

QATAR UNIVERSITY  
COLLEGE OF ENGINEERING

INVESTIGATING LIVABILITY OF MIXED-USE NEIGHBORHOOD  
CASE STUDY OF NAJMA IN DOHA, QATAR

BY

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A Thesis submitted to the faculty of College of Engineering  
in partial fulfillment of the requirements  
for the degree of  
Master of Science in Urban Planning and Design

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## **ABSTRACT**

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Title: Investigating Livability in Mixed-Use Neighborhood. Case Study Of Najma in Doha, Qatar

Supervisor of Thesis: Prof. Attilio Petruccioli.

The research focuses on investigating mixed-use neighborhoods in Doha, especially in the area of expansion between the B and C Ring roads that were built under speculative pressure during the 1960s to 1970s. The research aim is to develop urban policies and guidelines, based on livability principles that can aid the growth and development of a mixed-use neighborhood. The study measures and analyzes existing aspects in Doha mixed use neighborhoods, aiming to identify the distinct and particular nature of mixed-use neighborhoods in Doha.

The increasing population of Qatar and the introduction of new mega development projects have increased the need for proper urban planning and integration between existing and new districts. The result of this study will help to provide a set of design policies that address the urban identity of mixed-use neighborhood with the aim of preserving the local identity of these neighborhoods and their vitality in the long run and enhancing the quality of open spaces, walkability, connectivity and their general livability.

The following research study, through investigating the livability of mixed use neighborhoods and users' satisfaction and perception of the neighborhood, will contribute

to the development of urban design principles that employs specific guidelines for mixed-use urban neighborhoods. These guidelines can be used by scholars, urban planners and governmental institutions such as the Ministry of Municipality & Environment or Qatar Museum Authority, as recommendations or as a reference to aid in the revitalization of old mixed-use neighborhoods. Furthermore, it will incorporate rules and standards that can be applied to future planning of mixed-use urban development.

The findings of this research will help urban planners and stakeholders to design better mixed-use neighborhoods that address and accommodate users' physical and social needs, wants and aspirations; designed and built while taking into account the environmental conditions of the region.

**Keywords:** Mixed-use neighborhoods, Livability, Urban revitalization, Transit Oriented Development, Najma, Doha



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# **1 CHAPTER ONE: INTRODUCTION AND BACKGROUND**

## **1.1 Research Significance**

The research focuses on investigating mixed-use neighborhoods in Doha, especially in the area of expansion between the B and C Ring roads that are being built under speculative pressure, in order to develop urban policies and guidelines based on livability principles that can aid the development and growth of a mixed-use neighborhood. The research investigates and analyzes existing livability indicators of mixed-use neighborhoods in Doha, in order to distinguish the distinct and particular nature of mixed-use neighborhoods in Doha.

The rising population of Qatar and the introduction of new mega development projects have increased the need for proper urban planning and integration between existing and new districts. The results of this study will help to provide a set of design policies that address the urban identity of mixed-use neighborhoods, with the aim of preserving the local identity of these neighborhoods and their vitality in the long run, and enhancing the quality of open spaces, walkability, connectivity and their general livability.

Doha is situated within a hot and an arid region in the Middle East, therefore it involves particular environmental concerns that need be considered in urban design in order to improve the livability of the built environment.

The urban livability indicators of mixed-use neighborhoods will be analyzed in order to provide guidelines for mixed-use neighborhood improvements from an urban and community focused perspective.

The findings of this research will help urban planners and stakeholders to design better mixed-use neighborhoods that address and accommodate users' physical and social needs, wants and aspirations; designed and built taking into account the environmental conditions of the region.

## **1.2 Implications of the Study for Doha**

Doha nowadays consists of downtown core that corresponds to the traditional Doha that went through a radical transformation during the oil exploitation period. This transformation is both reflected in the built environment and the rapid population increase.

Through investigating the livability of mixed use neighborhoods and users' satisfaction and perceptions of the neighborhood, urban design principles can be developed which includes specific guidelines for mixed-use urban neighborhoods. These guidelines can then be used by scholars, urban planners and governmental institutions like the Ministry of Municipality & Environment or Qatar Museum Authority, as recommendations or as a reference for the revitalization of old mixed-use neighborhoods. Furthermore, it will incorporate rules and standards that can be applied to the future planning of mixed-use urban developments.

## **1.3 Major Developments in Doha**

Before the discovery of oil, the population of Qatar comprised of a very small community of 12,000 inhabitants (Adham, 2008:222). It all changed, however, with the first revenue made from oil exports. From the 1950s onward there was an increase in uncontrolled growth, which is reflected in the urban patterns of the city of Doha (Adham, 2008: 223). This historic urban revolution was accelerated furthermore by the 1971

increase of oil prices. Today, Qatar has over 2.55 million inhabitants (Ministry of Development Planning and Statistics, 2016) spread over the seven municipalities of Qatar: Doha, Al Rayyan, Al Wakra, Al Khor, Madinat Al Shammal, Umm Salal and Al Daayen.

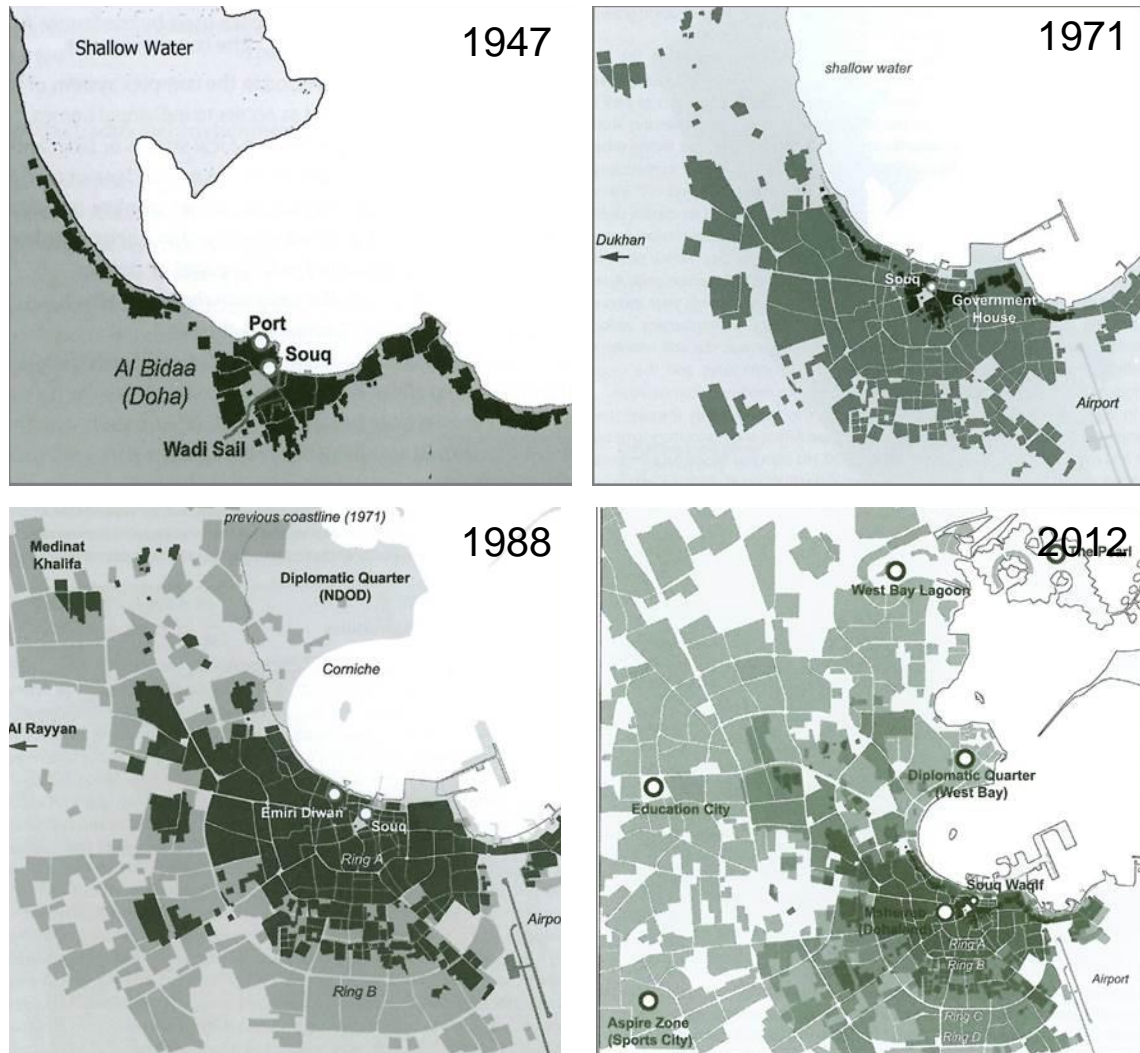


Figure 1: Urban Transformation of Doha from 1947 to 2012. Source: Salama and Weidmann, 2012

In the last decade and a half, the Government of Qatar has implemented numerous megaprojects, which provides up-to-date urban facilities, and facilitates an increase in

local tourism (Rizzo, 2013:540). Nevertheless, the implementation of such megaprojects without a definite national planning framework has led to Doha's urban supremacy over other cities, and consequently to more traffic congestions, a shortage in affordable housing, local environmental issues and land value inflation (Al Buainain, 1999:406). In an effort to tackle these issues the Ministry of Municipality and Urban Planning (MMUP) (now the Ministry of Municipality and Environment) has, since 2005, worked on a new Qatar National Development Framework (QNDF), which is a strategic document to be followed through a more detailed National Master Plan (Rizzo, 2014:50).

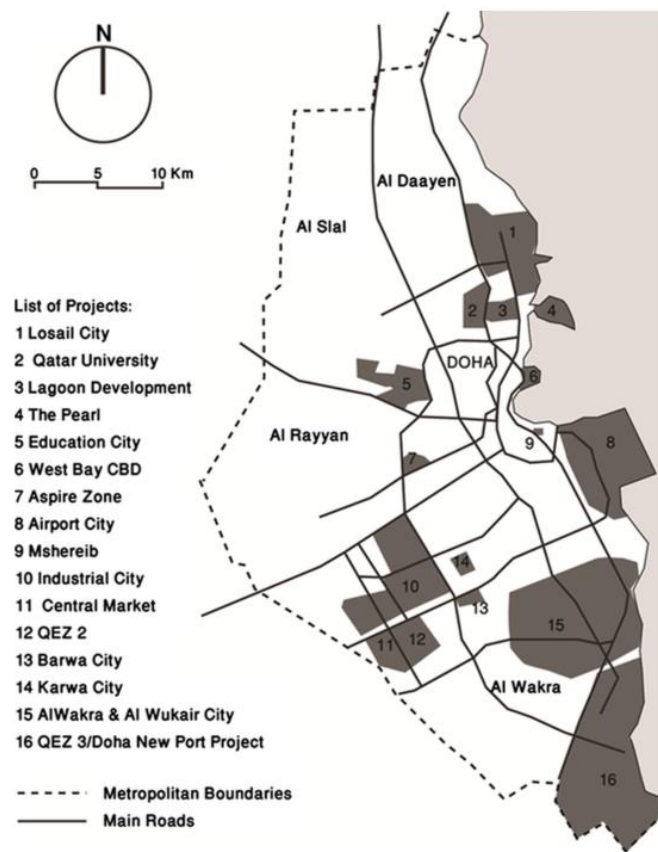


Figure 2: Existing and future megaprojects in the Municipality of Doha, QEZ = Qatar Enterprise Zone. Source: Rizzo 2014:53



In addition, Qatar has worked hard to attract mega events to the country and it finally succeeded in doing so, by winning the bid to host the 2022 FIFA world Cup in 2010. As a result, Qatar is facing a lot of challenges in environmental, economic, human and social development. The Qatar National Master Plan 2032 provides strategies for urban development and establishes a framework for short and long-term goals and short-term objectives. The plan also mentions that all megaprojects in Doha must be finalized by 2026. Some of these projects involve the construction of: (1) transportation systems or infrastructure; for example, highways, a national railway system, urban metro and light rail system and public transportation facilities, and (2) new lively communities; for example housing developments and transit oriented developments (TODs) (Furlan and Faggion, 2015:122-123).

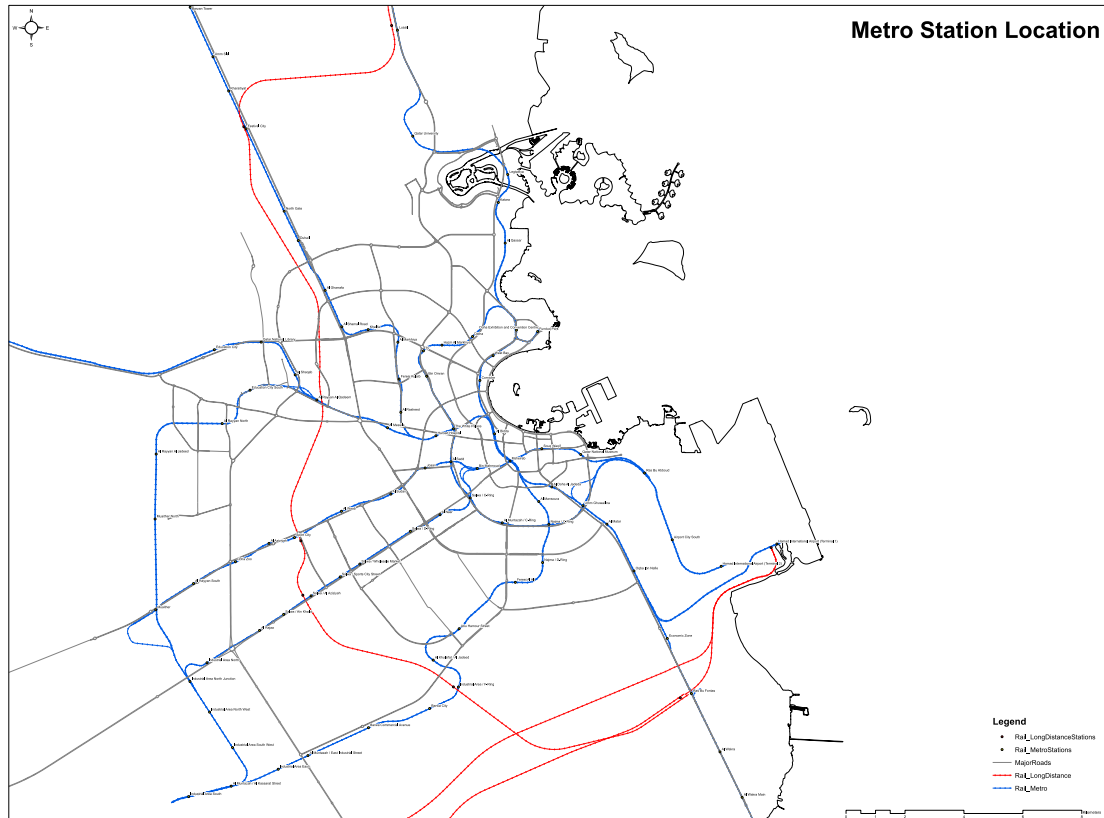


Figure 3: Metro Stations Location. Source: Qatar Rail (2015)

The planned metro network within the Doha metropolitan area, currently under construction, is designed to connect the Doha (Hamad) International Airport, Doha Port, all major Olympic stadium sites, urban villages and major districts. The due date for the metro lines construction is, as the case with all mega projects, in 2026. The metro network in Doha runs an overall length of 300 kilometers, and it amounts to 4 lines and 98 stations operating through tunnels, at ground level and on an overhead railway. The metro project is crucial to Qatar for several reasons: (1) for the FIFA World Cup event in 2022 and (2) to reduce traffic congestion. As Salama and Weidmann (2013) stress that the objective of investing in national transit is to introduce Doha, and Qatar as a whole, as an international service hub accompanied by developed and smart urbanism. On a similar

note, Sipe and Burke (2014) reason that the design of transit nodes and stations, and the planning of the local urban environment will heavily affect Doha's urban development. Specifically, they emphasize that Doha's transit environment will be a key factor in how visitors will interact with and perceive the Qatari culture. Furthermore, Sipe and Burke (2014) emphasize that transportation performance and efficiency will be important to the whole experience of sport fans in 2022 World Cup.

