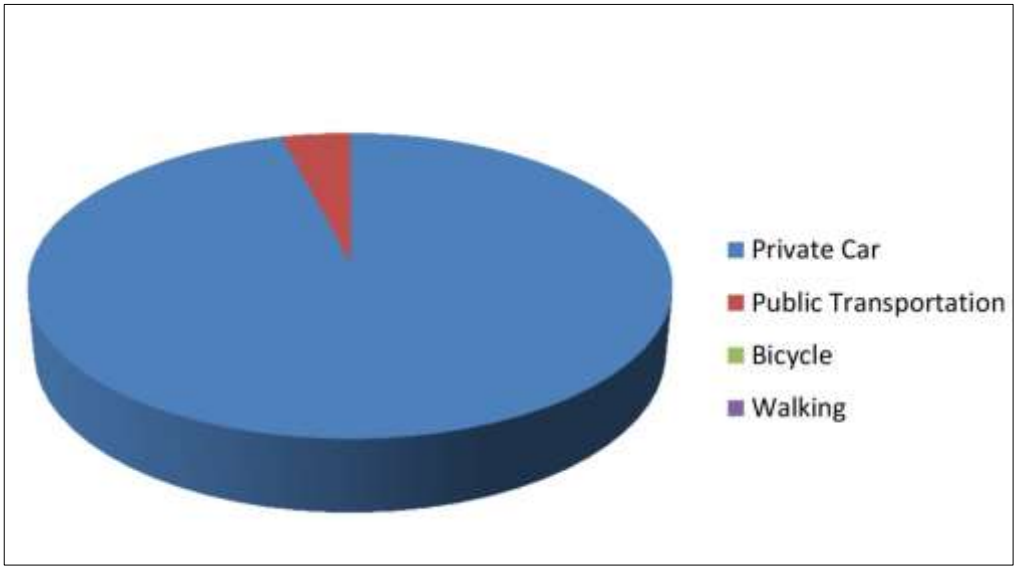


Figure 67: Use of different transportation modesto access the Larnaca Road

3.4.2 Functions and Land Use along Larnaca Street

Larnaca Road is generally a residential street, as can be seen in land use in Figure 67-68 and Appendix A, P5. Nonetheless, there are additional functions on the ground floors of the buildings. However, these functions are not attractive for many people who come to the street, most especially the locals who use it often. Functions such as vendor shop, car repair, petrol station, clinic, pharmacy, hairdressers, government office and machine shop does not play an important role in creating lively street.

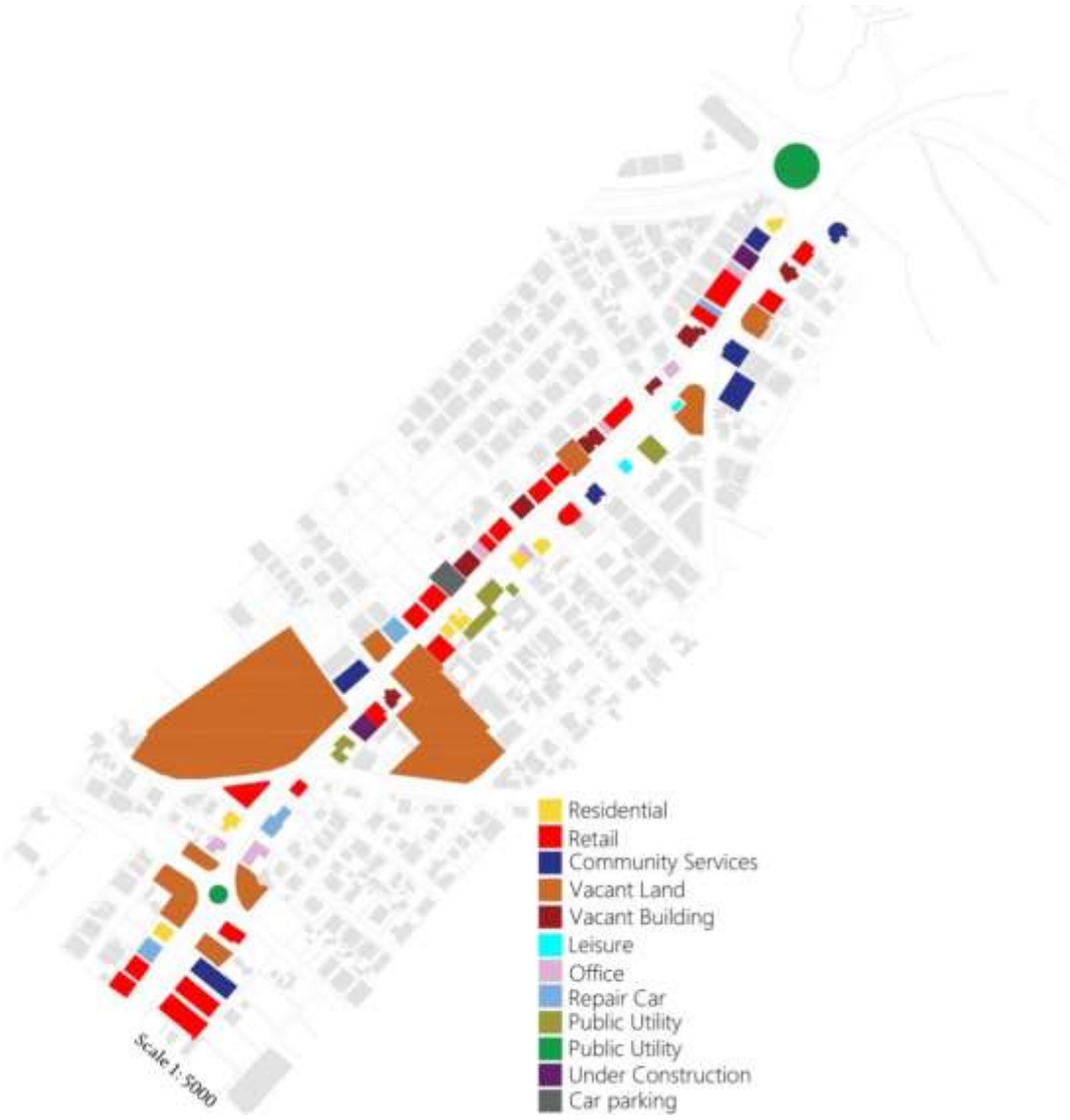


Figure 68 Ground floor land use along Larnaca Road

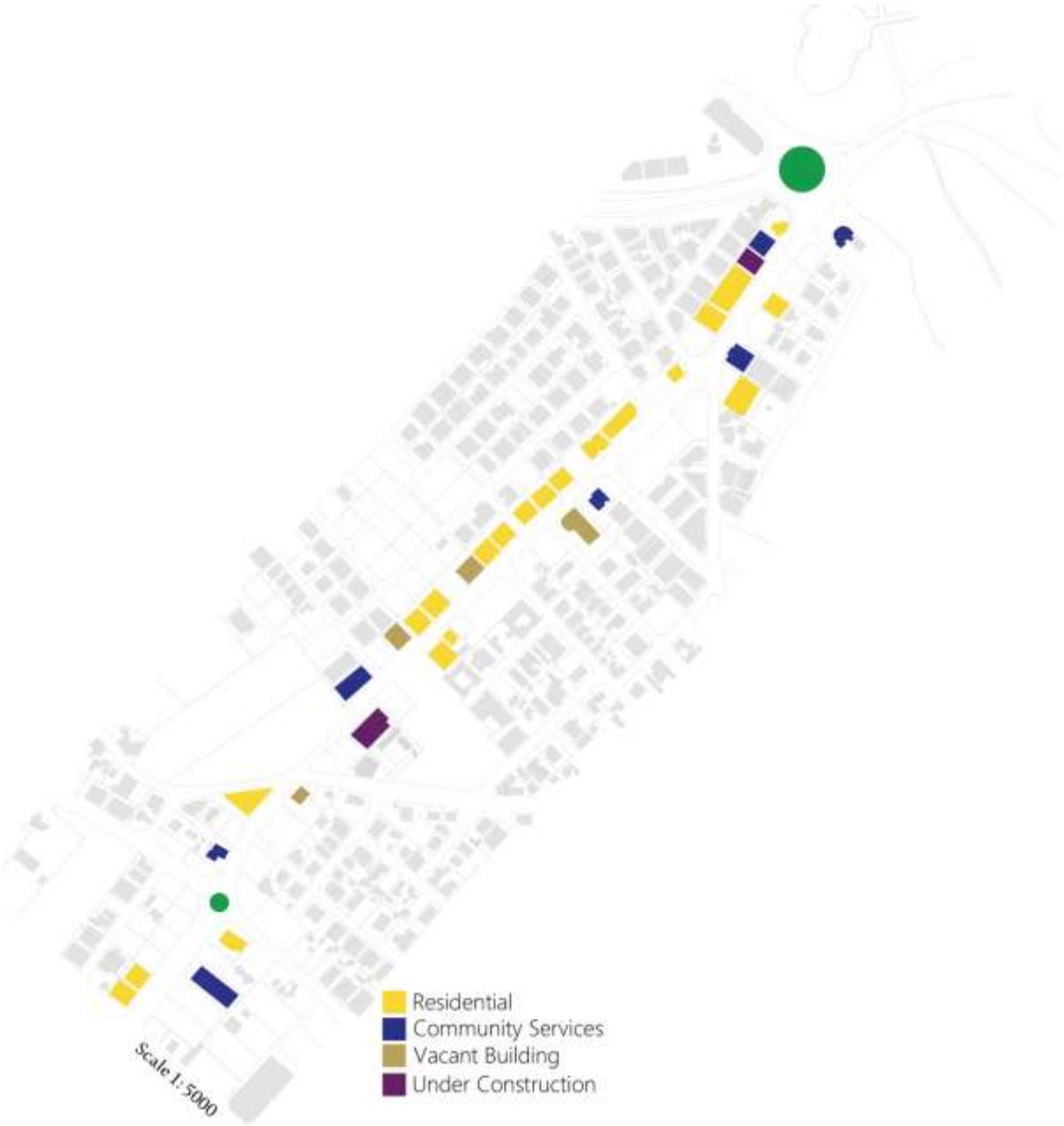


Figure 69: First floor land use along Larnaca Road

Existence of incompatible functions along the street such as petrol station, vacant land and buildings affect and reduce social activities on this street. These are the result of lack of a master plan and compatible land use along Larnaca Street. The analysis of the street is shown in the Figure 69 and Appendix A, P6.