The rapid expansion that Doha is facing today need to be carefully managed and coordinated with the ongoing urban planning projects to raise the quality of urban life and residents satisfaction. Thus, it is essential to study how livable the built environment is, especially those around transit nodes, keeping in mind the environmental and cultural nature of the country.

This study investigates livability indicators in mixed-use neighborhoods in Doha. The findings of this research can be used to provide design guidelines for urban planner to improve and enrich existing mixed-use neighborhoods and in developing future mixed-use neighborhoods. The quality of urban life in mixed-use neighborhoods is affected by several parameters that can help the overall livability of the neighborhood such as: the type/degree of mixed-use activities, spatial structure, neighborhood identity, community organization, transportation and infrastructure options, accessibility and walkability and availability of open spaces, all in with reference to the residents and users satisfaction, wants, needs and aspirations in relation to their neighborhood.

#### **1.4 Problem Statement**

The research investigates the livability of mixed-use districts, focusing on Najma area as a case study. Mixed-use neighborhoods, such as Najma, are not properly

maintained, due to the fast development of other areas in Doha, which the existing mixed-use neighborhoods cannot keep up with. Najma's population is highly transient; hence the minimal sense of place and highly male dominated population. The commercial activities in Najma are concentrated on one type of activity, mostly carpentry. Insufficient parking spaces along with the lack of public transportation lead to traffic congestion in the study area, in addition to poorly planned pedestrian circulation networks. The current situation is a result of the uncontrolled globalization and rapid urbanization that have severed the local urban identity of mixed-use districts, favoring the boxed shopping malls instead.

## 1.5 Research Design

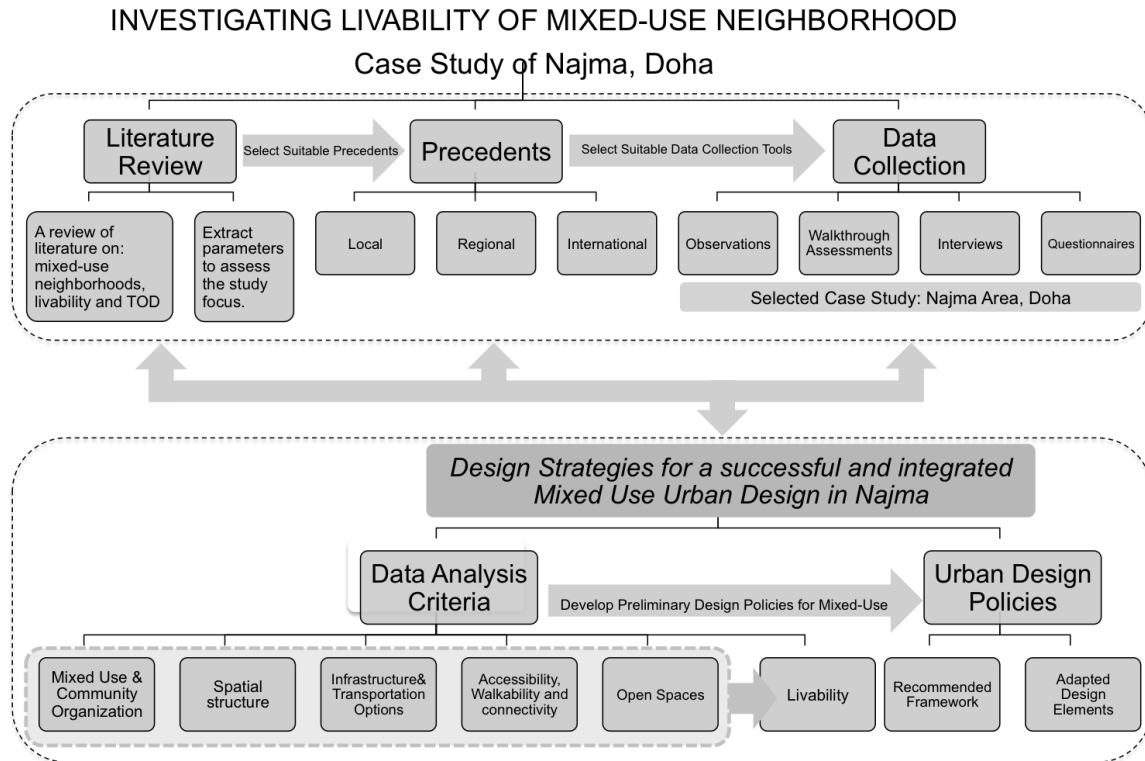


Figure 4: Research design diagram. Source: Author

Mixed-use neighborhood in Doha are poorly designed and maintained, due to constant modifications to the urban plan, with very slight consideration to the social interaction between the different groups of people and that affects the livability of the area. To investigate the problem and test the hypothesis, a literature review was conducted in three main subjects areas:

1. Mixed-Use neighborhood: investigating advantages and disadvantages of mixed-use neighborhood, impact on surrounding urban space and how to sustain them.

2. Livability: generally exploring livability definitions and principles and tackling other specific issues such as: livability of mixed-use neighborhoods and what makes it sustainable and livable in the long run.
3. Transit Oriented Development (TOD): what does it mean and how can it impact in the development of mixed-use neighborhoods.

## **1.6 Research Goals and Research Questions**

The main aim of this study is, through analysis of the fieldwork results, to develop a set of urban policies and recommendations that match the climate and culture of Qatar, which can guide the future development of mixed use neighbourhoods in Doha, and revitalization of older districts, and inform how to sustain livability, walk-ability, and attractiveness in the long run, to be used by National and local government ministries, stakeholders, real estate companies, businesses and urban designers and developers.

This will be based on the relevant literature review, and analysis of precedents and urban strategies related to mixed use neighbourhoods, followed by an investigation of a mixed-use district in Doha (Najma) to assess the quality of urban life, and a discussion about how the best practice and theories can be applied to this case study, and future developments.

These policy guidelines will help planners to design livable, walk-able, and attractive built environment for mixed-use neighborhoods. Investigating and assessing existing urban characteristics in the selected area and attributing it to mixed-use neighborhood physical and social dimensions; moreover, examining the level of satisfaction will involve the following objectives:

- To select a mixed use neighborhood to investigate and assess

- To review literature on sustainable mixed use neighborhoods and strategies to revitalize them
- To analyze the different attributes of the selected study area according to a selected criteria and dimensions
- To examine the built environment of the mixed use neighborhood in several different locations taking into consideration physical dimensions such as existent services and built environment elements;
- To identify elements that influence users' perception, social and behavioral attitudes towards the built environment within the study area.
- To develop specific urban design recommendations for Doha's urban designers and stakeholders for the design of mixed-use neighborhoods that matches the climate and culture of Qatar.
- To assess the findings to develop a set of policy frameworks

To accomplish the goals of this research, three research questions come into consideration. Firstly, to assess the livability indicators of Najma area, the first research question to be examined is: **How livable is the urban environment of Najma?** The unique character of Najma need to be assessed through the spatial structure, community organizations, population density, local facilities and other activities of the area. The second question is: **How the upcoming development projects, such as the metro will impact Najma's urban form?** Lastly, the third question is: **What are the main features that should be considered when designing mixed-use neighborhoods in Doha?**

## **1.7 Conclusion**

The concepts of livability and quality of urban life in relation to mixed-use neighborhoods have always been prevailing subjects in the discipline of urban planning and design. In the case of Doha, mixed-use neighborhoods between the B and C ring roads are in such deteriorating conditions they are like islands in the middle of the city, such conditions are noted for reasons, such as: lack of an integrated urban planning process, lack of sufficient facilities and poor connectivity between one area and another. These problems could be attributed to globalization and rapid urbanization that the country is facing.

This chapter identified three research questions that will guide the study framework in investigating livability in a mixed-use neighborhood, and the findings based on these three questions will help to provide policy guidelines in designing mixed-use neighborhood in Doha and how to revitalize the older neighborhoods without the need for total demolition.



## 2 CHAPTER TWO: LITERATURE REVIEW

### 2.1 Conceptual Frameworks

The literature review focuses on three main subject areas:

1. Mixed-Use Neighbourhood: investigating advantages and disadvantages of the mixed-use neighbourhood, its impact on surrounding urban space and how to sustain it.
2. Livability: generally exploring livability definitions and principles and tackling other specific issues such as: livability of mixed-use neighbourhoods and what makes them sustainable and livable in the long run.
3. Transit Oriented Development (TOD): what does it mean and how can it impact on the development of mixed-use neighbourhoods.

Consequently, this literature review will help in the following:

1. Developing an assessment tool to gauge the livability indicators in mixed-use neighbourhoods in Doha.
2. Providing suitable guidelines in dealing with Transit Oriented Development in mixed use neighbourhoods.

Nevertheless, it is important to note that most of the existing literature on livability and sustainable urbanism are formulated using Western Countries as a model. Hence, some of the assessment criteria identified in the literature may not be appropriate within the context of Qatar. Therefore the criteria will probably need to be adapted to the preferences of the population in Qatar and the climate.

## 2.2 Mixed-Use Neighborhood

Most of the human settlements in history were of mixed-use nature. Walking was the main way people and goods moved from one place to another, often with the aid of animals like horses or cattle. The majority of the buildings were not separated into different functions; instead each place held a variety of uses. A lot of people resided in buildings that were both their home and their workplace. Neighbourhoods at the time were highly dense because walkability and the scale of the human body determined the amount of space required for day-to-day activities. In those cities, most of the ground floor of the buildings was dedicated to commercial or business related uses, whereas the floors above were used for dwelling.

This arrangement of historical mixed-use development weakened in the industrialization age from the 1940s to 1960s, in favour of large-scale zoning and separation of manufacturing and residences into single-use buildings. As a result, in this period a lot of people migrated from rural areas to cities for work and this increase in workers required new residential buildings to accommodate them (Coupland, 1997). Therefore, many new urban districts developed with residential use as their main function. In addition, many of the factories produced several kinds of pollution making the areas surrounding them not suitable for living and a distance needed to be maintained to reduce the harmful effects of those districts. These aspects are the reason for the push for single use zoning and spatial separation of land uses, although Jane Jacobs (1961) argues in her book 'The Death and Life of Great American Cities', that healthy urban living must have a degree of mixed uses incorporated into its urban area. Consequently,

movements were made to reintegrate a mixture of uses into existing small urban contexts and in new development projects from the 1970s to the 1980s.

Furthermore, as the concepts of smart growth, walkable urbanism and sustainable design were popularized in the 1990s and 2000s; mixed-use developments emerged as the solution to all those concepts. Also, residential became the primary use in mixed-use neighbourhoods, an integral component for the growth of Transit Oriented Development (TOD) and an essential element in the creation of livable communities.

### 2.2.1 Definitions of Mixed-use Neighborhoods

There are several definitions of a mixed-use neighbourhood, and the description varies from one source to another. The following table highlights few of the definitions found in the literature reviewed.

Table 1: Definitions of Mixed-use Neighborhoods

Mixed-use Neighborhood Definition	Source
Of Real Estate, combining commercial and residential development that is commercial and residential zone.	Random House Dictionary (2016)
Designed for various functions	
A unique type of development and a movement that is transforming the real estate landscape. It combines the elements of residential, retail, office and entertainment. Mixed-use projects are being developed in urban and suburban markets on a global scale.	Conference on Mixed-use Development (November, 2006). Hollywood, FL.
Mixed-use neighborhood is a real estate project with planned integration of certain arrangement of retail, office, residential, hotel, recreation or other purposes. It is pedestrian-oriented and contains elements of a live, work and play environment. It maximizes space usage with its amenities and architectural expressions; furthermore, it tends to alleviate traffics and sprawl.	
Mixed-use neighborhoods have three or more significant revenue-producing uses, such as retail, office, residential, hotel, entertainment, cultural and recreation. These are well planned and are mutually supporting. (Thrall, 2002:216)	Thrall, G. I. (2002). <i>Business geography and new real estate market analysis</i> . Oxford: Oxford University Press.
Mixed-use covers a vastly wide variety of development types, from the neighborhood corner store to a thousand-acre master planned community.	Quality Growth Toolkit: Mixed-use Development, Atlanta Regional Commission. Pg.2

In summary, mixed-use neighborhoods combines a variety of uses in one place such as residential, commercial and institutional uses with the provision of safe pedestrian and bicycle networks within and outside the neighborhood.

### 2.2.2 Benefits of Mixed-Use Neighborhoods

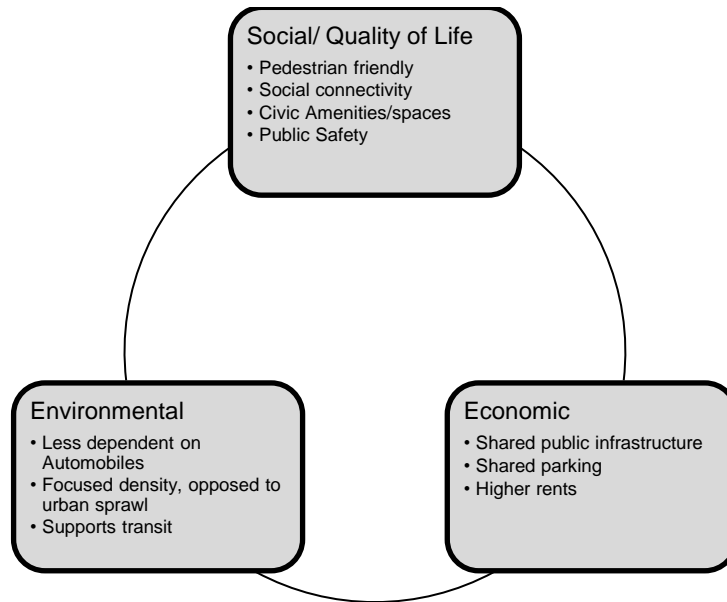


Figure 5: Summary of Mixed-Use Neighborhoods Benefits, Source: Urban Land Institute (2011), edited by Author

The aim of mixed-use neighbourhoods is that it brings people closer to the things they need in everyday life. It shortens the travel distance from one place to another and it ensures that the place will be occupied 24 hours a day, which results in a much safer environment, since there is always someone around. In addition, mixed-use neighbourhoods can make more efficient use of public infrastructure and other services. For example, regarding parking spaces for automobiles, the figure below showcases the benefit of having a parking system shared between buildings with different uses in the neighbourhood. This result in a decrease in parking spaces required since, for example, the offices will use the parking from early morning to late afternoon, and then it can be shared with the restaurants or retail visitors in the evening and during the weekends when the number of visitors is at peak. A study done by AECOM, a community planning and

design firm showed that the number of parking spaces will decrease from 4-5 parking spaces per 1,000 square feet (92.2m<sup>2</sup>) to 2.5-3 spaces per 1,000 square feet.

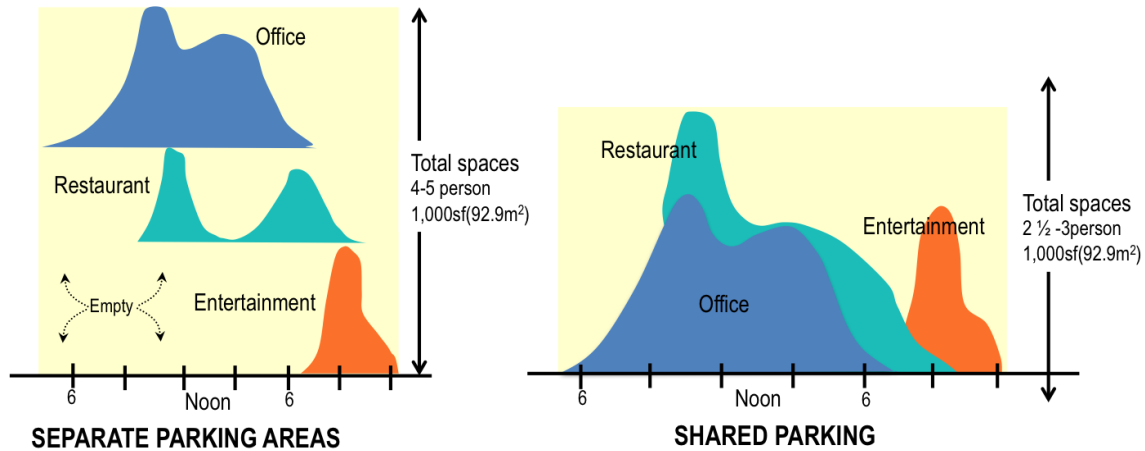


Figure 6: Shared Parking Study. Source: Glattig Jackson & Associates, now known as AECOM (2011), edited by Author.

Not only parking spaces can be shared, but also infrastructure and services as well such as, roads, transit nodes, sport fields, green spaces, sidewalks and shaded pathways.

Another advantage of mixed-use neighbourhoods is that it can help decrease traffic congestion by promoting other modes of transportation; for example since everything is located nearby users will be encouraged to walk or cycle from one destination to the other.

### 2.2.3 Challenges of Mixed-use Neighborhoods

There are numerous challenges that affect the development of mixed-use neighborhoods that are discussed in literature. Most of the literature agrees that the development of mixed-use neighborhoods is challenged with the following:

- Inadequate investments in planning

- Insufficient knowledge about benefits to public and private sectors
- Lack of integrated zoning regulations
- Identifying and tackling environmental issues
- Addressing and integrating planning and development agencies urban strategies with community needs
- Transportation concerns including parking design and pedestrian connections

Other challenges include identifying market and economic cycles, traffic congestion, locational choice, a good balance of various uses, developing diversity, providing an effective urban structure and creating an identity for the neighborhood (Hightower, 2002:41-43; Weidmann, Salama & Mirincheva, 2014: 20-21).

#### **2.2.4 Sustainable Urbanism and Mixed-use Neighborhoods**

“Sustainable urbanism” utilizes environmental sustainability approaches as the generative principle for urban design (Brown, Dixon and Gillham, 2009:265). Sustainable Urbanism is one of the answers to the questions about how should places grow, how should people commute from one place to the other and how could people live more sustainably (Farr, 2008:3). The answers to those questions can help formulate a coherent set of policies that can help the next generations of cities.

In Farr’s (2008) book about Sustainable Urbanism he defines some parameters that are essential to such concept, those parameters are:

- Density, how compact the neighborhood is.
- Sustainable corridors
- Human access to nature, referred to as Biophilia

- High-performance buildings and infrastructure
- Sustainable neighborhoods, that have:
  - Identifiable center and edge to the neighborhood
  - Walkable size
  - Mix of land uses and housing types
  - Integrated network of walkable streets
  - Special sites for civic purposes.
- Time

Local governance also plays a major role in creating urban efficiency in mixed-use neighborhoods. There are five main hub visions that can be noted, centered on recent public development strategies. These strategies are: (1) investment hub, (2) transit hub, (3) cultural hub, (4) the knowledge hub and (5) the political hub (Weidmann, Salama and Mirincheva, 2014:7-8). These development strategies are done with the purpose of raising investments in real estate, infrastructure, tourism, education and media (Weidmann, Salama and Mirincheva, 2014:10-11).

#### ***2.2.4.1 Social Sustainability in Mixed Use Neighborhoods***

Polese and Stren (2000) define social sustainability as:

*Development... compatible with harmonious evolution of civil society, fostering an environment conducive to the compatible cohabitation of culturally and socially diverse groups while at the same time encouraging social integration, with improvements in the quality of life for all segments of the population (Polese and Stren, 2000:15-16).*

The local government plays an integral part in achieving the goal of social sustainability, whereby municipalities can help raise social integration and equity through



economic development initiatives, social housing programs, land-use planning, infrastructural development, policing, etc.

The literature also derives conclusion concerning urban form and transportation that are compatible with the idea of environmentally sustainable cities. These include the idea of focusing on the production of more compact urban fabrics dependent on urban transit that does not confer with “the socially divisive effects of the car-oriented suburbs” (Polese and Stren, 2000:314). In addition, social sustainability entails to fair access to services and opportunities throughout cities.

Definitely all humanity is eventually under threat from the negative social, political, ecological, and economic effects of environmental change; furthermore, Caldwell’s work has made major contributions in understanding those effects. Caldwell describes this image of shared helplessness in the face of global environmental uncertainties as “our common future” (World Commission on Environmental and Development, 1988) and “our global neighbourhood” (Commission and Global Governance, 1995). This precarious situation has occurred in association with what some describe as “great material success”, “great advances in quality of life possibilities” and the “unprecedented material achievements of twentieth century” that are the trademarks of modern civilization (Caldwell, 1999:3-4,12). However that material wealth is increasingly concentrated in the hands of a few, as is the power to make significant change.

The sustainability alternatives offered to a vast portion of the world’s population are limited by the daily circumstances of their lives, and in turn those lives are limited by forces that are outside of their control, comprising the “opaque forces of the market”

(Caldwell, 1999:21). The World Commission on Environment and Development in 1987 claimed “Our inability to promote the common interest in sustainable development is often a product of the relative neglect of economic and social justice within and amongst nations” (World Commission on Environment and Development, 1988:47). Moreover, it is difficult to find any actual indication that this neglect is being solved.

Additional social pressures create obstacles in the way of sustainable choices. Nearly all governments; for example, insist on maintaining levels of military spending that are far more than the funds available for environmental repair and sustainable development (Elliott, 1998:219-241). This is a crucial and yet neglected factor affecting sustainable development, yet often it is disregarded in major analyses and evaluation of socio-environmental trends.

### **2.2.5 Mixed-Use Neighborhoods in Doha**

The current mixed-use neighborhoods in Doha lack a clear hierarchy that encourages vibrancy, vitality and sense of community. The current zoning and development practices promote the domination of single use commercial corridors such as Salwa Road, along with big-boxed shopping malls dispersed, some are difficult to access by foot or bicycle locations within and outside metropolitan Doha, for example Al Hazm Mall and Mall of Qatar. According to Doha’s Municipality Spatial Development Plan (2014), higher densities of population have been exhibited within the C-Ring Road, but outside the C-Ring the population densities are far less, with no promotion of mixed-use centers, employment hubs or corridors to promote increased densities, accessibility, convenience and vitality. This existing pattern of development has promoted low density urban sprawl, which in turn is highly dependent on the private vehicle for access to

highly centralized locations of employment, shopping, public facilities such as hospitals and education, leisure and entertainment.

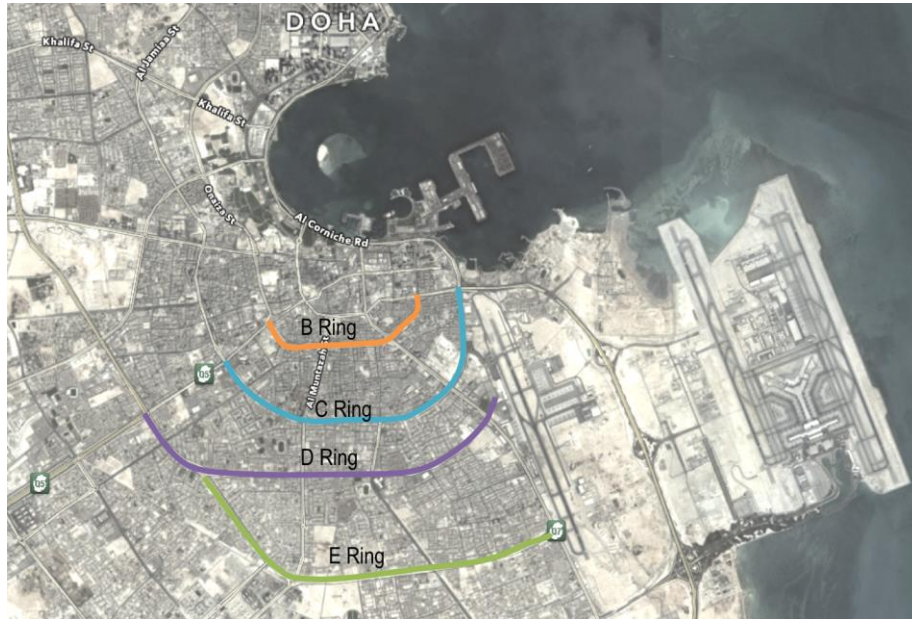


Figure 7: Location of Ring Roads in Doha, edited by Author

As for pedestrian connectivity within the city it is severely constrained. The traditional urban pattern, for example pedestrian streets, that reflect the traditional Qatari past and Arab culture have been lost to car dominated roads and scattered parking lots; which causes limited pedestrian connectivity and isolates residents from their neighboring communities.

Another barrier for the development of mixed-use neighbourhoods in Doha is the emergence of megaprojects, since the nature of the design of those megaprojects isolates them from their context and its related urban structure. In most cases the scale of those megaprojects is not compatible with its surrounding area, or the availability of necessary infrastructure services.

The historic part of Doha, which to some degree can be considered of mixed-use nature, is now characterized by overcrowding, a high number of single males and a predominately low-income expatriate population. Examples of those areas are Al Najada, Najma, Al Ghanim, Al Sadd and other areas within the B and C Rings.

## **2.3 Livability**

There are various approaches to the study of livability and each one of those approaches has its own objectives and methodological approach. Nevertheless, research initiatives on the subject of livability are pretty recent. The concept first emerged with the study of the quality of life in the 1960s, as a part of scientific studies that explored social indicators. In the 1980s, there was a rising interest in the study of the quality of life of cities, which consequently was coined as livability (Myer, 1987). There are various principles that make up livability, depending on the way it is defined within its neighbourhood context.

### **2.3.1 Definitions of Livability**

Livability refers to concerns related to the quality of life that are essential to the long-term well-being of people and communities. It involves aspects such as environmental quality, safety, health, affordability, friendliness, and the presence of neighbourhood facilities such as parks, open space, sidewalks, provisions stores and restaurants. These aspects help make neighbourhoods pleasant and easy to live in (Wheeler, 2001).

Livability concepts concerned with urban planning movements have been increasingly used in recent decades. However, there is no agreed definition of livability, each scholar describing a slightly different definition. Those differences in definitions stem from the facts that these scholars approach the concept of livability differently depending on their research background. Balsas (2004), Heylen (2006) and Wheeler (2001) all agree that livability, as a concept is hard to define and measure.

In literature, research highlights different definitions of livability with regards to urban life. The definitions used in this study are based on their relevancy to the case of mixed-use neighbourhoods in Doha and are presented in the following table.

Table 2: Definitions of Livability

Livability Definition	Source
Fit to live in.	Thesaurus Dictionary, 2016
Concerns related to the quality of life that is essential to the long-term wellbeing of people and communities.	Wheeler, 2001
Livability refers to the relationship between the person and the environment and what makes a place comfortable to live in.	Van Kamp et al., 2003
A place that is well managed and somewhat devoid of nuisance, overcrowding, noise, danger, air pollution, dirt, trash and other undesirable interventions.	Jacobs & Appleyard, 1987
Livability is related to the quality of life of the community that is built on shared characteristics the residents experience in their relative places and the surrounding conditions associated with it.	Myers 1987:108-109
Livability overall means a shelter that is healthy, safe, affordable and secure, within a neighborhood that provides piped water, sanitation, drainage transport, healthcare, education and child development.	Mitlin & Satterthwaite, 1996

In short, livability is related to space quality that an individual and a community can enjoy. Based on the definitions stated above, it can be inferred that neighborhood livability can be assessed based on the following criteria: (1) access to facilities, (2) leisure, (3) transportation systems, (4) safety and security, (5) living expenses, (6) air quality, (7) noise pollution, (8) involvement of society and (9) jobs availability and economic opportunities.

### 2.3.2 Livability in Mixed-use Neighborhoods

The livability of the mixed-use area is enhanced by a suitable amount of mixed uses in an appropriate allocation and ratio, and also facilities that cater to the neighbourhood community (Chiara et. al., 1995). These facilities include education, leisure, retail, and medical and healthcare facilities. The accessibility points for those

facilities are an integral point to livability (Pacione, 1985). Similarly, there has to be an adequate percentage of public open spaces, and other recreational amenities, within the neighbourhood, since they provide major benefits to the society, environment and economy (VCEC, 2008). Open spaces, plazas and public parks are important since they help reduce the feeling of overcrowding that mixed-use neighbourhoods tend to have. A lot of the literature reviewed emphasizes the fact that green spaces have positive effects on the health and general well-being of residents (Hartig, 2008). Providing these open spaces mean that people are more likely to meet each other, especially so in neighbourhoods with mixed use and high density of people. These social interactions can increase the sense of community within the neighbourhood. However, other scholars argue that in neighbourhoods with high density, people tend to withdraw from interacting with other people because of overcrowding, and the negative connotations that come along with it, causing each social group to be contained within themselves (Churchman, 1999).

Providing people with more opportunities to walk in the neighbourhoods will create a sense of surveillance effect on the streets, which results in an increased sense of safety (Jacobs, 1961). Nonetheless, other scholars argue that the increase in overcrowding of people working and living in the neighbourhoods will give rise to a sense of anonymity and thus, may lead to an increase in crime rates (Newman, 1972). Overall, the perceived sense of safety in the neighbourhood is often related to neighbourhood management plans and maintenance (Dempsey, et. al., 2012).

In addition, dwelling sizes in a dense urban fabric play a huge role in residents' satisfaction with their neighbourhood. While there is no definite standard regarding



dwelling size, a small dwelling size reduces the feeling of privacy and it is one of the disadvantages associated with dense urban neighbourhoods (McCarthy & Saegert, 1978), although Bretheron and Pleace (2008) argue that this feeling of compactness can be reduced by a well-thought out design that considers the socio-economic and cultural context of the residents and how they affect the overall neighbourhood experience.

Along with various mix of uses, researchers all agree that one of the most important aspects to neighbourhood's livability is the available transportation system (Vuchic, 1999). Yet, conventional approaches for transportation planning mostly considered the need to prevent traffic congestion, to allow fast automobile circulation and meet parking demands; without paying any regard to livability principles (Zhu, 2010). Thus, to enhance the livability of a neighbourhood, there have to be different transportation options available, that are accessible to people of all ages, all social groups and all income groups (Vuchic, 1999). It is believed that highly dense mixed-use neighbourhoods promote the provision of relatively higher quality public transport choices (Hillman, 1996). For the public transportation system to be well sustained in the long run it needs to be linked to well-connected pedestrian and cycling networks that are comfortable and safe for users. If there are no other transportation options available apart from private vehicles, it will lead streets to be overcrowded with streetcars, since the residents will rely on these as the only mode for them to travel, as clearly exhibited in the current situation of Doha. Traffic congestion has a lot negative effects associated with it. It increases the travel time, and cost required since it requires more fuel, and it causes a significant increase in the amount of air pollution for the people living nearby (Acioli & Davidson, 1996).

### **2.3.3 Livability Principles**

There are several principles related to livability and some of those principles are issued by the local authorities of each country, such as the case of Singapore and the United States. During a workshop held by the Urban Land Institute and Center of Livable Cities in 2012, Singapore came up with their ten principles of livability for dense cities. The workshop gathered about 62 leaders, experts and practitioners from various disciplines related to urban planning and development and they presented the following principles (ULI & CLC, 2013:13-64):

1. Aim for urban growth and renewal that are long-term. These aims are to combine long-term planning, responsive land policies, development control and good design.
2. Encourage better social interaction by embracing diversity and fostering inclusiveness.
3. Bring nature closer to the public realm through providing the city with green space to relax from the regular rush of the urban living, which in turns will mitigate heat from the sun and enhance air quality.
4. Developments of mixed-use neighborhoods that are affordable, compact, and conveniently self-sufficient and cost efficient since they have shared facilities.
5. All public spaces should include infrastructure to serve various functions to make the most of each land area
6. Make green transport and different building choices a priority through developing a public transport system that is efficient and well connected. Provide alternative modes of transportations.

7. Alleviate density with variety and add green boundaries by blending high-rise with low-rise buildings, to create a skyline that is more dynamic and reduces the sense of being in a crowded space.
8. Activate spaces for greater safety through improving the “visual access” to spaces so the community can collectively be the “eyes on the street,” helping to keep neighborhoods safe.
9. Encourage innovative and non-conventional solutions by looking at non-traditional solutions to get around the challenges.
10. Combine “3P” (people, public and private) partnerships, in which the city government and all stakeholders are to work together to certify that they are not taking actions that would negatively affect the quality of life for others.