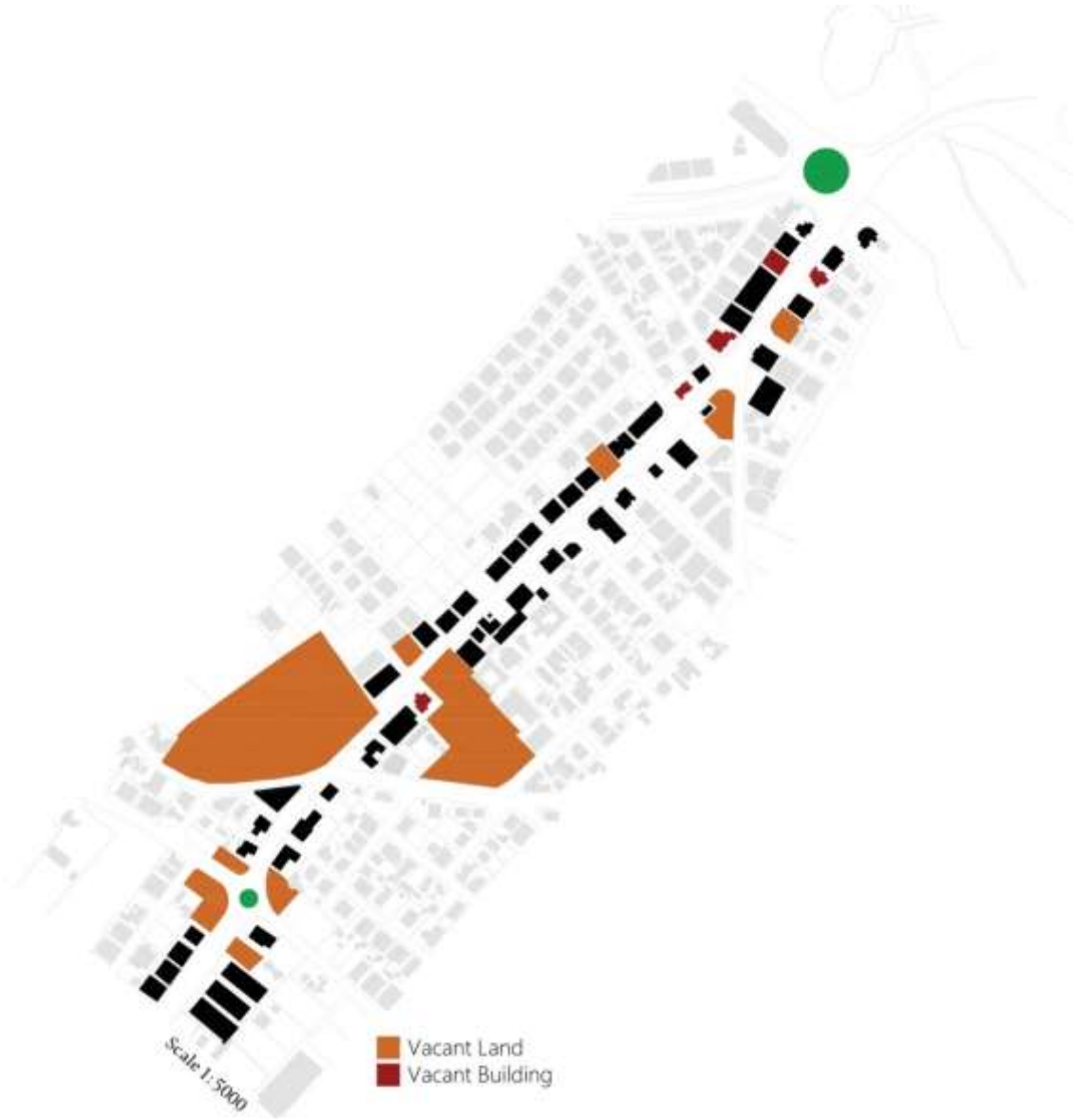


Figure 70 Lost Spaces along Larnaca Road

As shown on the map above, such conditions create a bad visual appearance due to vacant lands and lack of continuity of buildings along the street which is not enjoyable for people walking on the street as shown in Figure 71.

Figure 71: Lost Spaces along Larnaca Road

In order to create livable functions on the street, there is a need to understand what makes the street edges active and passive. Along Larnaca Road, there are mostly passive edges because of the functions on the ground floor of the street which do not attract people to use the street efficiently. Larnaca Road being a residential street is influenced by activities and functions mentioned previously that cannot make the street an active edge. Particularly during the night this street is completely passive because most of the functions on the ground floors are closed as shown in Figure 71.

Furthermore, the existence of vacant land, vacant buildings and petrol station along this street is another reason for the existence of a passive edge when compared to other districts close to the street like Salamis Road. Larnaca Road is far from the city centre and university (EMU) which mainly reflects its role as having passive edges. However, creating active edges of street depends on providing some functions such as; café, restaurants, shop, mall, retails, entertainment and boutiques along the street. This is reflected in the questionnaire results such that 68% of users believe that the main negative point of Larnaca Road is lack of cafés, restaurants, shops, parks and plazas for social interactions along Larnaca Road.

Figure 72: Lack of active edges along Larnaca Road

3.5 Social Attributes of Larnaca Road

The social dynamics of Larnaca Road can be evaluated in regard to human activities, comfort as well as safety along the street.

3.5.1 Human activities on Larnaca Road

According to Jan Gehl (1971) social activity takes place when two or more people are together in the same place. Meeting, seeing and hearing each other, these are all forms of social interaction and human contact. As evaluated before, Larnaca Road has very little social activities because it lacks in functions such as restaurants, cafes, retail, plazas and parks help making a space more socially active 24 hours. As a result from this point of view, Larnaca Road can be perceived as a space which lacks livability.

Jan Gehl also asserts that there are three categories which define human activity: necessary, optional and social activities. Larnaca Road seems to only host necessary activities. For instance, people use the street when doing grocery shopping, tools shopping and vehicular access. Nevertheless, there is less evidence of neither social nor optional activities taking place in this street as shown in Figure 72. According to the survey, 68% of the respondents gave negative remarks concerning the social

activity on the street, referring lack of cafes, restaurants and parks or plazas as social gathering spaces along the street.

Figure 73: Lack of human activities during day and night in Larnaca Road

3.5.2 Comfort of Larnaca Road

Being comfortable, feeling safe and at ease are the qualities of a livable space that will attract people using the street and make them stay. The experiences of the street users can be used to evaluate the level of comfort in the street and they are also related in a way to social analysis. In accordance with the questionnaire survey, the level of discomfort felt by people using the street is high and it is in direct relation to physical and environmental comfort as well as a sense of security. 60% of the respondents complained that the street is a lack of seating elements, 52% expressed the poor lighting makes the space uncomfortable and 84% feel that the sidewalks are not of proper quality because of the cars that park on the sidewalks, making the users uncomfortable. 76% of the users believe that the greenery along Larnaca Road is poor and also adds to the discomfort when walking on the street. As a result, it can be stated that Larnaca Road is not comfortable in terms of physical and environmental attributes which is shown in Figure 73.

Figure 74: Lack of physical and environmental comfort in Larnaca Road

3.5.3 Safety of Larnaca Road

As much as streets are established for vehicular movement, they are also public spaces and therefore they should be safe for all kinds of users. According to the questionnaires, 56% of the respondents Larnaca Road as fairly safe, while 36% find it is poor, especially during the day. In addition, especially the safety at junction points between motorized vehicles and pedestrians were found poor by 48% and fair by 44% which is shown in the charts below.

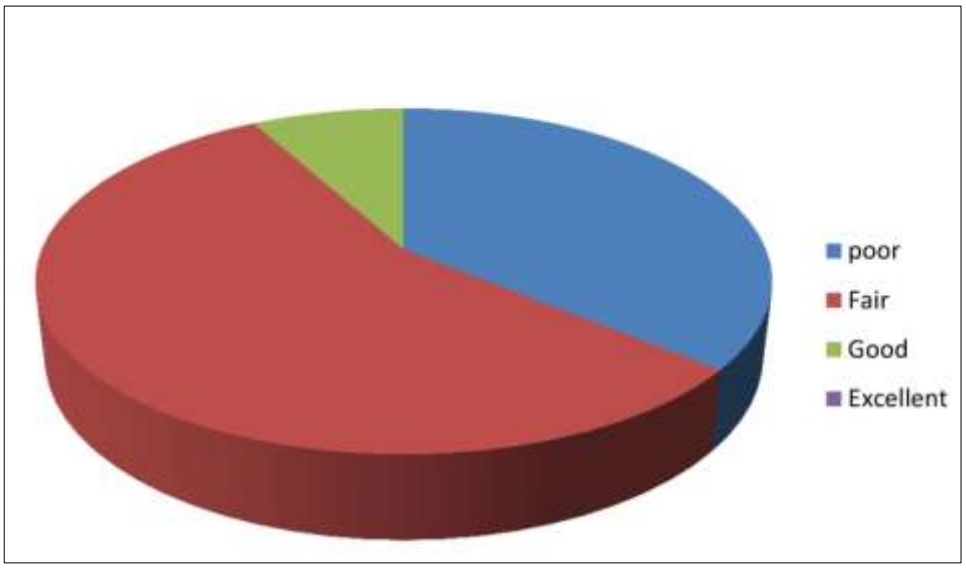


Figure 75 Rating the safety along Larnaca Road

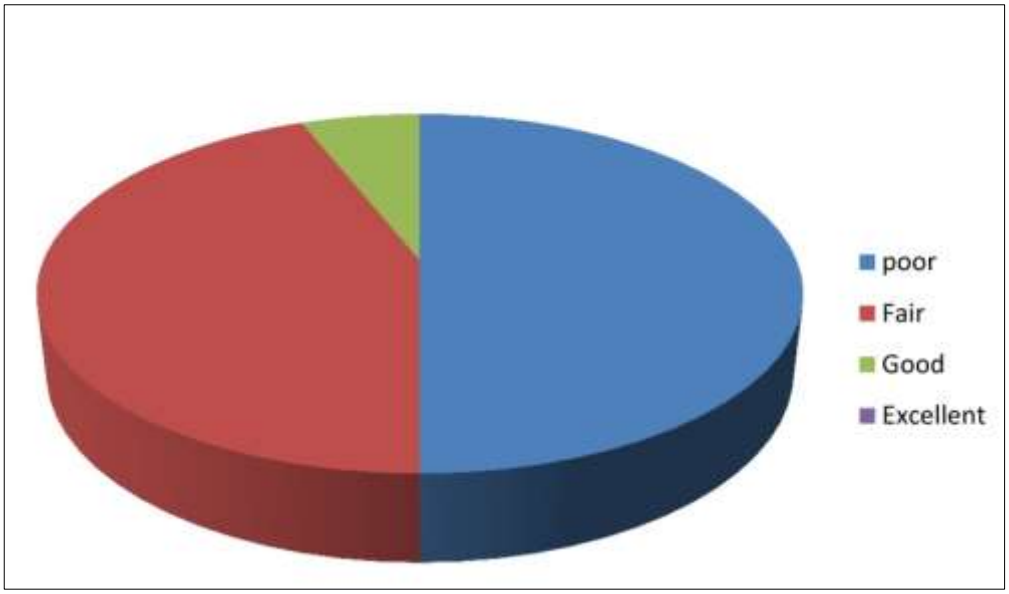


Figure 76: Rating the safety in the intersection points between Pedestrians and vehicles along Larnaca Road

Reasons for feeling unsafe on Larnaca Road can be seen in the lack of 24 hours activities and functions on the street, and poor street lighting at night, which is shown in Figure 76.