In the United States, the US Partnership for Sustainable Communities (2006) have identified six livability principles that are necessary for each neighborhood, those principles are:

1. Deliver additional transportation options
2. Encourage equitable affordable housing
3. Boost economic competitiveness
4. Support existing communities
5. Manage and leverage federal policies and investment
6. Value communities and neighborhoods

#### **2.3.4 Livability Principles Adopted for Mixed-use Neighborhoods in Doha**

Following the literature reviewed regarding the different definitions and principles of livability it is important to revise those principles within the context of Doha

and check whether they are potentially applicable or not. Correspondingly, the following principles have been adopted with regards to Doha's mixed-use neighborhoods:

1. Endorse developments that are of mixed-use nature.
2. Encourage a wider range of housing and design options that are culturally and climatically suitable, furthermore, those options should achieve commonly accepted levels of environmental sustainability and meet the residents' and users' expectations and needs.
3. Improve the natural environment, air quality and livability of the municipality by removing harmful and polluting industries from mixed-use and residential neighborhoods.
4. Encourage the use of public transport, since the private streetcar is the dominant mode of transportation, which increases traffic congestions.
5. Provide more open spaces that help facilitate social interactions that embrace diversity.
6. Community involvement in the planning and management of the neighborhood.

## **2.4 Transit Oriented Development (TOD)**

Transit oriented development is not a recent phenomenon. At the beginning of the 20<sup>th</sup> century, in a period that preceded car ownership, there were studies that showed the relationship between urban form, and the development of cars, underground and railways routes (Knowles, 2012). After the Second World War period and until the 1970s, most Western European countries cities faced rapid urban expansion and population growth, due to the immigration of people from rural areas to cities (Knowles and Sweetman, 2004). This urban sprawl, characterized by low density, was accelerated by the quick rise in private car ownership (Knowles, 2006).

The case of Arlington County in Virginia, USA, is a typical example of how transit has begun shaping twenty-first century urbanism at a regional scale and it suggests the form that new development will increasingly take in growing other metropolitan areas. Transit services were originally intended to relieve congestion and improve air quality. This scheme has progressively reacted to regional growth patterns. The public policy in Virginia promoted this response to growth patterns by encouraging denser development around metro stations. However, real estate markets have had an even stronger influence on this development (Brown, Dixon and Gillham, 2009:140).

### **2.4.1 Transit Oriented Development (TOD) Definitions**

There is no clear definition of transit-oriented developments since it is a distinct occurrence. Nevertheless, most definitions center on having a mixed-use commercial and residential neighborhoods that are walkable and dense.

In literature about TODs, studies showcase diverse definitions of this phenomenon. Presented definitions all share common characteristics with slight

variations. The following definitions used in this research are chosen on the basis of their relevance to the case of mixed-use neighborhoods in Doha.

Table 3: Definitions of TODs

TODs Definition	Source
Mixed-use commercial and residential neighborhoods that are walkable and compact.	Arrington and Cervero (2008)
A development pattern that is focused on its proximity and reliance on high-frequency transit. TOD is medium-to-high density, and typically features a mix of uses, such as apartment units, retail space, and offices. Transit-oriented development promotes not only transit but also a more connected and safe walking and biking network.	Bishop (2015)
A broad concept that involves any development that benefits from its proximity to a transit facility and generates significant transit ridership.	Metropolitan Atlanta Rapid Transit Authority, MARTA (2006)
A type of community development that includes a mixture of housing, office, retail and/or other commercial development and amenities integrated into a walkable neighborhood and located within a half-mile of quality public transportation.	Center for Transit Oriented Development, CTOD (2013)

The definition of transit-oriented development used in this research will focus upon the concept, that it is a development positioned around and coordinated with public transportation services.

#### **2.4.2 Impacts of Transit Oriented Development (TOD) in Mixed Use Neighborhoods**

Arrington and Cervero (2008) define transit-oriented development (TODs) as mixed-use commercial and residential neighborhoods that are walkable and compact. TODs usually occur in neighborhoods that are moderately dense in the center, which spread outwards into moderately lower density developments that have a limited number of land uses, most likely residential and/or institutional buildings. They are often located

close to transit centers or public transport nodes, such as train, metro, trams or buses; consequently they are constructed to efficiently optimize access to public transport. TODs are situated within a buffer area of 800m from a transit station, since this is studied to be a suitable scale for pedestrians. Cervero and Kockelman (1997), identify this distance, because it relates to the space a person can walk in 10 minutes at 4.8km/h (3mph) and is a common estimation for the distance people will walk to get to a rail station. Thus, transit oriented developments (TODs) can be described as “a mix of uses, at various densities, within a walkable radius of a transit stop” (Erwing & Cervero, 2010). The immediate surrounding of the transit station is critical to the functional elements of the metro system and will provide access to the station, services and other facilities. The area within 400m radius of the station is known as the Transit Oriented Priority Envelope (TOPE), this area is important for the consumer experience and it is the area where the higher concentration of density and mixed uses will take place. The wider area of 800m radiuses from the station is referred to as Transit Oriented Development Area (TODA), this area will also benefit from the transit station and it will generally accommodate lower densities and a smaller variety of uses. The figure below clearly illustrates the concepts of TOPE and TODA.

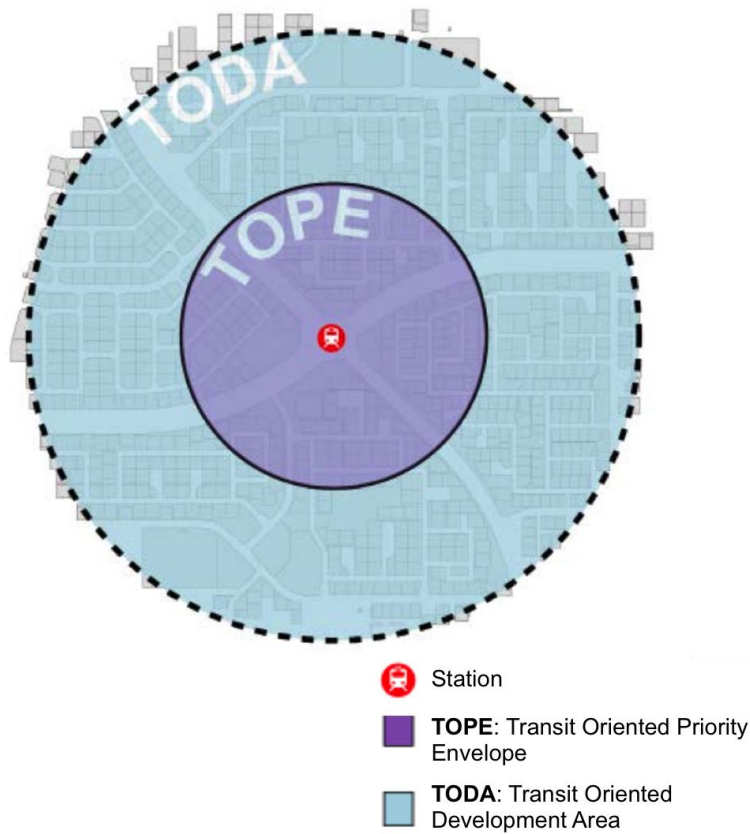


Figure 8: Means of determining priority development areas around transit stations. Source: Place Dynamix, Middle East (2011)

The literature reviewed stress on the idea that TODs can increase access to public transportation, workplaces, educational institutions, and other various opportunities and facilities by promoting transportation choices to households. Accordingly, this yields an increased transit ridership, promotes a secure and enjoyable pedestrian environment near transit stations, limits vehicles' and pedestrians' clashes and lessens traffic congestion (Besser & Dannenberg, 2005). In addition, TODs can help to reduce urban sprawls and parking requirements through encouraging shared parking and alternative means of transportation (Venner and Ecola, 2007). On a similar note, Galeo, Ribeiro and Martinez (2014), emphasise that this typology of collective strategies are important contributions to



increasing sustainable growth. Knowles (2012) considers TODs to be part of a broader smart growth towards urban development including new urbanism.

Studies on TOD identify four major factors that can help make TODs successful and are necessary for the development of lively neighborhoods. These factors are: (1) demand for real estate, (2) available land for development, (3) supportive local residents, and (4) transit line efficiently connecting to jobs and facilities (Furlan & Faggion, 2015:125). Another important point is that the area around the transit center should be well kept and provides a pleasant experience to users.

Mixed uses in TODs allow the transit service to be used for a variety of trip purposes throughout the day and week, but as a travel benefit, this is not a primary consideration for prospective TOD residents. Employment access is a primary consideration. Mixed uses, such as local restaurants, and urban design treatments, for example pedestrian pathways, are important for their amenity and design value in attracting residents and visitors/customers. TOD residents highly value “good” neighborhood design in addition to transit access to work. Urban design and the local land use mix may influence which TOD prospective residents choose to live in. Good design may also make a TOD a more desirable location to travel to (Arrington & Cervero, 2008: 7).

### **2.4.3 Benefit of TODs**

Most of mixed-use neighborhoods by definition have a wide variety of uses and shared uses within their quarters, which makes them a supportive incubator for TODs to develop. Furthermore, mixed-use neighborhoods often have a good connectivity to downtowns and employment center. One of the biggest advantages of TOD is that it

provides other modes of transport other than streetcars, in a study carried out by the World Bank (2011) it shows that Qatar ranks third in the world in terms of car ownership per 1,000 people.

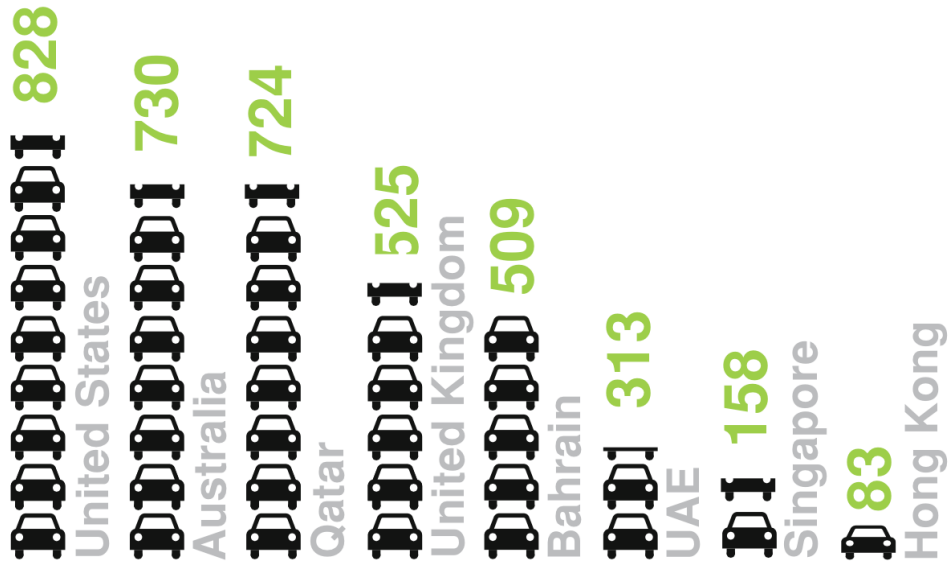


Figure 9: Car Ownership Increase per 1,000 people. Source: World Bank Motor Vehicles (2011)

There are a lot of advantages associated with TODs that both the public and private sectors can benefit from; these benefits are best summarized in the following table:

Table 4: Benefit of TOD. Source: Curtis et al., 2009:242

<b>Benefits</b>	<b>Public Sector</b>	<b>Private Sector</b>
Primary Benefits	Increase ridership and fare box revenues	Increase land values, rents and real-estate performance
	Provide joint development opportunities	Increase affordable housing opportunities
	Revitalize neighborhoods Economic development	
Secondary Benefits	Less traffic congestion and Vehicle Miles Travelled (VMT)-related costs, like pollution and fuel consumption	Increase Retail sales
	Increase property and sales tax revenues	Increase access to labor pools
	Reduce sprawl – conserve open space	Reduce parking costs
	Reduce road expenditure and other infrastructure outlays	Increase physical activity
	Reduce crime	
	Increase social capital and public involvement	

Transit oriented development can increase public transport riders, since it can transport people with a shorter travel distance compared to cars. It can revitalize the neighbourhood and the nearby retail businesses will flourish since there will an increase in people flow (footfall) from inside and outside the neighbourhood. The crime rates will decrease because of what researchers call “natural surveillance”, as people nearly always occupy the place. Furthermore, it will help in the agglomeration of economies such as labour pools and clustering of commercial activities along the transit center.

#### **2.4.4 Challenges of Introducing TODs**

The mixed-use neighbourhoods and main commercial corridors face a few challenges when trying to introduce TODs, mainly because they lack opportunistic sites, since the portion of existing undeveloped lands are typically small and shallow, making

them not well suited for infill development. For the older main streets or streets around the historical structures, there may be some issues regarding adaptability and appropriate reuse of those structures. Initially, since most of those neighbourhoods are built around the movements of streetcars, the neighbourhood will suffer from problems related to traffic- vehicle circulation and adequate parking spaces. In addition, local residents may be not open to the idea of any new developments, since it is assumed that these developments will increase traffic congestion and reduce car-parking availability in the neighbourhood. Other challenges to TOD include the huge construction cost of the TOD and the long approval process with local government.

#### **2.4.5 TOD Situation in Doha**

“The Qatar National Vision 2030 aims at transforming Qatar into an advanced country by 2030, capable of sustaining its own development and providing for a high standard of living for all of its people for generations to come.” The planned railway network will support this vision; there are four pillars to the QNV 2030 that are economic, social, human and environmental. Thus, integrated transport is a key to achieve this vision and to smart city planning. The planned Metro project will fully integrate with other public transport, current land use, future development and other routes that people want to take both current and future. This goal of integrated transport will enable future smart city planning development of mixed uses around the metro with appropriate people and buildings densities, and ultimately the delivery of a well-planned Transit Oriented Development. The National Planning Framework for integrated transport is illustrated in the figure below.

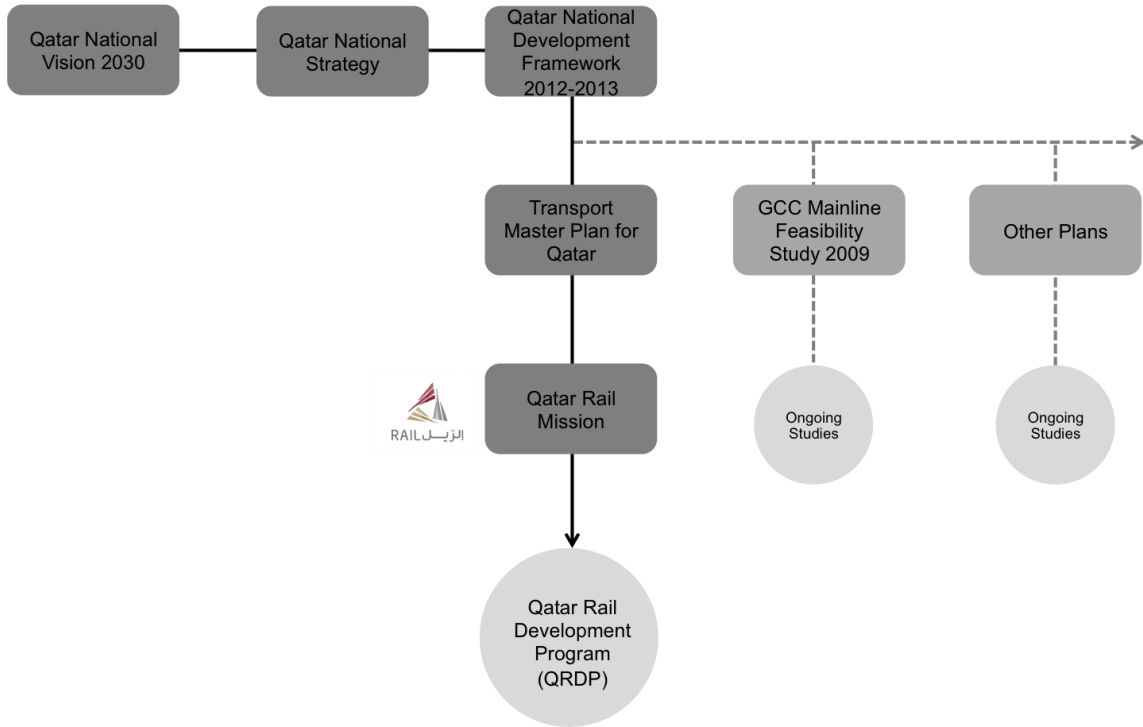


Figure 10: National Planning Framework from integrated transport. Source: Qatar Rail (2013), edited by Author

This development program is investing over \$35 billion into its metro project to construct an integrated rail network in time for the World Cup in 2022. The program includes a metro system in Doha, a Light Rail Transit (LRT), people mover system and a freight railway connected to a broader international network. This development program is summarized in the figure below.

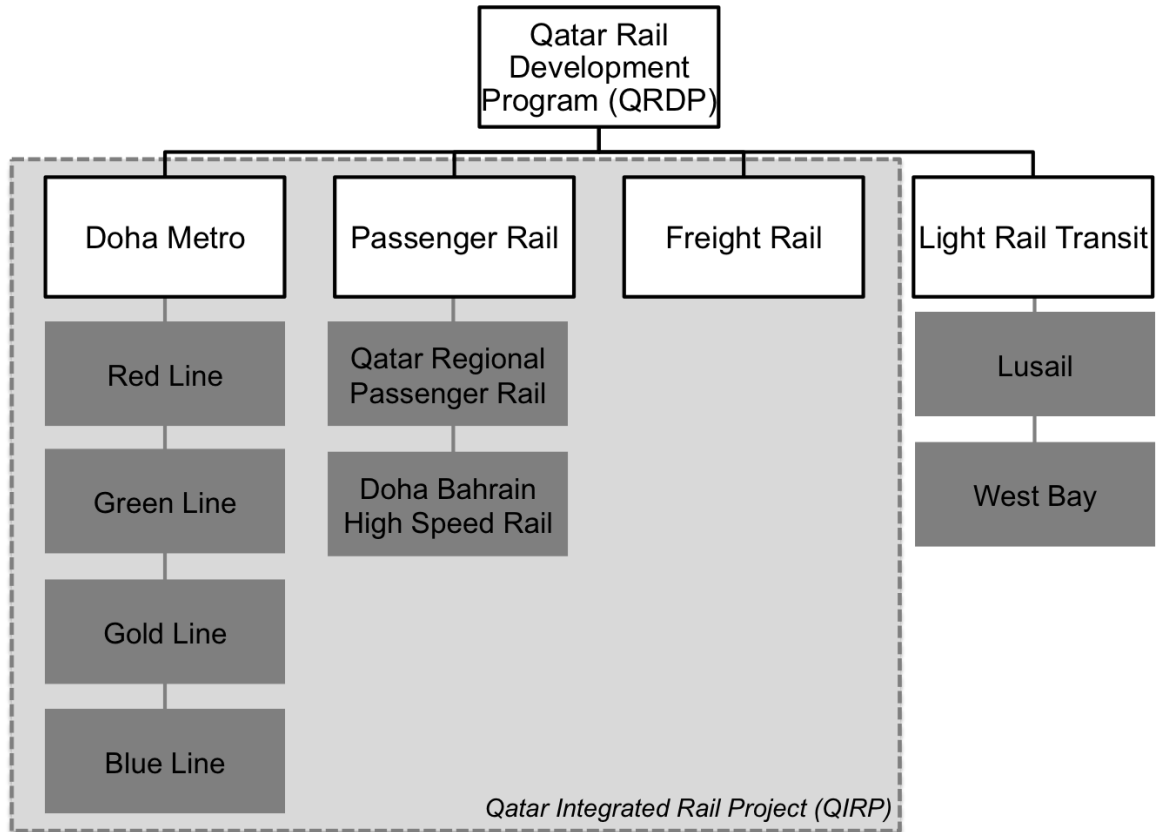


Figure 11: Qatar Rail Development Program. Source: Qatar Rail (2013), edited by Author

The new metro project strives to deliver new transportation options, to be a key contributor to the delivery of “mega events” such as World Cup, provide new impressive landmark feature to Qatar and provide an international link with the neighboring GCC countries. The completion of the metro project is planned in two phases, highlighted in Table 5.

Table 5: Phases of Qatar’s Metro Project. Source: Qatar Rail, edited by Author

<b>Metro Network</b>				
<b>Phase 1</b>		<b>Phase 2</b>		
Total Length	85km	Total Length	Additional	151km
Underground	69km	Underground		46km
Elevated	11km	Elevated		76km
At Grade	5km	At Grade		29km
Number of Stations	37	Number of Stations		56
Phasing	Construction began 2013 To be completed by 2019	Phasing		To be completed by 2026
<b>Complete Metro Network</b>				
Total Length				236km
Total number of Stations				93 Stations

The metro projects provide opportunities for Transit Oriented Development to occur, since the development adjacent to, or integrated with the metro will have mixed uses and high density, because people will use the metro for journeys from and to home, work, leisure, schools or healthcare centers. Daniel Leckel (2013) proposes that one of the future pioneer examples for TOD in Doha will be around the B Ring Station in Najma (Figure 12), mainly due to the various kinds of new developments happening around the station, these include developments such as offices, hotels, serviced apartments, residential, retail, community and cultural uses.

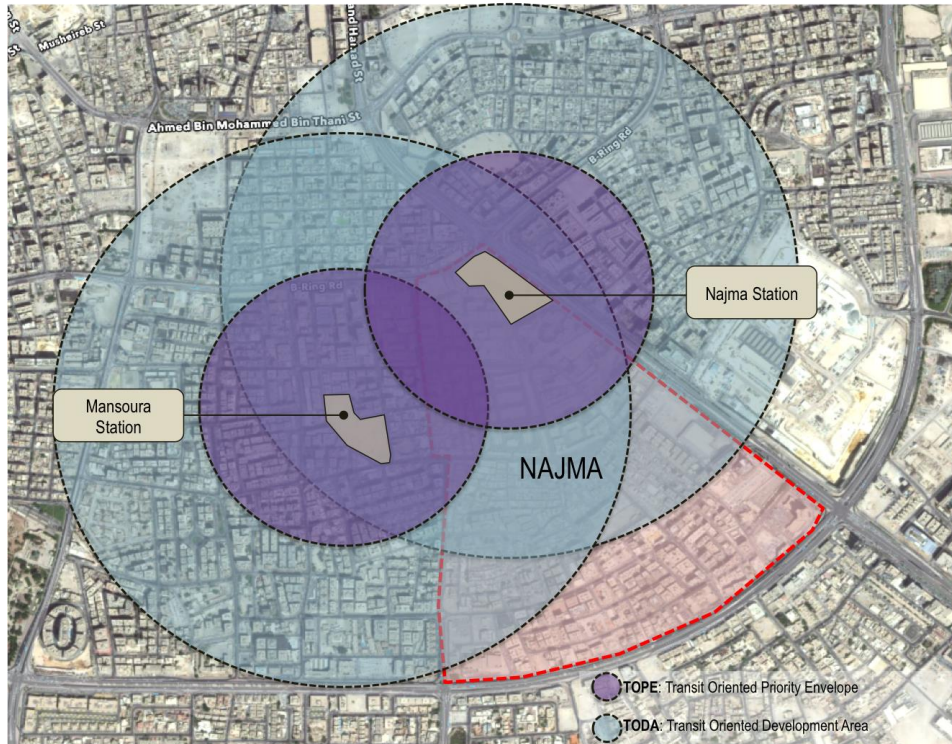


Figure 12: Najma Station Location. Developed by Author

## 2.5 Conclusion

The review of literature covered three main subjects. Firstly, the different definitions of mixed-use neighbourhoods by different scholars and the advantages the concept offers to the urban morphology as a whole; and how mixed-use neighbourhoods can be sustainable in the long run. The second subject, livability, focused on the different principles and indicators of livability in mixed-use neighbourhoods; especially important since this will help with the type of investigation carried in this study. The third subject was transit-oriented development, which is an essential issue to review with regards to the future development of mixed-use neighbourhoods in Doha.

The literature review divulged the need for an integrated urban planning process that uses inputs from several intangible dimensions, including the social aspects of the



neighbourhood such as the users' needs and their cultural backgrounds, in addition to the time variable that has to be considered to enable the neighbourhood to withstand changes and new trends.

### 3 CHAPTER THREE: CASE STUDIES OF BEST PRACTICE

The purpose of this chapter is to analyze various mixed-use neighborhoods around the world and how they developed to suit today’s requirement of modern urban living. Local, regional and international case studies were selected in order to develop a framework of adopted solutions that can be applied to the study area of this research.

#### 3.1 Case Studies description and significance

The following table provides a description for each of the selected cases studies and their significance to this research and the chosen study area in Doha. The type and scale of the selected case studies are detailed in the following table:

Table 6: Type, Scale and Significance of selected case studies to the study

<b>Case Study Name</b>	<b>Type and Scale</b>	<b>Significance to the study</b>
1. Msheireb Properties	Urban renewal project, a neighborhood plan that was renewed with improved urban design policies and guidelines.	It is within the same zone as the study area and of a similar nature with regards to previous uses and functions that existed before the urban renewal of Msheireb.
2. Al Satwa District, Dubai, UAE	A highly dense old historic neighborhood located in a prime area in relation to Dubai.	Shares similar characteristics to the neighborhoods located in Downtown Doha, especially those between the B and C Ring Roads.
3. Ala Moana, Hawaii, USA	A comprehensive transit oriented development plan that consists of vision, objectives, guidelines and policies.	Similar to Doha, Honolulu city is developing its own rail systems and drafting approaches in order to integrate the different transit nodes available with the existing land use.

### 3.2 Msheireb Properties, Doha, Qatar

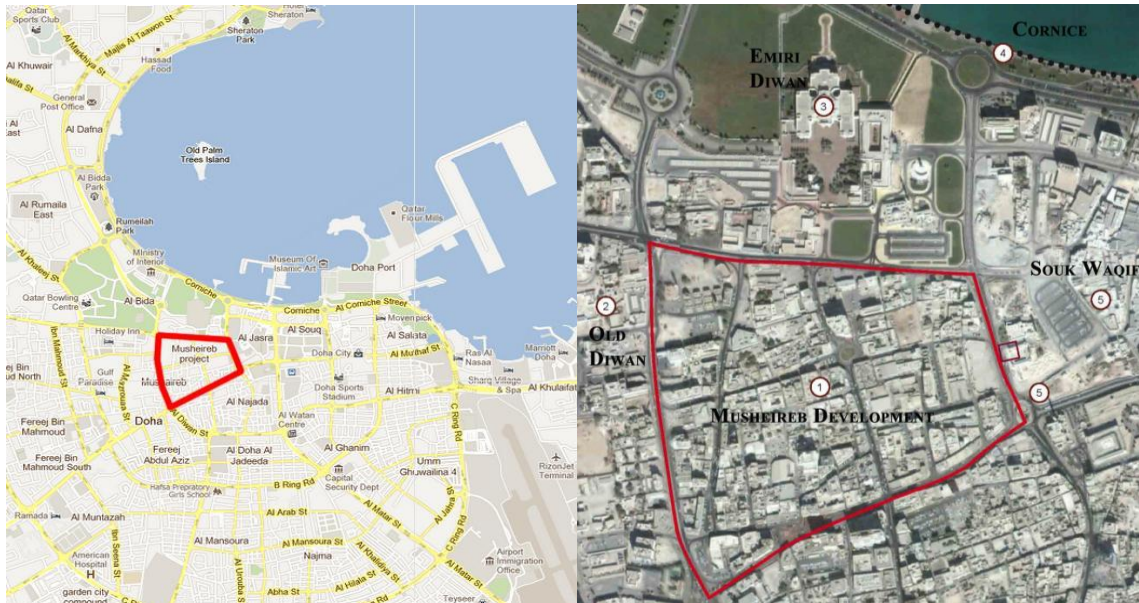


Figure 13: The Location of Msheireb. Source: Google maps, 2016

One of the megaprojects in Doha was the urban renewal of Msheireb neighborhood, where they are rebuilding the center of the city of Doha. The Msheireb project uses an approach that considers heritage, economy, environment, sustainability and social development holistically in one development project. One major aim of the project was rebuilding Doha’s center in an endeavor to revitalize the site in a way that suites modern day living while maintaining the core values of the heritage and culture of Qatari communities. The size of the development is 35 hectares (0.35km<sup>2</sup>), and it is near to the historic center of the capital city of Qatar, see figure above. It is also close to Al Koot fort and Souq Waqif, a successful redeveloped mixed-use scheme based on a traditional Qatari Souk. With regards to climate, Msheireb is situated within a desert climate with relatively high temperature and humidity throughout the year.

### **3.2.1 Goals of Msheireb Project**

One of the important missions of Msheireb project is to rebuild the center of Qatar's capital city in an approach that strengthens, modernizes and revives the neighborhood whilst keeping true to traditions, culture and heritage that were the basis of the native communities in Doha. The main goal of the Msheireb project is to build a consistent urban neighborhood offering a balanced and flexible public realm, mix of land use and social and cultural infrastructure. Other goals, as identified by the local authorities, of developing the "Heart of Doha" project are summarized as follows (Khalil & Shaaban 2012: 683):

- To reduce urban heat effect and thus, it increases the number of days in a year where it is comfortable to use outdoor spaces, moreover; the design should cater to this scheme.
- To decrease the reliance on car use and reduce congestions in the site. On the other hand, enhancing connectivity within neighboring areas.
- To reduce water demand and warrants its use and efficiency to meet the requirement for LEED accreditation.
- Optimize energy efficiency and lessen carbon emission through the neighborhood; furthermore, the general layout of the buildings should decrease the demand for cooling.
- To provide a high quality public realm that facilitates social interaction between and within different communities.
- To establish a lively local economy that focuses on local business or local industries to optimize the benefits of its site location.

- Provide schools that meets the local residents demand and to encourage other modes of transportation other than the use of the private car.
- Encourage social inclusion by providing housing for various social groups with different types of housing accommodations.
- Implement a sufficient waste and resources strategies to encourage sustainable waste management.
- Safeguard the usage of low energy and sustainable materials by establishing sustainable procurement policies for the construction and operations stages of Msheireb development.

### 3.2.2 The Msheireb Framework

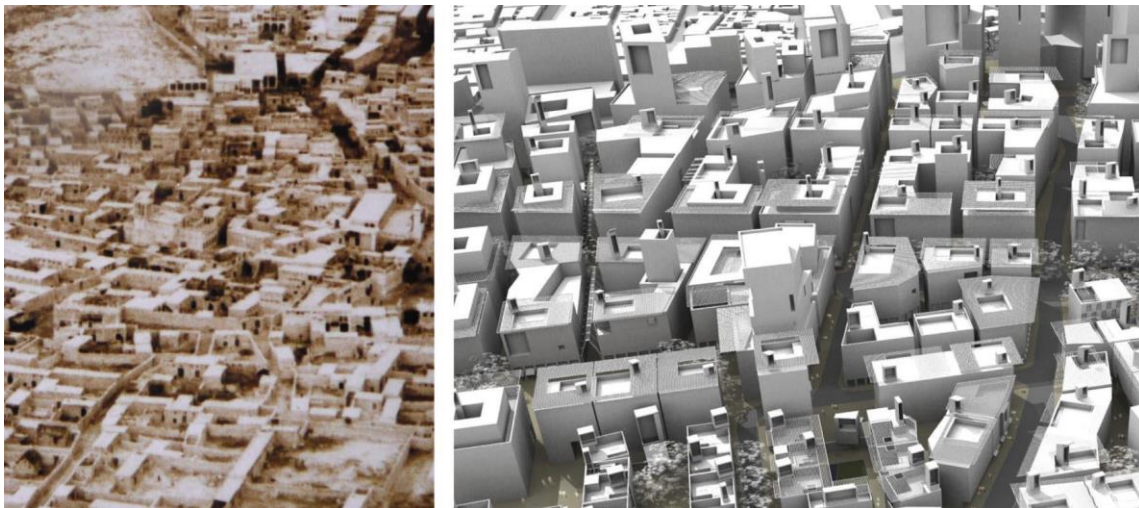


Figure 14: (a) Old Fabric of Msheireb; (b) Proposed Fabric for Msheireb Development (Doha Land, 2010)

The master plan of Msheireb is divided into 22 blocks to offer a manageable arrangement for classifying development parcels and to configure land uses throughout the site. Primary and secondary roads surround these blocks; and a hierarchy of open

spaces and pedestrian connections are provided. The Msheireb project is divided into four quarters: (1) the Diwan Quarter, which contains the new governmental buildings opposite Souq Waqif and Doha’s Cornice, (2) the Heritage Quarter, which links Msheireb to the old historic core and Souq Waqif, (3) the Retail Quarter, which spread westwards through Sikkat Wadi Msherieb and links it with the old historic retail area along Al-Kharaba Street, and (4) the Kahrab Quarter, the exclusive residential quarter that has the high profile office buildings, a school and the elegant townhouses allocated in *Fareej* - neighbourhood- clusters at the Northern end of Al-Kharaba Street.