Figure 77: Lacking of the safety along Larnaca Road

3.6 Findings and Discussions

Based on literature review, the physical, functional and social aspects of the street have been discussed. As a result of the analysis of the street, Larnaca Road has shown several weak points concerning livable street. A summary of findings is presented in Table 4.

Physically, the street's main weaknesses include but are not limited to the following; poorly designed pavements with poor quality paving material and lack of regard for disabled members of the community; there is an insufficiency of crossroads and traffic calming measures which compromises the safety of the public when using the street; there is a lack of continuity and definition of the building frontage which may also result in a lack of sense of place and enclosure; street elements such as vegetation and urban furniture are in serious lack; there are no bus stops and the micro-climate is unsuitable for human comfort, because of the lack of vegetation which may be used to provide shade; there is also insufficient space for car parking.

In terms of the functional aspect of the street, the main weaknesses are that the land uses or functions found along the street which are not compatible to each other and there are no public amenities provided which results in a lack of activity on the street edge; the street mainly functions as a channel for vehicular movement instead of catering the needs of the pedestrians as well. Additionally, the social aspect of this street has more negative points. The most important issues is lack of lively public spaces which would encourage social activities. This lack of public spaces may be a result of the lack of mixture of the uses found in this area, the lack of an active street edge as well as a lack of social spaces which may attract students and the community of Famagusta at large.

These mentioned problems keep Larnaca Road from being a livable street and in order to combat these, it is fundamentally important to devise design strategies which would help in making Larnaca Road a more livable and lively street. A summary of all the findings and results of the study is provided in Table 4, and in order to realise the objective of the research, some recommendations which may be used to make the situation on Larnaca Road better are outlined in terms of principles of livable streets, in the concluding part of Chapter 4.

Table 4: Summary of finding and resulting of all attributes of Larnaca Road

	Attributes of	Strengths of Larnaca Street	Weaknesses of Larnaca Street
Physical Attributes	Sidewalks	•Existence of well identified sidewalks along the street.	•Narrow sidewalks ranging from 0.5m to 2m •Blocked sidewalks by cars, and inappropriately bins and lighting element of the street. •Poor design of sidewalks. •Poor paving quality of sidewalks. •Height variation in sidewalk's surface. •Not designed for disabled standards.
	Crosswalks		•Lack of crosswalks along the street. •Lack of traffic calming along the street. •Lack of any safety measures for crossing the street. •Unclear crossing area in front of kindergarten.
	Building continuity along the street	•Appropriate width of the street to create sense of enclosure.	•Lack of sense of space. •Building heights vary along the street. •Street edge is not well defined. •Decreasing continuity and enclosure caused by intersecting auxiliary and secondary streets. •Lack of visual enclosure. •Public and private spaces are not clearly defined. •Lack of attached building blocks to create good frontages.
	Micro-climate		•Lack of trees to create good shading . •Lack of shading at noon times. •Building heights vary along the street discouraging wind flow.
	Elements of Street		•Lack of street elements such as; sitting, bus stops, public toilets, bike lanes and parking as well as shading elements. •Lack of plants and trees. •Lack of green areas along the street. •Poor quality of bins and lighting elements along the street.
Functional Attributes	Functions and Land use Active and passive edges	•Existence of necessary functions along the street such as; kindergarten and machine tools.	•Existence of vacant lands and buildings along the street. •Lack of variety of functions. •Existence of non suitable functions such as petrol station. •The street continuity is distrupted by vacant lots •Lack of optional and social activity on the street to make it livable and create an active edge along the
	Traffic, Accessibility and Permeability	•The street has a two-way access. •There is public transportation along the street. •Existence of car parking area. •Good permeability.	•Lack of accessibility for disabled people. •Not enough public transportation. •The street is too narrow for providing bike lanes. •High traffic and therefore noise and environmental pollution for the street. •Lack of bike line along street. •Empty lots used as car parking. •Sidewalks are used as parking for cars. •Lack of car parking in the street. •Poorly designed entrances along the street.
Social Attributes	Human activities	•There are necessary activities along the street.	•The street lacks optional and social activities. •The street is not active. •Lack of variety of users in the street.
	Safety	•Safety on the street,	•Lack of crowds during 24 hours. •Lack of enough light at night. •Sidewalks without barriers.
	Comfort		•Lack of physical comfort such as; sidewalks which is blocked by cars, bin, and lighting elements and street furniture. •Lack of environmental comfort

Chapter 4

CONCLUSION AND RECOMMENDATIONS

Streets as communal open areas constitute an important part of the urban landscape and significantly affect people's social life. Particularly, urban streets often play double roles: providing movement and social spaces. Urban streets are places where people walk, shop, meet, and generally engage in the diverse array of social and recreational activities that, for many, are what makes urban living enjoyable. Thus, the paradigm in designing street has to be shifted from constructing more road surfaces for vehicles to an effort of making a place for people, whether they are on foot or car, that is the livable street. Street livability is mainly determined by better integration of the pedestrians' needs and safety with traffic accessibility in accordance with the land use and activity.

It is evident that some streets do not always function fully as liveable spaces, particularly in newly expanded areas, thereby making people more dependent on automobiles. One such example is 15 Ağustos Boulevard (Larnaca Road) of Famagusta, North Cyprus. The prospective of this street serving as a connecting point between the old and current sections of the city of Famagusta and also between North and South Cyprus is quite high. The Larnaca Road is predominantly a residential district used mostly by local people. It lacks adequate amenities and services such as large supermarkets, eating places, cafes, etc., which often act as meeting points for students and locals. Larnaca Road has a number of weaknesses in

terms of its physical, functional and social attributes and these reduce its quality as a livable street.

Consequently, the aim of this research identifies these weaknesses and suggests further improvements for turning this public space into a livable street for all users.

4.1 Recommendations for Improving Attributes of Larnaca Road to Create a Livable street

The collected data have shown that Larnaca Road needs to improve and change in order to achieve livability. Many recommendations are provided in terms of physical, functional and social attributes for improving Larnaca Road, which would create a livable Larnaca Road, as follows:

- **Improving Sidewalks along the Street**

The sidewalks on the street must be improved, especially with regards to accommodating disabled people. In order to be more suitable for disabled people, there should not be an excessive height difference between the ground and the pavement; there should be smooth edges which merge the two to allow for easier movement. The sidewalks must meet the minimum universal standard for livable streets that is minimum 4m. In addition, barriers such as bins, construction waste, lighting elements, advertisement boxes and more importantly, should not be cars blocking the sidewalks.

- **Improving Crosswalks along the Street**

The crosswalk lanes should be increased along the street and designed with the disabled people in mind as well. They should be well defined and readable, both physically and visually in order to help in calming the traffic by slowing vehicles down, which will increase safety when crossing the street.

- **Improving Building Continuity along the Street**

The building line along the street must be continuous and dense. Since there is vacant land in this street, it may be infilled by new various functions or by landscaping strategies to increase the sense of enclosure created by the buildings. There should be continuous functions as well on the street edge to encourage people to walk and use the street.

- **Improving Micro-Climatic Conditions along the Street**

In order to improve the environmental comfort of the street, planting more trees and greenery, long the street so as to provide shelter and shade from the sun during hot summer days while allowing the cool breeze to penetrate through to the space. These trees have to choose considering climatic issues.

- **Improving Street Elements**

The street elements may be improved by carefully planting trees along the street for shading to make the space more comfortable for walkers. Street furniture may also be used to enhance the quality of the street and this furniture includes seating elements and strategically placed waste bins which will reduce clutter on the street. It is important to improve the quality of lighting elements and accentuating the buildings by light in order to encourage and improve safety at night on the street. Bicycle parking racks should also be introduced as part of the street elements to encourage cycling as a form of transportation in this area; and bus stops should be introduced as well to encourage use of public transportation.

- **Improving and Increasing of Land Uses and Functions along the Street**

Incompatible functions along the street, such as the petrol station, may be replaced with functions that encourage more activity. The vacant land should be filled with buildings to increase continuity in users as well as changing the use of the ground

floor spaces of governmental offices to accommodate more diverse and lively functions which would turn the residential street into a mixed use area. A good mixture of functions along this street would encourage more people to use it both during day and at night.

The two roundabouts at each end of the street could also be used as public gathering spaces where new activities may be introduced in order to define them better as access points into the street. The passive edges on the street should be replaced with more suitable functions – such as restaurants, cafes and so on - which would change them to active edges to increase livability of the street. In addition, some administrative functions of EMU may also be introduced in this area to encourage more students to use this street and thereby increase the liveliness of the street.

- **Improving of Accessibility and Permeability of the Street**

The connection between the Walled City and Larnaca Road should be improved so as to attract more tourists to the street; and as the two main entry points to the street, the roundabouts should be well designed and clearly defined as such, in order to invite people to the street. Pedestrian movement can also be increased by improving the sidewalks and crosswalks to make them more accessible and suitable for disabled people, which is an important element in attaining livable streets.

Bicycle lanes should also be introduced as well as strategic spots where they can be parked. This would encourage more people to cycle and walk, and be less dependent on motorized forms of transportation. Bus stops should also be introduced at suitable spots on the street to lessen the use of private cars which thereby reduces traffic on the street.

Parking vehicles on the sidewalks should be strictly discouraged by increasing the number of organized side parking along the street as well as providing a multi-story car park on the back side of the street. The speed of motor vehicles should be reduced by traffic calming strategies which would make the street more permeable and safe.

- **Improving of Social Activities along the Street**

In order to attract a diverse group of people with different backgrounds and age groups, such as residents, tourists and students; more attractive functions must be introduced. These functions may include provision of public facilities, small plazas, and playgrounds for children as well as public gathering spaces which should all be of high quality. Events such as art exhibitions, festivals, cultural activities, concerts, local food markets and so on, are also ways of improving the social life on the street.

- **Improving Comfort along the Street**

Environmental comfort may be increased by planting trees which may be native to the land and those that are suitable to the climate in order to provide shade while using the street. To add to this, physical comfort may be improved by creating unique street furniture, cleaning up the street and freeing it of clutter, construction waste and removing cars from the sidewalks so that walking along the street will be more comfortable for people. All these will create a successful aesthetic environment of the street.

- **Improving Safety along the Street**

The safety and convenience of using the street may be augmented by creating a clear distinction between the public realm and vehicular movement, as well as improving the street lighting during the night time and increasing traffic calming to provide a sense of safety when crossing the street.

Larnaca Road has the potential to be a livable street which can play a significant role in adding to the overall liveliness of the city of Famagusta. As this street provides a connection between the old and new quarters of the city, it is essential that it is redesigned both functionally and physically to improve the quality of social life. The application of these recommendations may help in making Larnaca Road transforms to a livable street.

4.2 Agenda for Future Study

Accordingly, this research was conducted to identify the existing situation of Larnaca Road, in term of physical, functional and social attributes of a well-designed and livable street and suggesting improvements to the street in terms of these identified attributes. Moving forward, two more aspects can be studied, that is; developing guidelines. The research may be useful to other researchers in the future, including, town planners, municipality and students, who is dealing with research about Larnaca Road as well as for the improvement and management of Larnaca Road.