### 3.2.3 Planning Process of Msheireb

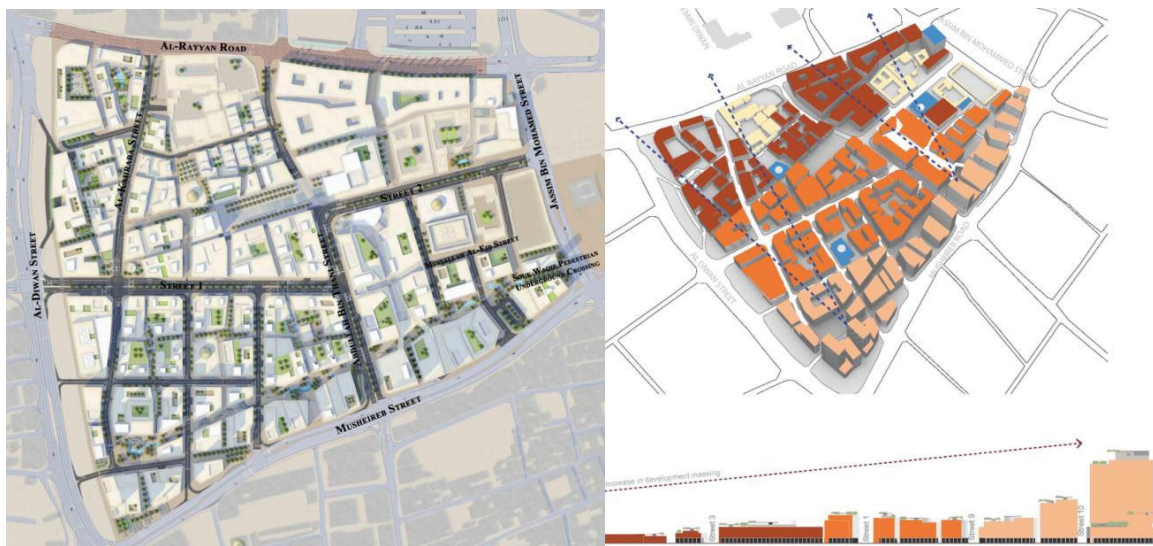


Figure 15: (a) Msheireb Development Master Plan; (b) Massing Study. Source: Doha Land, 2011

The master plan of Msheireb presents a new evolution for the urban morphology of the existing centre of Doha. It draws references from the old urban fabric of Qatar such as the ‘fareej’ concept- a common space which several families share in order to interact



with the traditional community, to build a modern city rooted in tradition. The master plan also considers an integrated basement infrastructure for services, allowing narrower, shadier streets at ground level to be created (Khalil & Shaaban 2012: 683-684).

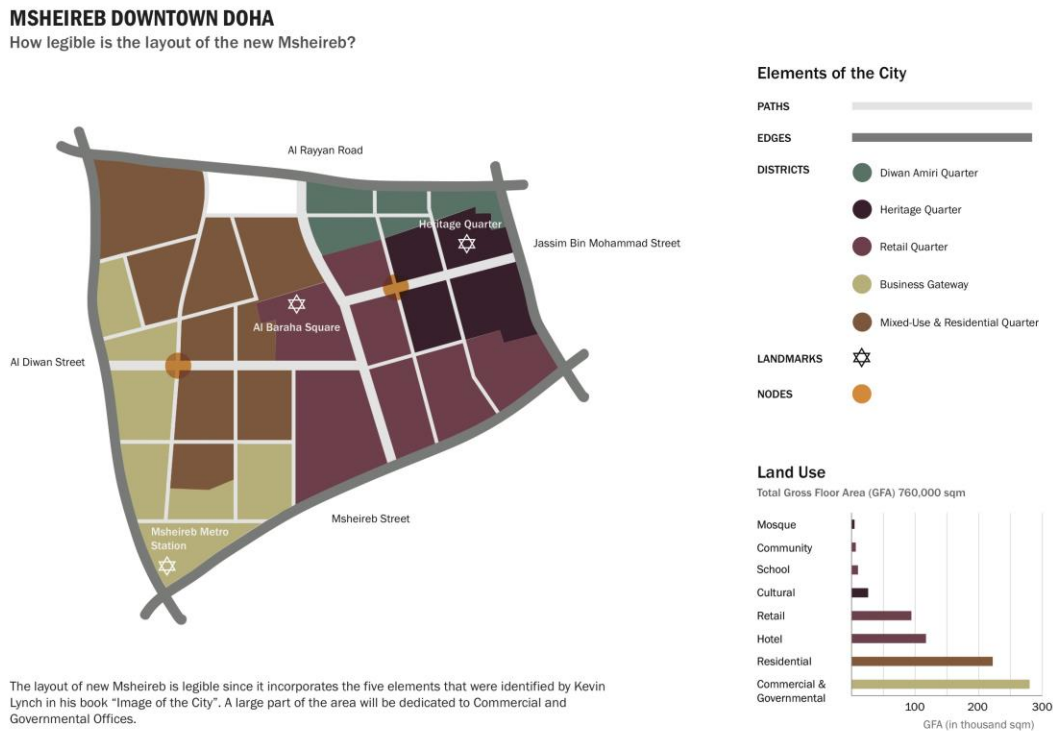


Figure 16: Msheireb Layout. Source: Msheireb Properties, 2016

The conceptual master planning for Msheireb started in early 2004 along with five phases of construction. Each phase of construction will take a period of eight years, and accordingly the first phase of construction was expected to be finalized by 2012. The first phase, known as the 'Diwan Amiri Quarter', exhibits a mixture of three major governmental buildings: (1) The National Archive, (2) A museum to go along the heritage sites, and (3) an Eid Prayer Ground. The following four phases are to include a total of 226 buildings which comprise of a 5-star oriental hotel with three other traditional

hotels, an exclusive commercial office space, an assembly of several residential building types, and an extensive selection of retail shops and restaurants, all with a height limit of 3-30 stories. In addition, there is a significant focus on arts and community through establishing a cultural forum, schools, mosques and nurseries; furthermore, a two level basement for services and private parking space. For detailed information on the different buildings typologies present in Msheireb refer to the table below.

Table 7: Distribution of facilities by area and percentage (Doha Land, 2011)

<b>Typology</b>	<b>GFA (m<sup>2</sup>)</b>	<b>GFA (ft<sup>2</sup>)</b>	<b>Percentage</b>
Commercial and Government Offices	280,000	3,014,000	36.9%
Retail	94,000	1,012,000	12.3%
Hotel	117,000	1,259,000	15.4%
Residential	222,000	2,390,000	29.2
Community, Cultural, School, Mosques, Museum	47,000	506,000	6.3%
<b>Total</b>	<b>760,000</b>	<b>8,181,000</b>	<b>100%</b>

Since the one of the objectives of Msheireb is to reduce the reliance on private cars, it encourages other forms of transportation by improving walkability within the site, increasing the number of bus stops and routes within and from the site, and through the (now under construction) metro station toward the southern part of the neighbourhood.

For walkability considerations, there is a strong emphasis put on the people movement within the site through providing well-connected pedestrian links for primary and secondary pedestrian paths within Msheireb, as seen in the following figure.





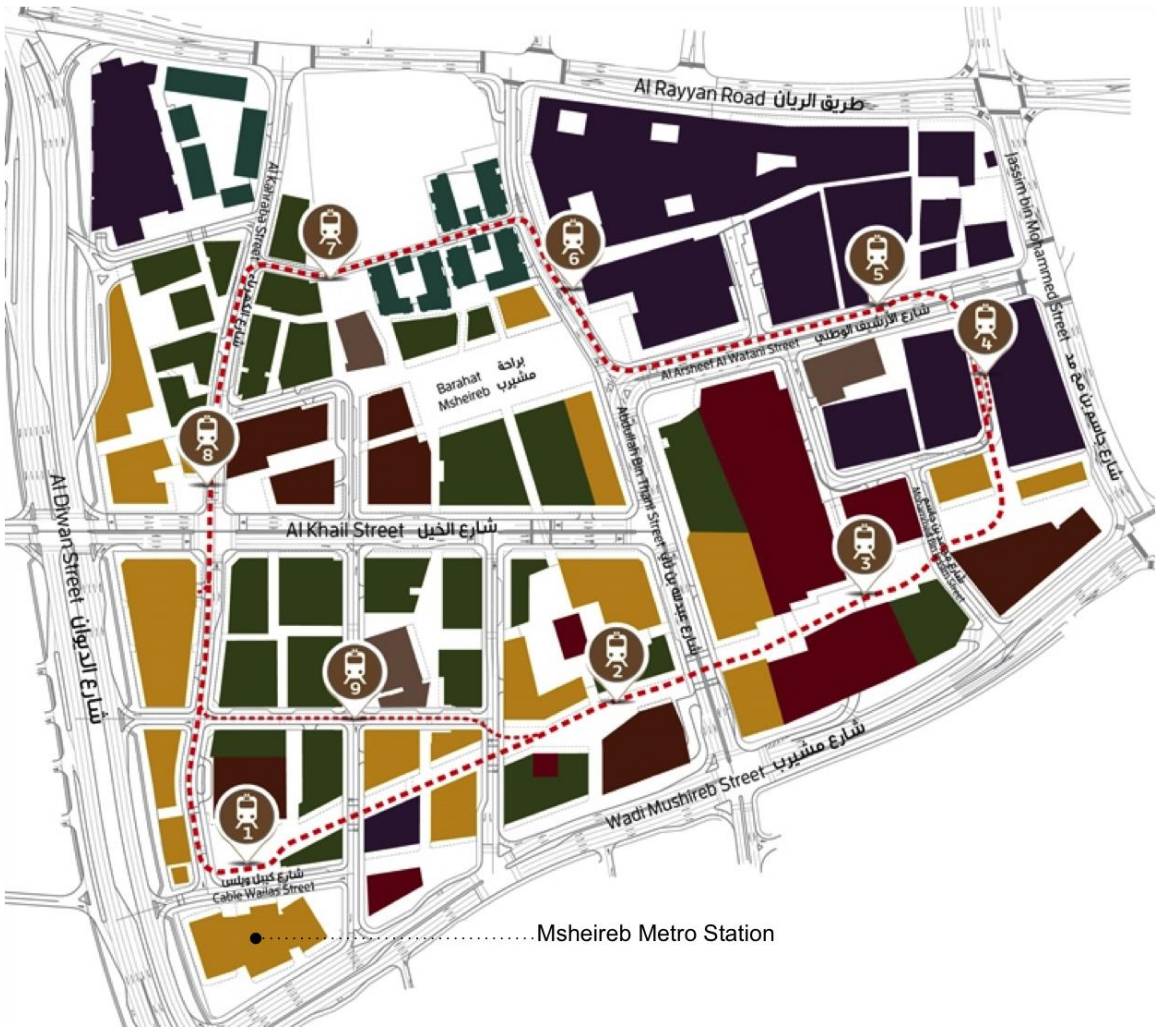


Figure 18: Msheireb Bus stops map and Metro Station. Source: Msheireb Properties, 2016

### 3.3 Al Satwa District, Dubai, UAE



Figure 19: Al Satwa District Location in Dubai, UAE. Source: Google Maps, 2017

Al Satwa is a district located in Dubai, United Arab Emirates, containing a high density of private residential dwellings and retail outlets. It is bounded by Bur Dubai, an old historic District, towards the southwest; close to Sheikh Zayed Road, the longest highway in the Emirates; and Jumeirah towards the north. According to Dubai Statistics Center (2015) the total population of Al Satwa is 37,872 with an area of 2.7km<sup>2</sup> and a density of 14,026.7 inhabitants per 1km<sup>2</sup> as of December 31<sup>st</sup> in 2015. Initially, the Bloushi tribes, Iranian immigrants that settled in Dubai, were the main residents of Satwa and as the government started to provide better housing options for Emirati nationals to stay there, few were found to reside in Satwa. In contrast, now most of Satwa's population are South-East Asians. In fact it has one of the largest South East Asian communities in Dubai, mostly Filipino nationals. As a result, most of the Filipino communities refer to Satwa as mini-Manila, after the capital of the Philippines.

Significant landmarks in Satwa include Satwa Grand Mosque, the Iranian hospital and Al Satwa bus terminal.

### **3.3.1 Goals of Al Satwa District**

The initial goal for developing Satwa was to provide locals with affordable housing. However, in recent years the goals have been expanded to include the following:

- Provide low-income locals with affordable housing
- Preserve neighborhood identity and diversity
- Provide a variety of housing options
- Support the area with an integrated transportation network that is well connected to other areas in Dubai

### **3.3.2 Al Satwa Planning Framework**

The district of Satwa is associated with low-income users, nowadays mostly low-income migrant workers. Initially, Al Satwa was planned as a suburban residential area for the low-income local population of Dubai in the 1960s. The framework consisted of identical and repetitive plots of houses that were provided by the local government of Dubai. Ultimately in the 1970s and 1980s, the initial local population of Satwa relocated to other parts of the city. Presently, a small group of Emirati locals still occupy a few of those houses (Elshestawy 2006:106). There were plans to redevelop the area in 2009, but these plans were halted after the design stage, due to an argument that Satwa is one of the few remnants of old Dubai and some would like to preserve it as it is instead.

One of the biggest advantages of Satwa is that it is situated within a district that has high level of commercial activity and which has access to a number of public transportation options such as metro stations and bus stops, which draws people from all



over the city, contributing to the feeling of crowdedness in Satwa, particularly at the weekends. It provides a total of 5 major bus stops, within the site and adjacent to 3 metro stations, as seen in the following figure.

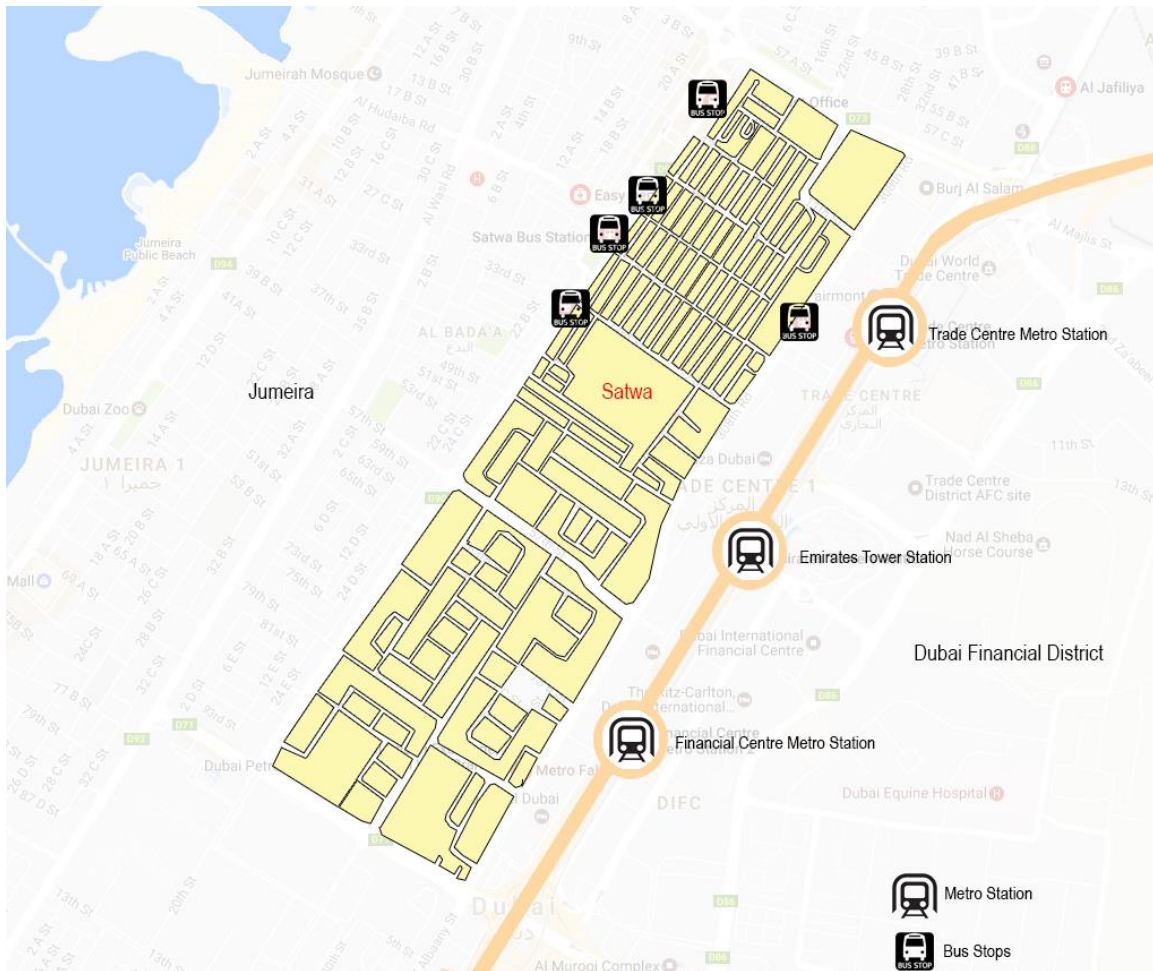


Figure 20: Satwa Public Transit. Source: Google Maps 2017, edited by Author

One of the attractions of Satwa is the commercial activity in the district that caters to the ever-moving transient population. It includes cafes, restaurants and newspaper stands that display mostly newspapers and magazines written in Hindi. In addition, there are some outdoor seating areas provided, and food and drinks are being served in these

places. Most of the cuisines are Southeast Asian dishes, which remind the migrant communities of home (Elshestawy 2006:106-107).