REFERENCES

Alexander, C., Ishikawa, S. & Silverstein, M. (1977), *A Pattern Language*. Towns, Buildings, Construction, Oxford University Press, Oxford.

Appleyard, D., & Lintell, M. (1972). The environmental quality of city streets: the residents viewpoint. *Journal of the American Institute of Planners*, 38 (2), 84-101.

Appleyard, D., Gerson, M. S., & Lintell, M. (1981). *Livable streets*. protected neighborhoods. University of California Press.

Bendixson, T., & Plowden, B. (2003). *Streets for people*. Integrated Futures and Transport Choices: UK Transport Policy Beyond the White Paper and Transport Acts, Aldershot, Ashgate.

Bentley, I. (1985). *Responsive environments*. A manual for designers. Routledge.

Boodlal, L. (2004). *Accessible Sidewalks and Street Crossings-An Informational Guide*. (No. FHWA-SA-03-019).

Carmona, M., Heath, T., Oc, T., & Tiesdell, S. (2003). *Urban Spaces-Public Places*. The Dimensions of Urban Design.

Carmona, M. (2010). *Public places, urban spaces: the dimensions of urban design*. Routledge.

Carr, S. (1992), *Public Space*. Cambridge University Press, New York.

Deakin, S., Lele, P., & Siems, M. (2007). The evolution of labour law: Calibrating and comparing regulatory regimes. *International Labour Review*, 146 (3-4), 133-162.

Frankel, J. A. (2010). *The natural resource curse survey*. National Bureau of Economic Research.

Gehl, J. (1996). *Public Spaces Public Life*. Copenhagen: Arkitektens Forlag.

Gehl, J. (2002). *Public spaces and public life*. City of Adelaide.

Gehl, J. (2007). Public spaces for a changing public life. *Open space and People space*, pp. 3-7.

Gehl, J. (2010). *Cities for people*. Island press.

Gehl, J. (2011). *Life between buildings: using public space*. Island Press.

Goellner, E., Peterson, C., & Rahn, S. (2014). *Building Support for Living Streets*.

Hass-Klau, C., Crampton, G., Dowland, C., & Nold, I. (1999). *Streets as Living Space: helping public places play their proper role.*

Jacobs, A. B. (1993). Great streets. *Access Magazine*, 1(3).

Jacobs, A., & Appleyard, D. (1987). Toward an urban design manifesto. *Journal of the American Planning Association*, 53 (1), 112-120.

Jacobs. J. (1961), *The Death and Life of Great American Cities*. Random House.

Jefery F,. T. (2010). *Livable Streets: Establishing Social Place Through a Walkable Intervention.*

Kostof, S. (1992), *The City Assembled*. Elements of Urban Form through History, Little Brown, Boston.

Lang, J. (1994), *Urban Design: The American experience*. New York, Van Nostrand Reinhold Co.

Poirier, J. P., & Liebermann, R. C. (1984). On the activation volume for creep and its variation with depth in the Earth's lower mantle. *Physics of the earth and planetary interiors*, *35* (4), 283-293.

Llewelyn-Davies, U. D. C. (2000). *English Partnerships and The Housing Corporation*. London, UK, 64-65.

MacCormac, R. (1983), Urban reform: MacCormac's manifesto, *Architects journal*, June, pp. 59-72.

MacCormac, R. (1987). Fitting in offices. *The architectural review*, 181 (1083), 62-67.

Mehta, V. (2006). *Lively Streets*. Exploring the relationship between built environment and social behavior.

Methorst, R., Gerlach, J., Boenke, D., & Leven, J. (2007). Shared Space: Safe or Dangerous. *A contribution to objectification of a popular design philosophy*, 3.

Monderman, H., Clarke, E., Monderman, H., & Baillie, B. H. (2006). Shared Space-: the alternative approach to calming traffic. *Traffic engineering & control*, 47 (8), 290-292.

Moudon, A. V. (1987). *Public streets for public use*. University of South Carolina Press, New York.

Moughtin, C. (2003). *Urban design: street and square*. Routledge.

Oktay, D. (2002). The quest for urban identity in the changing context of the city: Northern Cyprus. *Cities*, 19 (4), 261-271.

Pushkarev, B. (1975). *Urban space for pedestrians*.

Rapoport, A. (1987). Pedestrian street use: Culture and perception. *Public streets for public use*, 80-94.

Rappaport, A. (1986). *Creating shareholder value: the new standard for business performance*. Free press.

Rudofsky, B. (1969). *Streets for People: a primer for Americans*. Garden City, NY: Doubleday.

Sammas, Y. A. A. (2008). The Role of Active Public Streets as Preequiste for Livable Cities. *Unpublished Master's Thesis. University Technology Malaysia*.

Tibbalds, F. (Ed.). (2012). *Making people-friendly towns: Improving the public environment in towns and cities.* Taylor & Francis.

Vasilevska, L. (2013). *Towards more User-Friendly Public Open Space in Low-rise High Density Housing Areas*. Urban Design.

Whyte, W. H. (1980). *The social life of small urban spaces*.

Yang, Q. (2012). *Lively Streets and Better Social Life*.

Yücel, G. F. (2013). *Street Furniture and Amenities*. Designing the User-Oriented Urban Landscape.

Zhang, Li., He, X., Miao, S., Shen, S., B., Zhang, Z., & Chen, X. (2015). Influence of sky view factor on outdoor thermal environment and physiological equivalent temperature. *International journal of biometeorology*, 59 (3), pp. 285-297.

URL, 1: http://www.total911.com/great-roads-n140-spain

URL, 2: https://en.wikipedia.org/wiki/14th_Street_(Manhattan)

URL, 3: http://blog.ricksteves.com/cameron/2015/08/glasgow/

URL, 4: https://commons.wikimedia.org/wiki/File:Camden_Town_Camden_High_St_-_July_2006.jpg

URL, 5: http://www.gettyimages.com/on-street-new-york-city-new-york-usa

URL, 6: http://www.alamy.com/stock-photo-times-square-42nd-street-midtown-manhattan-new-york-city-tkts-duffy-41733767.html

URL, 7: https://www.expedia.com/Beale-Street-Memphis.Vacation-Attraction

URL, 8: http://preservenet.blogspot.com.cy/2011/06/straten-van-amsterdam-streets-of.html

URL, 9: http://usa.streetsblog.org/2011/05/24/dangerous-by-design-how-the-u-s-builds-roads-that-kill-pedestrians/

URL, 10: http://www.shutterstock.com/january-traffic-moves-slowly-along-a-busy-road-in-bangkok-thailand.html

URL, 11: http://www.parislogue.com/des-champs-elysees-paris-main-street.html

URL, 12: http://welcometochina.com.au/beijing-road-in-guangzhou-1000.html

URL, 13: http://www.alamy.com/stock-photo/graben-pedestrian-street-vienna.html

URL, 14: https://safestreetstrategies.wordpress.com/2011/12/20/defining-principles-remebering-donald-appleyard/

URL, 15: http://completestreetsnc.org/project-examples/ex-hillsborough/

URL, 16: http://www.engr.uconn.edu/garrick/ce371.htm

URL, 17: http://www.westjetmagazine.com/story/article/beginners-guide-montreal

URL, 18: http://www1.toronto.ca/wps/portal/contentonly.htm

URL, 19: http://www.still-in-paris.com/shops-champs-elysees-avenue/

URL, 20: http://www.alittlebiteofeverything.com/2012/06/more-pictures-of-berlin/

URL, 21: http://rebargroup.org/doxa/page/8/

URL, 22: http://www.sfbetterstreets.org/design-guidelines/street-types/

URL, 23: http://www.freefoto.com/Crosswalk--Tremont-Street--Boston

URL, 24: http://www.pedbikeinfo.org/planning/facilities_universities_engineering/

URL, 25: http://ebar.com/news/article.php?sec=news&article=69005

URL, 26: http://www.gettyimages.com/street-central-historic-santa-barbara

URL, 27: http://www.midtownatl.com/midtown-monthly-december-2014/

URL, 28: https://www.placestogrow.ca/index.php?option=com_content&task=view/

URL, 29: https://www.portlandoregon.gov/transportation/

URL, 30: http://koonceportland.blogspot.com.cy/2014_06_01_archive.html

URL, 31: http://tekinico.free.fr/around-shibuya-by-night.php

URL, 32: http://www.globalpossibilities.org/santa-monicas-big-blue-bus-stop/

URL, 33: http://www.planetizen.com/node/64767

URL, 34: http://www.parracity.nsw.gov.au/future_planning/urban design/

URL, 35: http://www.sagetraveling.com/palma-de-mallorca-accessible-excursion

URL, 36: http://gulfnews.com/news/uae/society/how-disabled-friendly-is-dubai/

URL, 37: http://www.alamy.com/mulberry-street-manhattan-new-york-city-usa.html

URL, 38: http://blog.newinhomes.com/new/toronto-ranks-fourth-liveable-city-world/