Figure 21: Examples of street strips located in Al Satwa. Source: Dubai Thoughts, 2008

The figure above shows some examples of streets strips in Al Satwa with wide pedestrian pathways and natural shading provided by adjacent buildings. The buildings facing main streets are mainly of commercial use on the ground floor and residential apartments on the upper floors. Back in 2008, pedestrian crossings were not clearly highlighted, and for an area as busy as Satwa there were a significant number of jaywalkers, which caused a huge issue in terms of safety. Furthermore, Dubai Police Traffic Department (2009) statistics revealed that there was 13% increase in accidents involving pedestrians, thus they decided to issue a fine directed toward any jaywalking activity as a part of the pedestrian safety awareness campaign. Ala Moana, Hawaii, USA

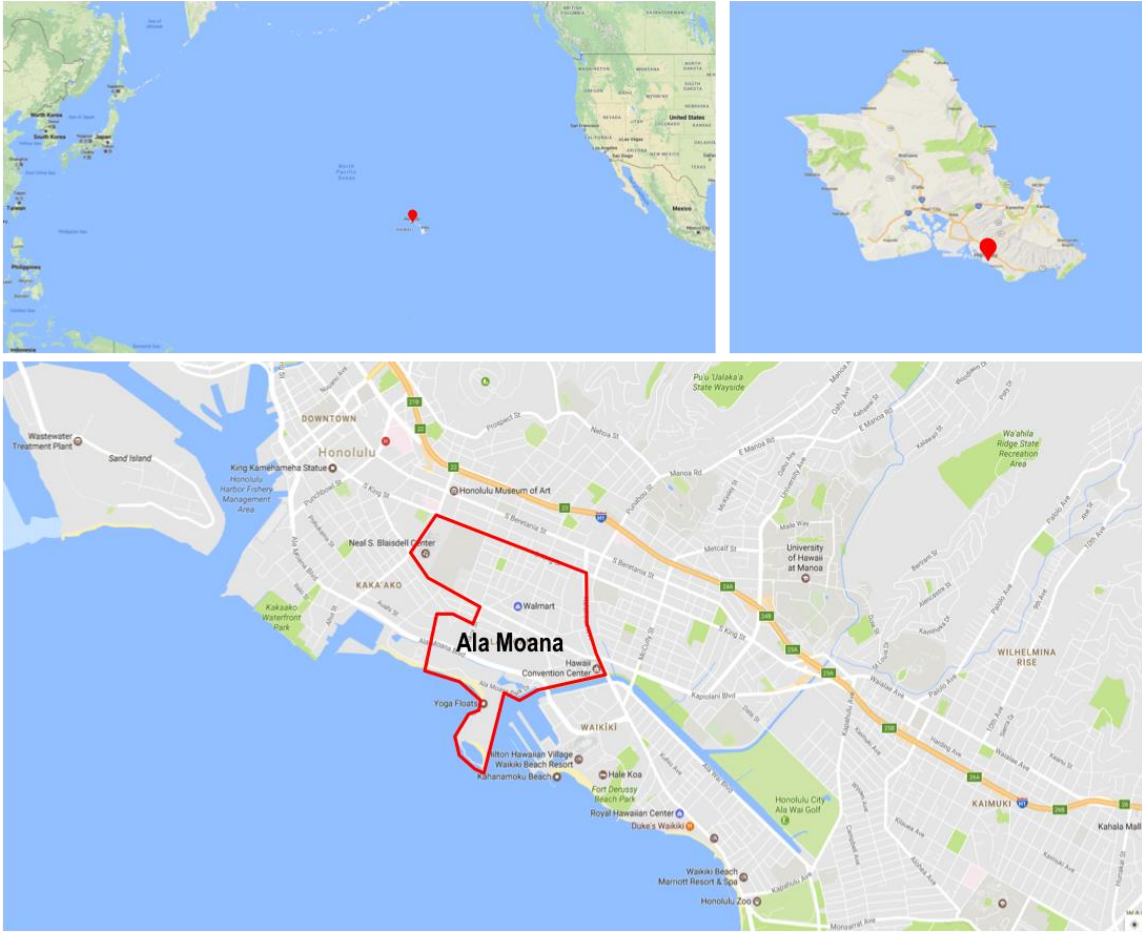


Figure 22: Ala Moana District Location in Honolulu, Hawaii. Source: Google Maps, 2017

Ala Moana is a mixed-use neighborhood located in Honolulu, Hawaii. The city of Honolulu has a long history of public transit and currently, it has one of the most successful bus systems in the whole United States. In addition to the streetcars, rail transit systems were re-introduced into the city by supporting neighborhood planning around the system's rail stations that also includes the Ala Moana Center station; the total span of the rail system is 20 miles (32 kilometers). The district and station of Ala Moana are a part of a planned rail system that includes 21 stations (Figure 23) and it is one of the most urban and complex neighborhoods along the railway corridor. Therefore, the purpose is to use most of this system to benefit the community, putting an emphasis on

transit oriented development, which will support transit ridership, enhance pedestrian access and fund neighborhood improvements.

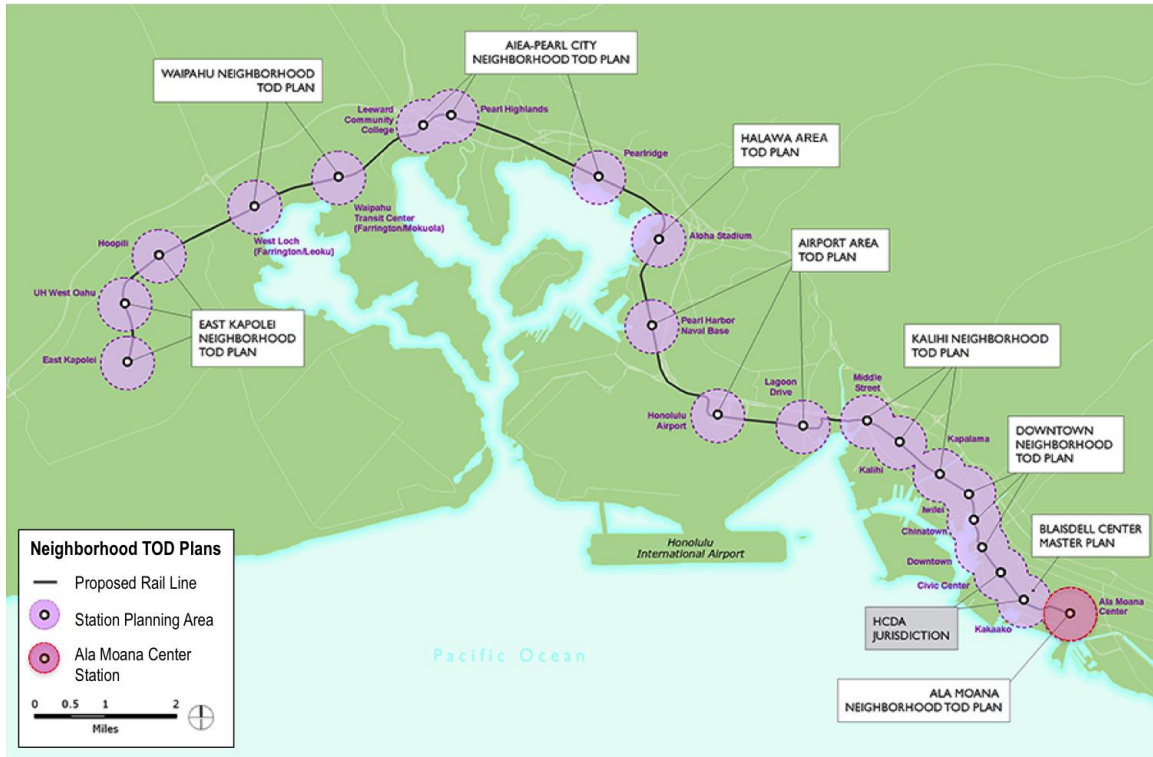


Figure 23: Honolulu Neighborhood TOD Plans. Source: Ala Moana Transit Oriented Development Plan, 2016.

### 3.3.3 Ala Moana Vision and Goals

According to Ala Moana Transit Oriented Development Plan (2016), Ala Moana is “envisioned as a livable urban community and a model for walking, biking and transit usage”. Thus, the main goals for the development of Ala Moana neighborhood were formulated as follows:

- To provide residential diversity
- Support a mixture of commercial activities



- Develop open spaces that are usable
- Complete and wholesome streets
- Create intermodal connectivity
- Facilitate cultural programs and public events
- Encourage public-private partnership

### **3.3.4 Ala Moana Framework**

The city of Honolulu partnered with the US Department of Transportation Federal Transit Administration to build the Honolulu Rail Transit (HRT) project, which will develop rail transit systems to the island of Hawaii. It will be an elevated rail system that will connect residential districts to employment centers. The main objective of this project is to improve mobility, support various transit options and to encourage development projects. Simultaneously, the city is planning a series of transit oriented development projects that will integrate existing land uses around the planned rail system and to other transit nodes. The first scheduled operation for the rail system will be in 2020. In the case of Ala Moana neighborhood, the transit oriented plan will help the development of the area through ensuring the benefits of the community first and foremost, especially since the early phases relied heavily on the community's input and their requirements. The Ala Moana station is expected to have the largest amount of ridership; the predicted amount is more than 22,000 riders per day. However, most of the riders are expected to arrive by bus to the station; thus the connections from the bus stops to the rail stations have to be well thought out. Many bus routes will be re-evaluated before the launch of the rail system and important considerations will be given to the bus stops waiting areas and the amenities provided around the transit nodes, and as for

redundant bus routes they will be converted to feeder routes. The following map shows the project's transit network of Ala Moana.



Figure 24: Ala Moana Transit Network. Source: Ala Moana Transit Oriented Development Plan, 2016.

The urban district of Ala Moana features a balance of residential and commercial uses, which are reinforced by a wide variety of civic institutions and services for the community. The usage of civic institutions and community services promotes local and tourist economies by providing major shopping nodes and commercial corridors. In addition, residents of Ala Moana are drawn by the different housing options, services and

shopping that meets the day-to-day requirements. Others land uses in Ala Moana are highlighted in the following land use map.



Figure 25: Existing Land Use of Ala Moana. Source: Ala Moana Transit Oriented Development Plan, 2016.

### **3.4 Comparative analysis and adaptive solutions**

The selected case studies have different approaches in revitalizing the area and to suit residents' needs. The objectives of each case studies address those requirements. It is important to compare the different approaches presented in the case studies, in order to develop a framework that is well tailored to the nature of mixed use neighborhoods in Doha and particular to the selected study area. The case studies are compared to each other to generate goals and solutions that will help enhance the livability of mixed-use neighborhoods in Doha. The following summarizes how the selected studies contributed to this research:

- Developing a set of adapted goals that is suitable to the context of mixed use neighborhoods in Doha
- Developing a comprehensive design framework with regards to the livability principles established in this research
- Learn from past experience in regards to urban development projects in mixed use neighborhood
- Learning how and when to apply the use of digital graphics, illustrations and other visualization tools to support the topics discussed.

### 3.4.1 Comparative Analysis on the selected case Studies

The case studies showcase important elements that can be adapted to the context of the study area; however, there are other more negative elements that the study area should learn from. Thus, a pro and con analysis was developed for each example, as presented in Table 8.

Table 8: Case Studies Pros and Cons

Case Study	Pros	Cons
1. Msheireb Properties	<ul style="list-style-type: none"> <li>• Development of Doha's Downtown, since Msheireb is located right at the center of Doha.</li> <li>• Adherence to international and local sustainability standards.</li> <li>• Well-connected pedestrian network within the site.</li> </ul>	<ul style="list-style-type: none"> <li>• Completely demolished the old urban fabric of Msheireb</li> <li>• Relies solely on government funding</li> <li>• Previous residents were not involved in the decision making process</li> <li>• Lacks diversity in housing options</li> <li>• High-rise buildings are placed on the edges of the neighborhood, which blocks view to and from the area.</li> </ul>
2. Al Satwa District	<ul style="list-style-type: none"> <li>• Highly dense urban fabric</li> <li>• Provision of alternative modes of transit other than streetcars</li> <li>• One of the few remnants of old Dubai</li> <li>• High commercial activity</li> </ul>	<ul style="list-style-type: none"> <li>• Lack of sufficient road crossing and pedestrian walkways.</li> <li>• It does not attract local population</li> <li>• Insufficient planning for street furniture</li> <li>• Lack of community facilities</li> </ul>
3. Ala Moana Neighborhood	<ul style="list-style-type: none"> <li>• Involving the community in the decision making process</li> <li>• Transit nodes are well-connected to each other</li> <li>• A mixture of land uses</li> </ul>	<ul style="list-style-type: none"> <li>• Currently, the neighborhood seems to be dominated by commercial activities instead of residential.</li> <li>• Although one of the goals is to provide a variety of housing options that is affordable for different groups of people it is yet to be achieved.</li> </ul>

Some lessons can be learned from these examples, such as:

- Avoid focusing on attracting one social group or class and provide affordable housing alternatives for all type of people and all ages
- Integrate modes of transit together in a well-connected network to ensure safe mobility within the site and to neighboring sites
- Create a mixture of uses that conveniently meets residents everyday requirements
- Engage residents in decision making processes and/or consider their wants, needs and aspirations in the design
- Support the local economy and encourage private and public partnership.

An additional comparison can be made for each case study according to the sustainable urbanism parameters established in Farr's (2008) book about sustainable urbanism. Those parameters are:

- Density, how compact the neighborhood is.
- Sustainable corridors
- Human access to nature, referred to as Biophilia
- High-performance buildings and infrastructure
- Sustainable neighborhoods, that have:
  - Identifiable center and edge to the neighborhood
  - Walkable size
  - Mix of land uses and housing types
  - Integrated network of walkable streets

- Special sites for civic purposes.
- Time

Accordingly, the following table presents a comparison and typology matrix for those sustainable urbanism parameters in relation to the selected case studies:

Table 9: Case Studies Comparison and Typology Matrix

<b>Sustainable Urbanism Parameters</b>	<b>1. Msheireb, Doha</b>	<b>2. Al Satwa, Dubai</b>	<b>3. Ala Moana, Honolulu</b>
Density		X	
Sustainable corridors	X		X
Human access to Nature			X
High performance buildings and infrastructure	X		X
Identifiable edge and center to the neighborhood	X	X	X
Walkable size	X	X	X
Mix of land uses and housing types	X	X	X
Integrated network of walkable streets	X		X
Special sites for civic purposes	X		X

### 3.4.2 Goals Adaptable to the Context of the Study Area

The selected case studies had several planning goals that helped to revitalize the area. Some of these goals are extracted and adapted to the context of the study area of this research as presented in Table 10.