URL, 39: http://www.communitycare.co.uk/blogs/social-work-blog/children-people/

URL, 40: http://www.californiabeaches.com/attraction/third-street-promenade/

URL, 41: http://www.singapuraterkini.com/

URL, 42: http://blog.gresleyabas.com.au/

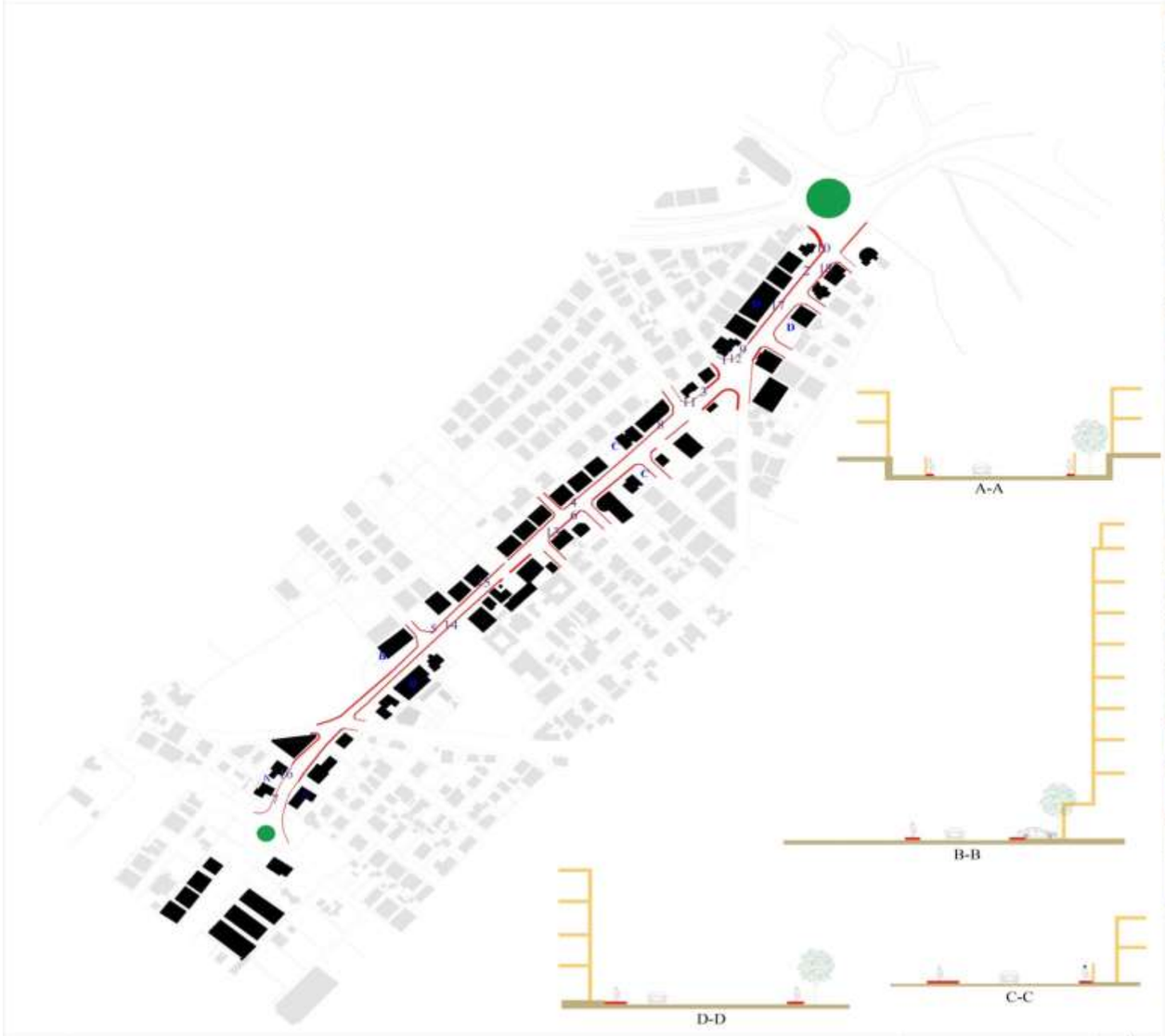
URL, 43: http://www.pixelmap.com/sl_w_la_11.html

APPENDIX

Appendix A: Analysis Map

Livable Streets as an Essential Quality of Social Life: The Case of On Bes Agustos Boulevard (Larnaca Road) of Famagusta, North Cyprus

Najmaldin Hussein, ... M.S Urban Design Program
Department of Architecture Faculty of Architecture
Eastern Mediterranean University

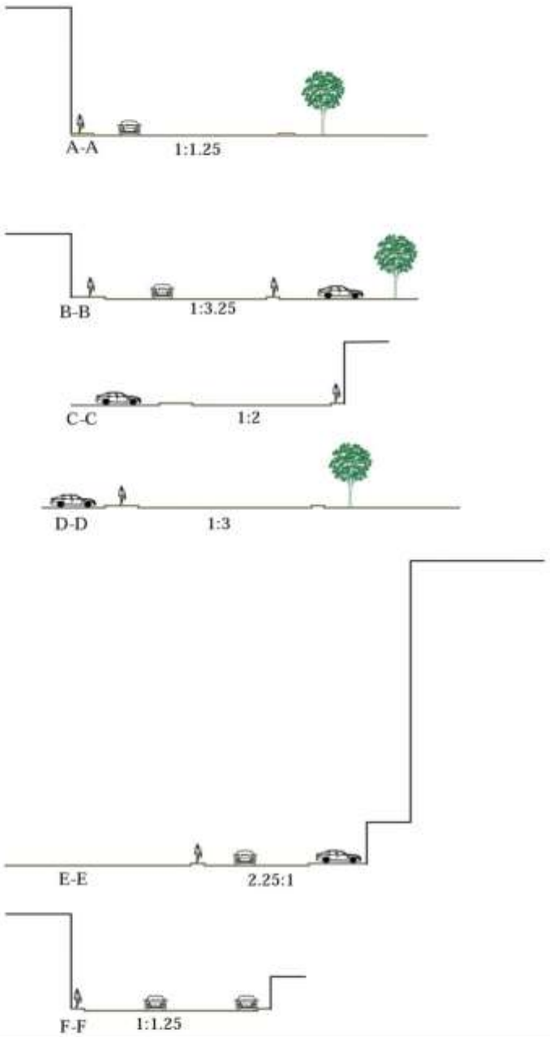


P 1 **Sidewalks Analysis** **Scale: 1/5000** N

The sidewalk analysis along the street as shown on the map reveals that the width of the sidewalk is in variation in different parts that starts from 0.5m to 2m. Some are narrow with poor quality of the pavements. Other problems include: sidewalks blocked by rubbish bins and lighting elements being placed on the sidewalk in such a way that they create obstacles for passersby. Furthermore, the spaces on the street have no defined places with ramps or other special materials for the physically and visually disabled, thus making it difficult to move along the streets and sidewalks easily and safely. Surface height variations in front of ground floor buildings also make walking impossible and using of the buildings difficult for disabled people.

Livable Streets as an Essential Quality of Social Life: The Case of On Bes Agustos Boulevard (Larnaca Road) of Famagusta, North Cyprus

Najmaldin Hussein, ... M.S Urban Design Program
Department of Architecture Faculty of Architecture
Eastern Mediterranean University

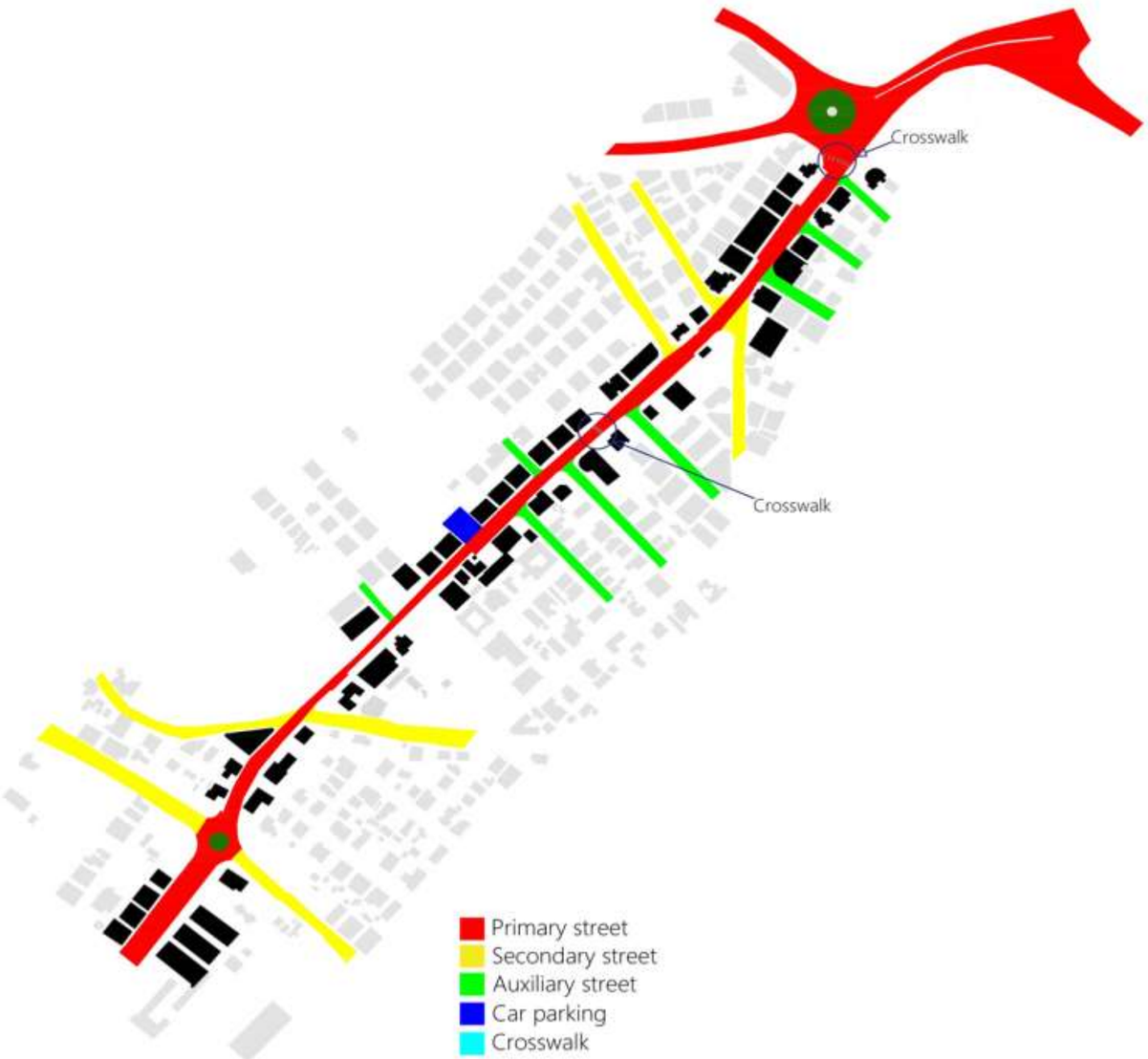


According to the Figure-ground map analysis, which illustrates the solids and voids along the street area, the eastern side along the street and the part around the Nekmar Roundabout have a lower density but in the western side along the street, the density is higher.Though building blocks along the street are not widely spread there is no street space and in general, the sections of the street show lack of enclosure along street because of lots of vacant lands especially on one the side of street.

P 2 **Figure_Ground Analysis** **Scale: 1/5000** N

Livable Streets as an Essential Quality of Social Life: The Case of On Bes Agustos Boulevard (Larnaca Road) of Famagusta, North Cyprus

Najmaldin Hussein, ... M.S Urban Design Program
Department of Architecture Faculty of Architecture
Eastern Mediterranean University

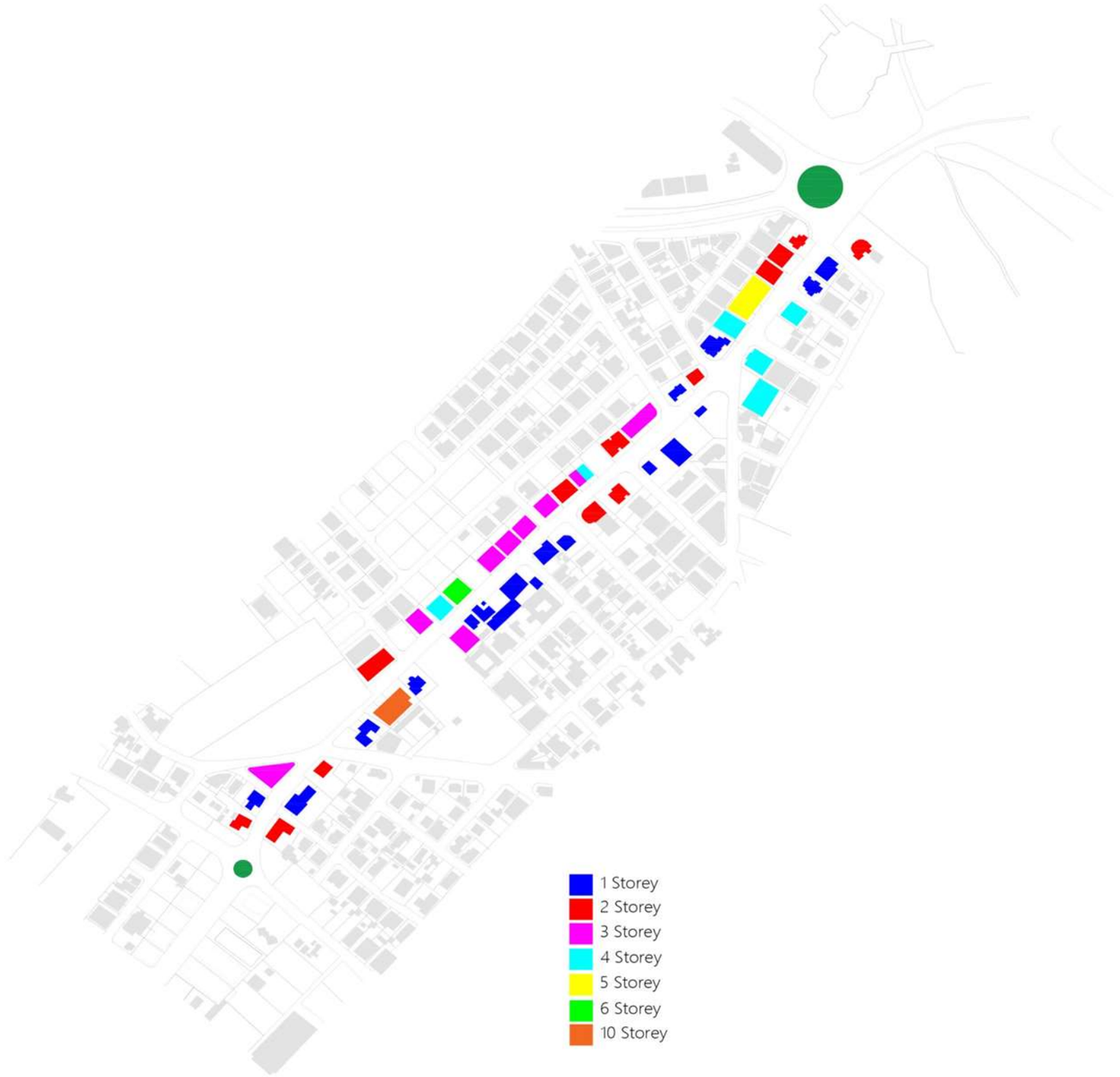


According to the accessibility analysis, which shows that Larnaca Road are has different kinds of roads, there are three primary roads of Famagusta which intersect at the Zafer roundabout which is the starting point of Larnaca Road, and there are seven secondary and many auxiliary roads accessing the street which help the street to be more permeable. In addition, there are sidewalks along the street, but they are not well defined and their quality is also poor and the lack of proper functions along the street make people use the street less. Though some people do use bicycles, there are no bike lanes along the street.The public bus passes via this street, but there is not any bus stop on the street and also there is only one small car parking area which cannot serve all cars on the street which causes blockage of sidewalks along the street.there only exists two crosswalks; one of them at the beginning of street near the Zafer roundabout and the other one is close to the middle in front of the kindergarten which cannot provide pedestrian of all ages easy and safe crossing and also it participates in traffic.

P 3 **Traffic and Accessibility Analysis** **Scale: 1/5000** N

Livable Streets as an Essential Quality of Social Life: The Case of On Bes Agustos Boulevard (Larnaca Road) of Famagusta, North Cyprus

Najmaldin Hussein, ... M.S Urban Design Program
Department of Architecture Faculty of Architecture
Eastern Mediterranean University

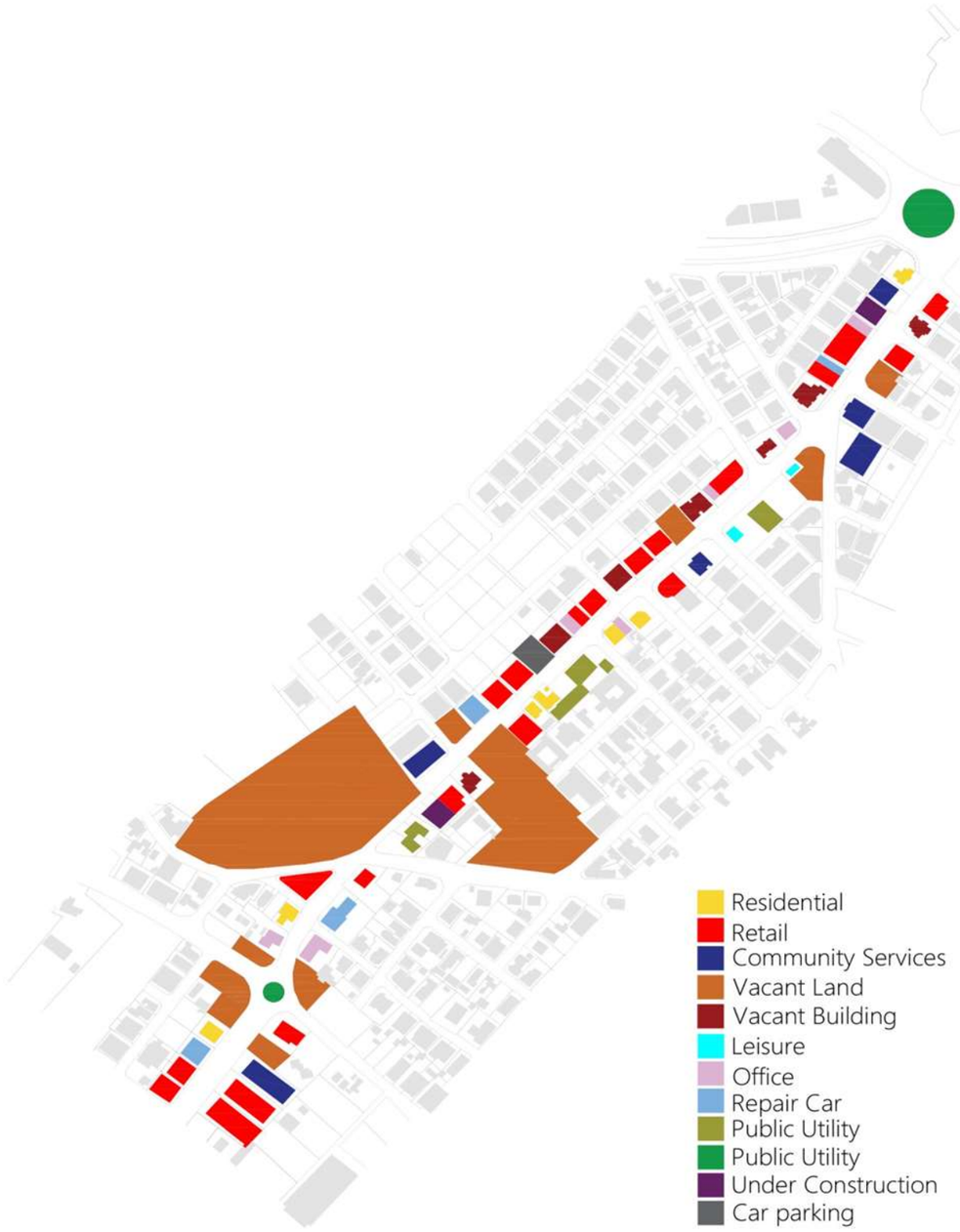


According to the building heights analysis map, which shows the variety of building heights along the street from 1 to 10 stories, there is a lack of buildings in some parts of the street such as vacant land areas which causes a lack of harmony in building heights and this in turn gives a non-enjoyable view to users and there is no recognizable skyline along the street.

P 4 **Building Heights Analysis** **Scale: 1/5000** N

Livable Streets as an Essential Quality of Social Life: The Case of On Bes Agustos Boulevard (Larnaca Road) of Famagusta, North Cyprus

Najmaldin Hussein, ... M.S Urban Design Program
Department of Architecture Faculty of Architecture
Eastern Mediterranean University

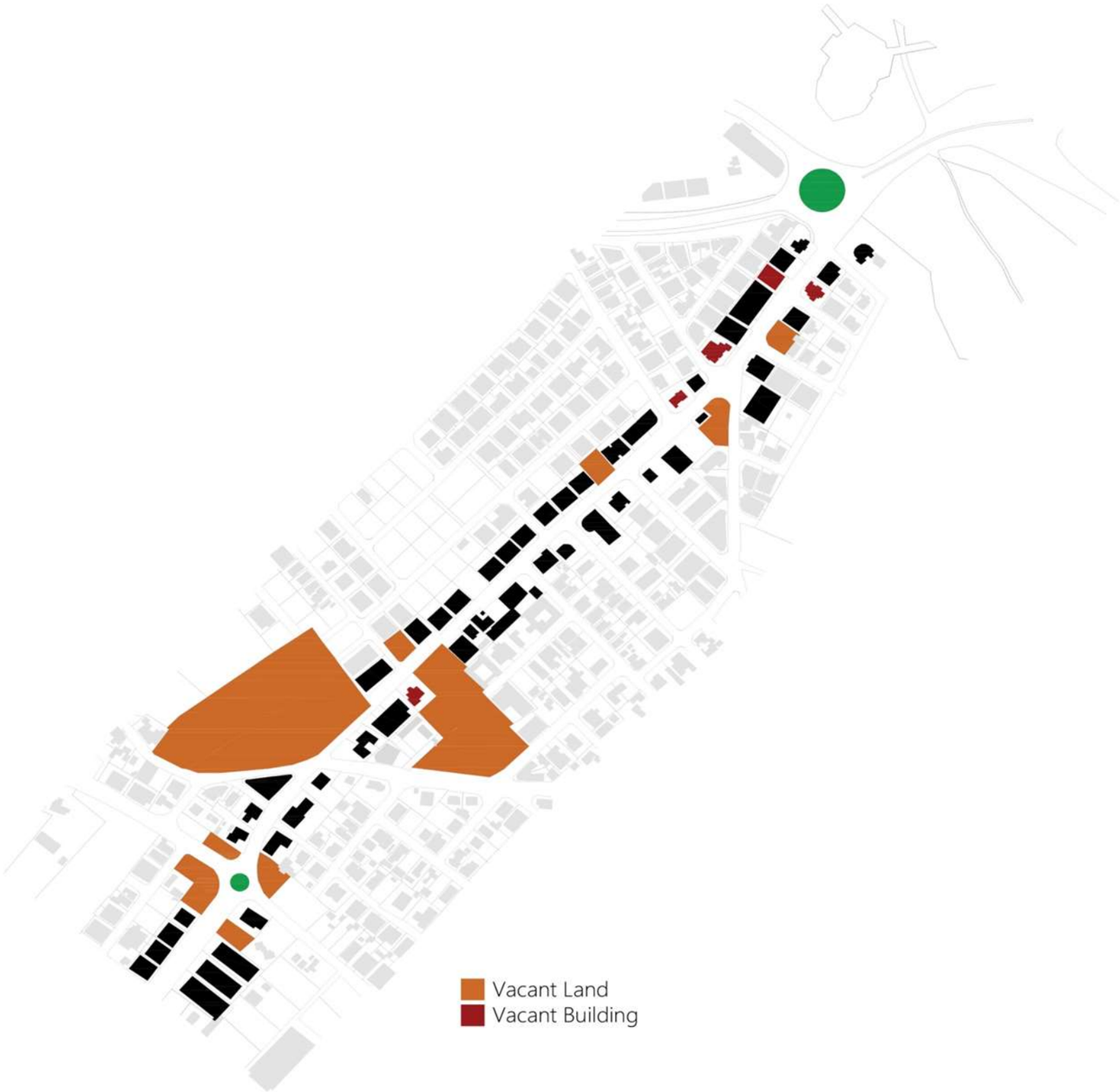


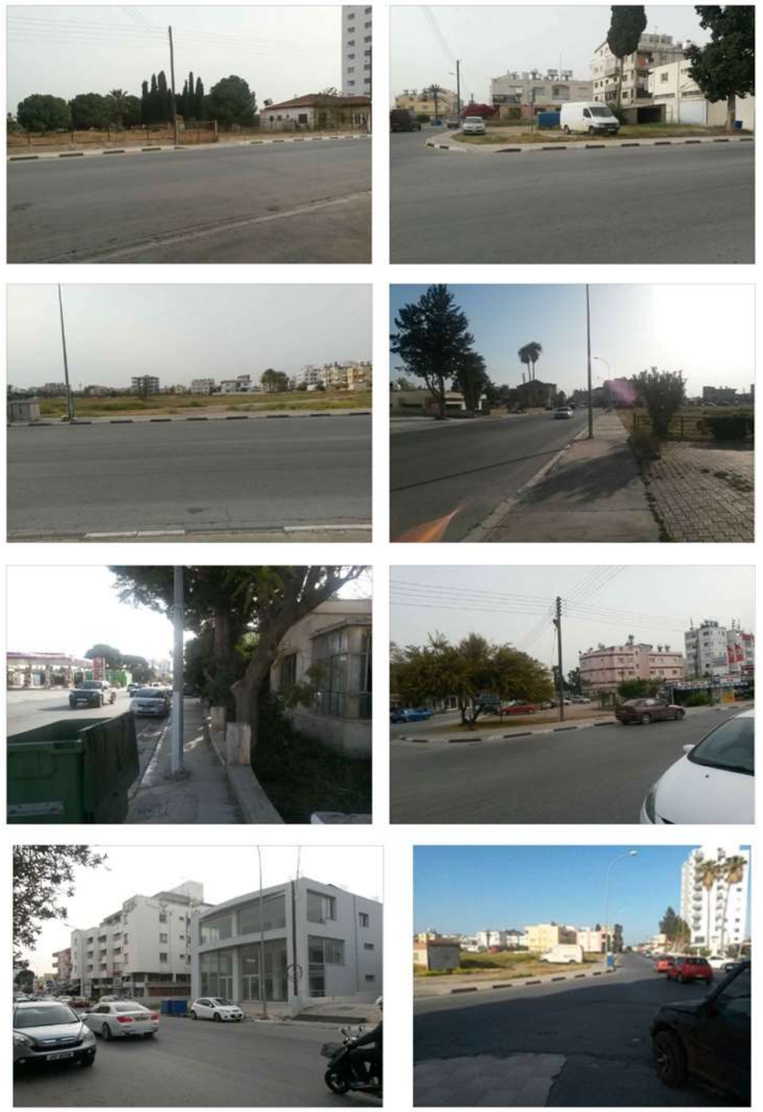
P 5 **Land Use (Ground floor) Analysis** **Scale: 1/5000**

The land use analysis map shows the lack of difference in functions on the ground floor which affects the street and keeps it from working as a living space. This is because these functions along the street are not suitable and they cannot attract different kinds of people to the street and also the existence of many vacant plots along the street breaks the continuity of functions. On other floors, the buildings' functions are residential because the street is in a residential area. There are no active edges during the day and at night along the street because of lack of proper functions such as restaurants, café..etc.

Livable Streets as an Essential Quality of Social Life: The Case of On Bes Agustos Boulevard (Larnaca Road) of Famagusta, North Cyprus

Najmaldin Hussein, ... M.S Urban Design Program
Department of Architecture Faculty of Architecture
Eastern Mediterranean University



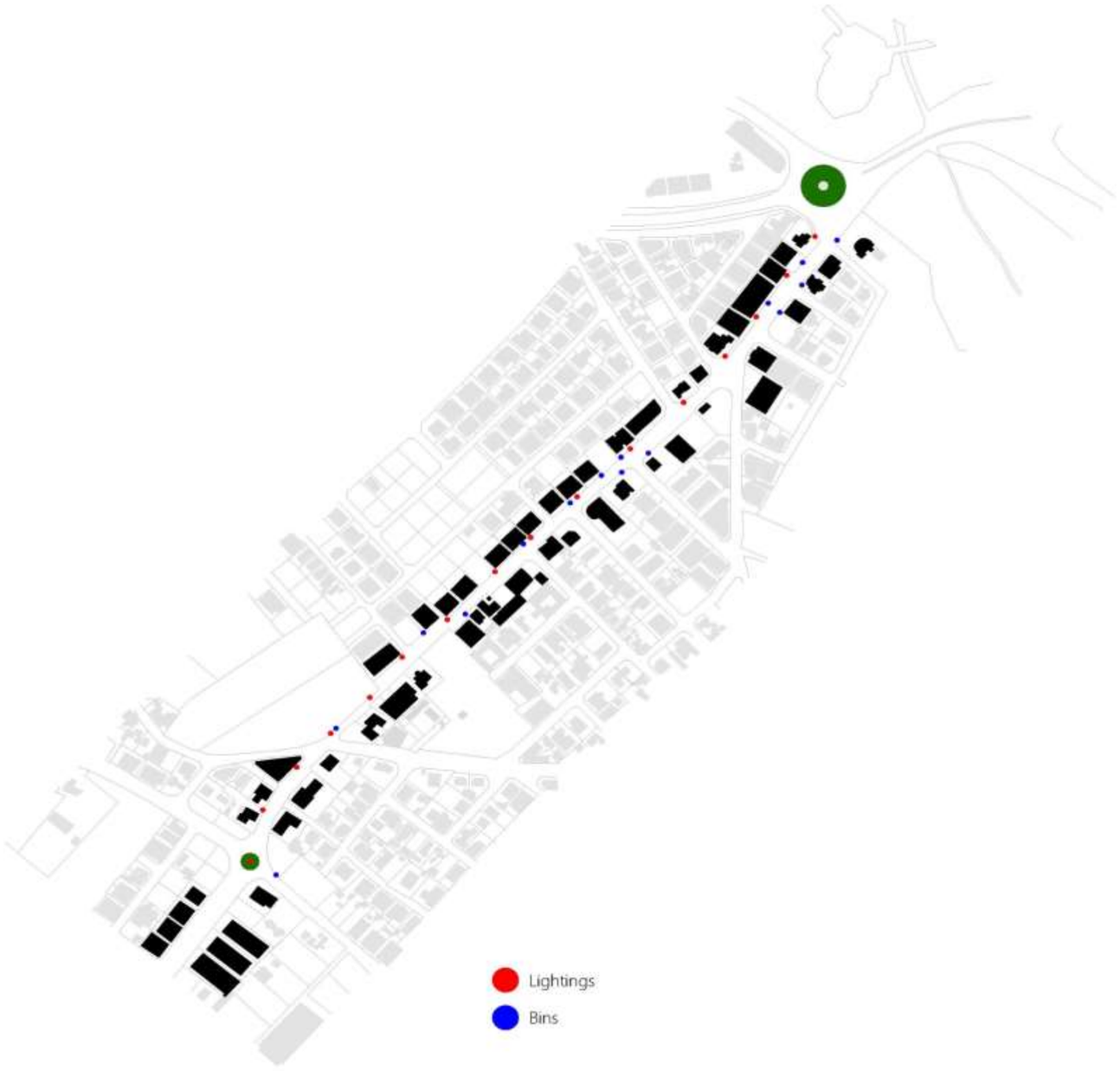


According to the analysis of the lost spaces along the street, they exist in many parts of the street due to the vacant plots and buildings which are vacant break the functions and provide passive edges as well as unpleasant views while walking along the street. However, these vacant lands and buildings can be positive points to improve and develop the street.

P 6 **Lost Space Analysis** **Scale: 1/5000** N

Livable Streets as an Essential Quality of Social Life: The Case of On Bes Agustos Boulevard (Larnaca Road) of Famagusta, North Cyprus

Najmaldin Hussein, ... M.S Urban Design Program
Department of Architecture Faculty of Architecture
Eastern Mediterranean University

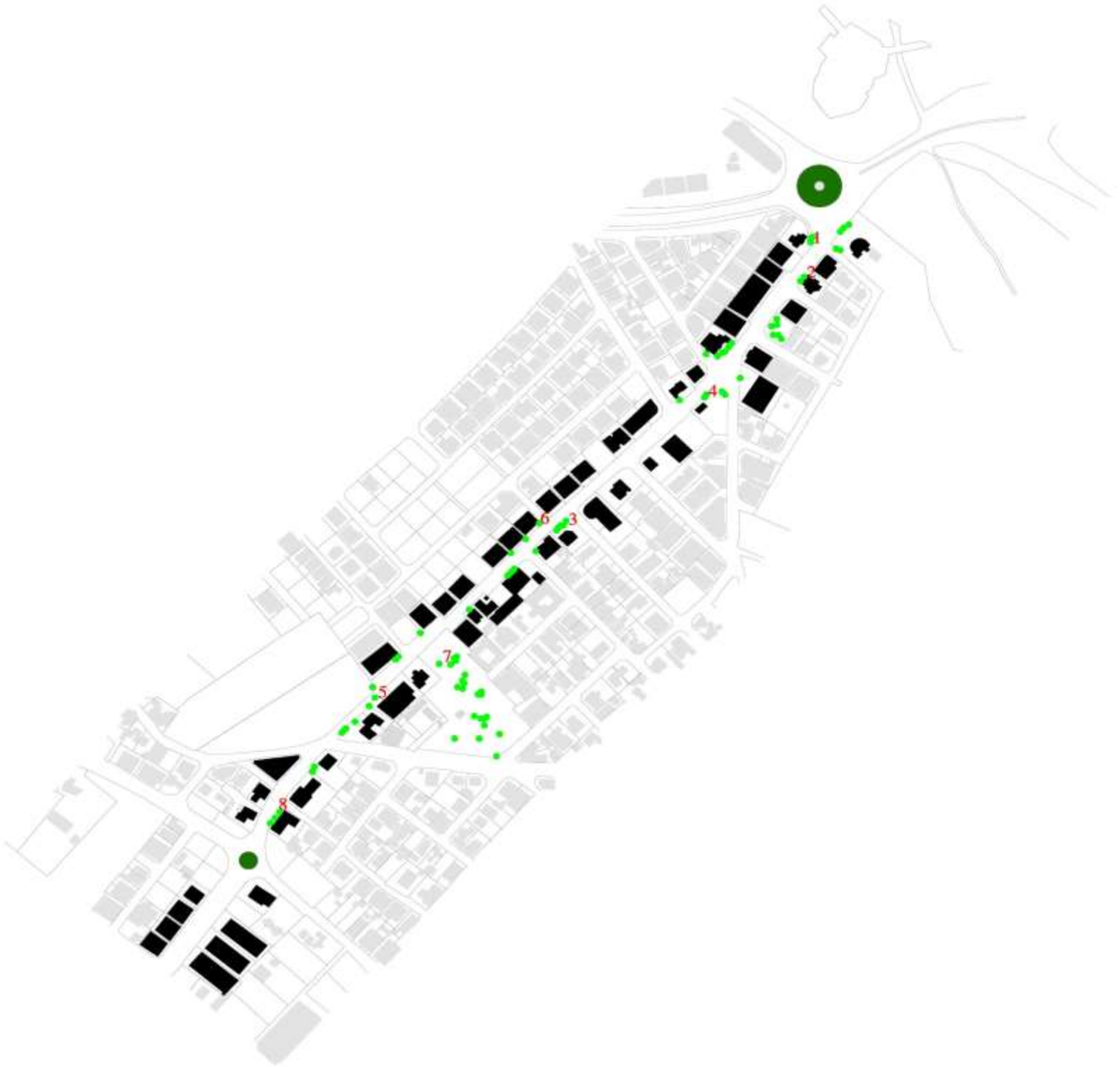


According to the analysis of element distribution shown on the map which shows the location and spread of street elements along the street, only bins are suitably distributed along the street and these are mostly moveable and of poor quality. In addition, the existing lighting elements are of poor quality and are placed on only one side of the street; this proves inadequate for street lighting and for providing safety along the street. Other things which are lacking include sitting places, bus stops, bike parking and shading elements. Generally, common street elements along Larnaca road are very poor.

P 7 | **Street Elements Analysis** | **Scale: 1/5000** | N

Livable Streets as an Essential Quality of Social Life: The Case of On Bes Agustos Boulevard (Larnaca Road) of Famagusta, North Cyprus

Najmaldin Hussein, ... M.S Urban Design Program
Department of Architecture Faculty of Architecture
Eastern Mediterranean University



The analysis of vegetation along the street, as shown on the map, shows that the street has very few trees and plants. It is also evident that most of the trees and plants are planted by house owners thus providing limited shading to the street. The position of the trees, sometimes in the middle of the sidewalks, creates a blocker for pedestrians along the street. Various types and sizes of trees found along the street include: palm, pine, fichus Benjamin and eucalyptus. The street can generally be said to be poor in green areas.

P 8 | **Vegetation Analysis** | **Scale: 1/5000** | N

Livable Streets as an Essential Quality of Social Life: The Case of On Bes Agustos Boulevard (Larnaca Road) of Famagusta, North Cyprus

Najmaldin Hussein, ... M.S Urban Design Program
Department of Architecture Faculty of Architecture
Eastern Mediterranean University

According to the analysis of serial vision along the street, which is shown on the map and pictures, the street has the ability to show different views. However, lack of building continuity, difference in building heights as well as the existence of lots of vacant plots creates a negative effect on street views.

P 9	Serial Vision Analysis	Scale: 1/5000	N

Appendix B: Sample of English Questionnaire

Questionnaire Survey

This questionnaire survey is conducted by Najmaldin Hussein, Master candidate of M.S in Urban Design program, in the Department of Architecture, Faculty of Architecture, Eastern Mediterranean University, Famagusta, North Cyprus, as a part of his Master studies under the supervision of Asst. Prof. Dr Müge Riza. Moreover, all collected data will be analysed by Najmaldin Hussein under the guidance of Asst. Prof. Dr Müge Riza.

The purpose of this research is to try to understand the problems and needs of On Bes Agustos Boulevard, which is called (Larnaca Road), as an urban space, to improve its characteristics towards a livable street as well as to benefit social life.

Direction:

- Put a check (√) to your corresponding answer. (If you have more than one option please mention)

Thank you in advance for your time and support.

1- Gender: □Male □Female

2- What is your age group?

□18 to 22 □23 to 29 □30 to 39 □40 to 49 □50 to 60 □Over 60

3- What is your nationality? □Turkish Cypriot □Turkish □Other (Please specify) …….

4- Are you a □Student □Tourist □Local □Resident

5- How often do you come to Larnaca Street? □Daily or more than three times a week □1-3 times a week □1-3 times a month □Monthly □Never

Why or What for?.....

6- What kind of transportation do you use to get Larnaca Street?

□Private car □Public transportation □Bicycle □Walking

7- Do you think the car parking along Larnaca Street is proper? □Yes □No

8- Do you think the existing sidewalks on Larnaca Street are proper? □Yes □No

9- How do you rate the condition of pavements of sidewalks along Larnaca Street?

□Poor □Fair □Good □Excellent

10- How do you rate the safety along the sidewalks of Larnaca Street?

□Poor □Fair □Good □Excellent

11- How do you see the safety of pedestrians while crossing the Larnaca Street?

□Poor □Fair □Good □Excellent

12- What do you think about lighting of sidewalks at nights along the Larnaca Street?

□Poor □Fair □Good □Excellent

13- How do you see the safety in interaction points between pedestrians and vehicles on Larnaca Street? □Poor □Fair □Good □Excellent

14- How do you see the condition of shading elements along the sidewalks of Larnaca Street? □Poor □Fair □Good □Excellent

15- How do you rate the greenery along the Larnaca Street?

□Poor □Fair □Good □Excellent

16- How do you rate the traffic calming along the Larnaca Street?

□Poor □Fair □Good □Excellent

17- Is Larnaca Street accessible enough for you? □Yes □No □Not bad □No idea

18- What are the negative points of Larnaca Street? □Comfort □Safety □Lack of restaurant and cafe □Lack of Parks and Plazas □Lack of Shops and Offices □Lack of Crowds of people □Lack of Children playgrounds □Poor quality of buildings □Lack of continuity in facilities □Narrowness □Lack of bike lane □Lack of street elements: □Bin □lighting □sitting element □shelter □Bike parking □signage □Other (Please specify)……..

19- Are you satisfied with the quality of Larnaca Street? □Very satisfied □Somewhat satisfied □Not satisfied □Not sure

20- Do you have any comments regarding the improvements of Larnaca Street?

1-…….

2-…….

3-…….

4-…….

5-…….

……

Thanks for your time and support

Appendix C: Sample of Turkish Questionnaire

Anket Araştırması

Bu araştırmanın amacı, yaşanabilir bir caddeye yönelik özellikleri geliştirmek için hem de sosyal yaşamdan faydalanmak için, kentsel bir mekân olarak adlandırılan Larnaka Caddesinin sorunlarını ve ihtiyaçlarını anlamaya çalışmaktır.

Yön

- Uygun cevaba bir tik (√) koyun. (Birden fazla seçenek varsa belirtiniz)

1- Cinsiyet: □Erkek □Kadin

2- Yaş grubunuz nedir?

□18 - 22 □23 - 29 □30 - 39 □40 - 49 □50 - 60 □ 60 üzerinde

3- Uyrugunuz nedir?□ Kıbrıslı Türk □ Türk □ Yunan Kıbrıs□ Diğer (Lütfen Belirtin)…….

4- Siz bir □ öğrenci □ Turist □lokal □ yerli

5- Ne kadar sıklıkla Larnaka sokağına geliyorsunuz? □ Günlük veya daha fazla haftada üçten fazla □ hafatada 1-3 kere □ ayda 1-3 kere □ Aylık □ Asla

Neden ya da neiçin?.....

6- Larnaka Sokağına varmak icin hangi ulaşım yolunu kullanıyorsunuz?

□ Özel otomobil □ Toplu taşıma □ Bisiklet □ Yürüyüş

7- Larnaka Caddesi boyunca araba park etmenin uygun olduğunu düşünüyor musunuz? □ Evet □ Hayır

8- Larnaka Caddesi üzerinde mevcut kaldırımlar düzgün olduğunu düşünüyor musunuz? □ Evet □ Hayır

9- Larnaka Caddesi boyunca kaldırımların durumunu nasıl değerlendiriyorsunuz? □ Kötü □ Adil □ İyi □ Mükemmel

10- Larnaka Caddesinin kaldırımlar boyunca güvenliğini nasıl değerlendiriyorsunuz? □ Kötü □ Adil □ İyi □ Mükemmel

11- Larnaka Caddesinden geçerken yayaların güvenliğini nasıl degerlendiriyoruz? □ Kötü □ Adil □ İyi □ Mükemmel

12- Geceleri Larnaka Caddesi boyunca kaldırımların aydınlatması hakkında ne düşünüyorsunuz? □ Kötü □ Adil □ İyi □ Mükemmel

13- Larnaca yayalar ve araçların arasındaki etkileşim noktalarında güvenliğini nasıl görüyorsunuz? □ Kötü □ Adil □ İyi □ Mükemmel

14- Larnaka Caddesi boyunca kaldırımlardaki gölgeleme elemanlarının durumunu nasıl görüyorsunuz? □ Kötü □ Adil □ İyi □ Mükemmel

15- Larnaka Caddesi boyunca yeşillendirmeyi nasıl değerlendiriyorsunuz? □ Kötü □ Adil □ İyi □ Mükemmel

16- Larnaka Caddesi boyunca trafik durgunlugu nasıl değerlendiriyorsunuz?

□ Kötü □ Adil □ İyi □ Mükemmel

17- Larnaka Caddesi sizin için yeterince erişilebilir mi?

□ Evet □ Hayır □ fena değil □ Fikrim yok

18- Larnaka Caddesinin olumsuz noktalari nelerdir? □ Mağazaları ve Ofis eksikligi Park ve Plaza eksikligi □ restoran ve kafe eksikligi □ Comfort eksikligi □ Emniyet □ eksikliği insanların kalabalıklar eksikliği Çocuk oyun eksikliği □ Düşük binaların kaliteli □ tesislerde sürdürülebilirlik eksikliği □ bisiklet yolu eksikliği □ sokak elemanlarının şerit □ eksikliği: □ Bin aydınlatma □ Oturan eleman □ barınak □ Bisiklet parketme □ Hayvanlar □ Diğer (lütfen belirtiniz) ……..

19- Larnaka Caddesi kalitesinde ile memnun musunuz? □ Çok memnun □ Biraz memnun emin değil □ memnun değil

20- Larnaka Caddesi geliştirebilme ile ilgili herhangi bir yorumunuz var mı?

1-…….

2-…….

3-…….

4-…….

5-…….

……

destek ve zamaniniz için teşekkür ederiz.