Table 10: Adapted goals to the context of the study area

Case Study	Goals	Adapted goals
1. Msheireb Properties	<ul style="list-style-type: none"> <li>• Reduce urban heat effect</li> <li>• Decrease the reliance on car use</li> <li>• To reduce water demand</li> <li>• Optimize energy efficiency to decrease the demand for cooling.</li> <li>• Provide a high quality public realm</li> <li>• Establish a lively local economy</li> <li>• Provide schools that meets the local residents demand</li> <li>• Encourage social inclusion</li> <li>• To implement a sufficient waste and resources strategies</li> <li>• To safeguard the usage of low energy and sustainable</li> </ul>	<ul style="list-style-type: none"> <li>• Establish a lively local economy and encourage private and public partnership.</li> <li>• Support the area with integrated transportation network to decrease the reliance on car use.</li> <li>• Provide a high quality public realm</li> <li>• Facilitate cultural programs and public events and encourage social inclusion</li> <li>• Preserve neighborhood identity and diversity</li> <li>• Provide a variety of housing options</li> </ul>
2. Al Satwa District	<ul style="list-style-type: none"> <li>• Provide low-income locals with affordable housing</li> <li>• Preserve neighborhood identity and diversity</li> <li>• Provide a variety of housing options</li> <li>• Support the area with integrated transportation network</li> </ul>	
3. Ala Moana Neighborhood	<ul style="list-style-type: none"> <li>• To provide residential diversity</li> <li>• Support a mixture of commercial activities</li> <li>• Develop open spaces that are usable</li> <li>• Complete and wholesome streets</li> <li>• Create intermodal connectivity</li> <li>• Facilitate cultural programs and public events</li> <li>• Encourage public-private partnership</li> </ul>	



### 3.4.3 Design Framework Adaptable to the Context of the Study Area

The following figure shows the adapted urban design framework to the context of the study area. This framework was formulated from the analysis done on each case study and by selecting suitable urban design elements that can be considered for the recommended scenario of the study area.

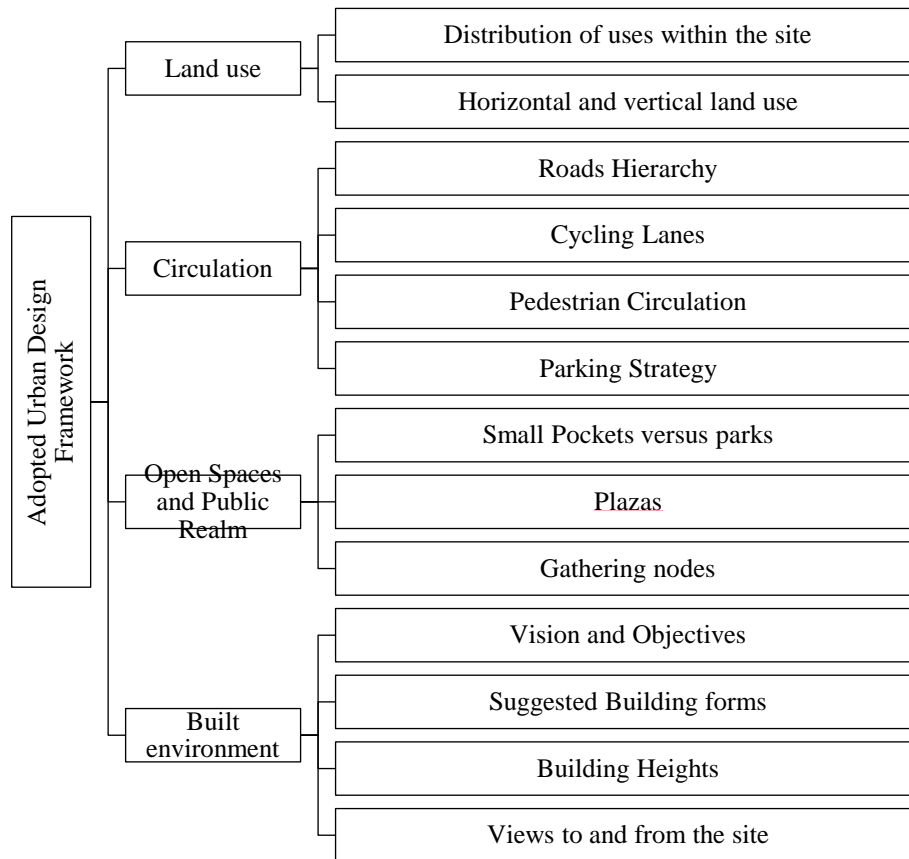


Figure 26: Urban Design Framework Adapted to the Context of the Study Area

### 3.5 Conclusion

The selected case studies provide helpful guidelines to analyze livable neighborhoods around the world. These case studies promote the usage of a variety of

land uses and transportation systems. Therefore, the significance of these studies is to extract helpful design principles that are used nowadays in support of livability.

The Msheireb example, in particular is helpful since it is located within the B and C Ring Roads and is a prominent example of an urban renewal project that happened in downtown Doha. The consequences of this project are yet to be studied since, as of now, it is still not fully occupied. As for Satwa, it is one the few remnants of the old urban fabric of Dubai that still exist today, and it exhibits similar characteristics to some neighborhoods here in Doha. Attempts at an urban development project in Satwa were well underway in 2009. However, they were halted later indefinitely in an attempt to preserve the area's general characteristics and to not push away current residents. Lastly, the third case study analyzed the neighborhood of Ala Moana in Honolulu, Hawaii. The city of Honolulu invested a lot of resources in the developments of the TODs, as it is believed it is the best approach to integrate various transit nodes with the existing land use, which will have a lot of positive influence on the local economy.

The comparative analysis compares the case study to each other and analyzes the pros and cons of each case study. After that a comparison and typology matrix is generated based on Farr's (2008) sustainable urbanism parameters. Once the analysis is completed, a list of lessons learned, adapted goals and design framework adapted to the context of the study area are formulated to further help analyze the study area of this research.

## 4 CHAPTER FOUR: METHODS OF DATA COLLECTION

### 4.1 Methodological Approach

This investigative research uses both qualitative and quantitative methods for data collection, which are utilized to achieve the objectives of this study. Those methods include questionnaires, interviews with field professionals, observations, walkthrough assessment and morphological analysis conducted on the urban fabric and building types in Najma. From the literature reviewed several data collection methodologies were presented depending on the subject, the methodologies used by previous researchers can be categorized as follow:

1. Researches who investigates issues of mixed-use neighborhood, used the following methods:
  - Interviews with field professionals.
  - Theoretical analysis of different urban planning theories and how do they apply in real life situations.
  - Case Studies
2. Researches who investigates neighborhood livability, used the following methods:
  - Observations to study the different indicators of livability in the neighborhood in terms of physical, functional, social and perceptual aspects.
  - Walkthrough assessments by developing a checklist to assess the livability indicators in a neighborhood.
  - Questionnaires were used to analyze users satisfaction with their neighborhood and how do they use it in a daily basis.

- Interviews with both filed professionals and neighborhood users.
3. Researches who investigates the phenomenon of transit oriented development (TOD), used the following methods:
- Case studies to investigate how transit oriented development impact the urban morphology of the neighborhood.
  - Observation to evaluate the effects of transit oriented development on the urban form of the neighborhood.

Accordingly, the data collection methods used in this research is summarized in the following table.

Table 11: Selected Data Collection Methods

<b>Method</b>	<b>Purpose</b>
Site Analysis	To analyze the condition of Najma’s existing built form and public realm.
Morphological Analysis	To analyze the morphological evolution of Najma and how it developed to the way it is today.
Filed Observations	The purpose of the observations carried on the site selected, is to analyze the physical, functional, social and perceptual aspects related to Najma.
Interviews	The purpose of the interviews is to get some professional input regarding the issue for mixed-use neighborhoods in Doha.
Questionnaires	To assess the level of residents and users satisfaction and usage of the selected neighborhood.
Walkthrough Assessment	To assess the mixed-use neighborhood based on livability principles identified in the reviewed literature.

## 4.2 Case Study Selection

A case study is selected for in-depth understanding and exploration of livability aspects in mixed-use neighborhoods in Doha. For this research, Najma area has been selected. The reason why Najma is selected is because it is located in the inner city of

Doha, of a mixed-use nature, built form character and general demographics of the area. In the 1980s, Najma went through a rapid growth based on laissez faire that produced a neighborhood with several points of crisis. More detailed analysis on Najma is done in the next chapter.

### 4.3 Data Collected from Secondary Sources

The data collected from secondary sources include maps and statistics for Najma. All the historical aerial photos and Municipality Spatial Development plan documents were taken from the Ministry of Municipality and Urban Planning MMUP. Population census and population by gender were taken from Qatar Statistics Authority. Collected historical maps were traced using AutoCAD and overlapped together to compare and contrast. Other data collected are listed in the table below.

Table 12: Data Collected from Secondary Sources

<b>Type of Data</b>	<b>Source</b>
Historical Aerial photos and satellite maps	MMUP
Population census	Qatar Statistics Authority
Planning policies and regulations	MMUP
Bus stops and taxis	Ministry of Transportation
Metro stations	Qatar Rail
Neighborhood spatial planning	MMUP

### 4.4 Primary Data Collection Tools

#### 4.4.1 Site Analysis

An initial site visit was conducted to assess the general character of the neighborhoods and condition of the built form; it helped in formulating the research questions and the direction that this research undertakes. Later on, it was followed by a

series of site visits to carry on the different methodological approaches identified in this research.

#### **4.4.2 Morphological Analysis**

The morphological analysis was done through collecting historical maps of from the Ministry of Municipality and Urban Planning (MMUP). The maps collected consist from aerial images and satellite maps from the 1960s to present day Najma. The analysis is done through tracing the historical structure of the neighborhood to generate information about the urban fabric of Najma and how it developed. Morphological analysis retrace signs that are permanent through the transformation occurred in the urban fabric, like old corridors connecting the center to main territorial points, radial roads used for the implant of original settlements in the study area, presence of obstacles and natural topographic features.

Most of the listed forms do not have evidence in the historical archives or in the memory of the inhabitant, but are marked in the palimpsest of the urban fabric.

#### **4.4.3 Field Observations**

Several site visits were conducted to assess the physical, functional, social and perceptual aspects of the neighborhood. Certain neighborhood characteristics were observed during site visits such as the available transportation options, public amenities, existing built form and setbacks, safety, accessibility, open spaces and parks. These observations included a photographic survey carried around and within the neighborhood.

#### 4.4.4 Walkthrough Assessment

The walkthrough assessment is conducted based on adopted livability principles for Doha extracted from reviewed literature. The assessment is done based on a scale from 1 to 5, 1 being highly inappropriate and 5 highly appropriate. This scale is to measure the situation of the identified livability indicators for mixed-use neighborhoods within the context of Doha. Then, an average is taken for each principle to properly gauge the existing situation of mixed-use neighborhoods in Doha in terms of livability.

Table 13: Walkthrough Assessment Matrix used to evaluate livability of Mixed-use Neighborhoods in Doha

Livability Principle	Indicator	Status				
		Highly Inappropriate (1)	2	3	4	Highly Appropriate (5)
1. Endorse developments that are of mixed-use nature.	Density of mixed-uses within the neighborhood	1	2	3	4	5
	Density of buildings that adopt more than one use					
	Growth of local business					
	Building heights and sizes					
	Distance from one building to another along the same street					
2. Encourage a wider range of housing and design options that are culturally and climatically suitable, furthermore, those options should achieve commonly accepted levels of environmental sustainability and livability expectations.	Wide range of housing options					
	Affordable housing for all income groups					
	Residential buildings setbacks from the street					
	Household waste collection					
	Available recycling Options					
3. Improve the natural environment, air quality and livability of the municipality by	Provision of open spaces such as parks or plazas					
	Amount of green spaces within the neighborhood					

removing harmful and polluting industries from mixed-use and residential neighborhoods.	Air quality
	Quality of drinking water
	Neighborhood waste management system
4. Encourage the use of public transport, since the private streetcar is the dominant mode of transportation, which increases traffic congestions.	Are other modes of transportation used
	Adequate parking space
	Provision of pedestrian lanes
	Provision of cycling lanes
5. Provide more open spaces that help facilitates social interactions and embraces diversity.	Signage and Way-finding
	Open spaces that are within direct viewpoints.
	Number of recreational spaces
	Number of local events
6. Community involvement in the planning and management of the neighborhood.	Number of Najma's visitor's at night
	Sense of place and belonging
	Residents satisfaction with Municipality's efforts in developing Najma
	Residents sense of safety

#### 4.4.5 Questionnaires

To investigate livability in mixed-use neighborhoods the perception and experience of residents is an essential source of information. Thus, a questionnaire survey was an important methodological approach to the case study selected.

The questionnaire uses non-probability sampling method targeting people who reside in Najma and those who visit Najma frequently be it for leisure or Business. The respondents to the questionnaire have to be 18 years old or above regardless of nationality or gender. The questionnaire consists of twenty three close and open ended questions divided into four parts; the first part asks about general questions related to the



respondents, second part about household size and choice of location, the third part asks questions related to neighborhood and the last part is about transportation. The questions asked are related to the following set of themes:

- The reason behind the respondents' choice of location.
- The type of accommodation they live in.
- Social capital and unity of the neighborhood.
- Level of satisfaction in regards to the different facilities of Najma
- Modes of transportation and commuting time from residents' houses to their workplace.

The questionnaires were distributed personally by the researcher to residents and users of Najma, to provide an opportunity to explain the purpose and the questions of the research. In total 106 questionnaires were collected. The questionnaire form is attached in appendix A.

#### **4.4.6 Interviews**

Interview are semi-structured directed towards professionals in the field of architecture and urban planners, it was done on purpose to leave certain flexibility to the interviewee to express their views and knowledge on the matter. Interviews were scheduled via email invitations to participants, to ask if they have the time and willingness to be interviewed, the email was attached with the research abstract and the questions to be asked during the interview. The table below includes the interviewee information and the list of topics discussed. For the interview questions that were sent to participants, refer to appendix B.

Table 14: Interviewee Information

<b>Interview</b>	<b>Affiliations</b>	<b>Date and Place</b>	<b>Topics</b>
Ashraf Nalakath Pallathu Urban Planner GIS Qatar	Ministry of Municipality & Urban Planning Qatar	March 8 <sup>th</sup> , 2016 at 10:00AM Ministry of Municipality & Urban Planning, 1 <sup>st</sup> Floor, West Bay	<ul style="list-style-type: none"> <li>• Urban Morphology of Najma</li> <li>• Land use of Najma</li> <li>• Characteristics of mixed-use neighborhoods in Doha such Najma and Al Najada neighborhoods</li> </ul>
Lorena Suteu <i>Senior Architect &amp; Urban Planner Design Management</i>	ASTAD Project Management Qatar Foundation Education City Master Planning	Sunday October 30 <sup>th</sup> , 2016 at 8:00AM Commercial Bank Plaza, 10 <sup>th</sup> Floor, West Bay	<ul style="list-style-type: none"> <li>• Future vision of mixed-use neighborhoods in Doha.</li> <li>• Main features of mixed-use neighborhoods</li> <li>• Government organizations roles</li> <li>• Urban planning process</li> <li>• Transit Oriented Development</li> <li>• Metro circulation and urban morphology</li> </ul>
Gabriele Acquaviva <i>Senior Architect</i>	Restoration of Historic Structures in Education City Al Shaqab Arena Project in Education City	Tuesday November 1 <sup>st</sup> , 2016 at 9:00AM Qatar Foundation CPD Education City	<ul style="list-style-type: none"> <li>• Future vision of mixed-use neighborhoods in Doha.</li> <li>• Main features of mixed-use neighborhoods</li> <li>• Government organizations roles</li> <li>• Urban planning process</li> <li>• Transit Oriented Development</li> <li>• Metro circulation and urban morphology</li> </ul>
Samah Izzeddin <i>Project Manager</i>	Qatar Academy Projects Education City World Cup Stadiums	Tuesday November 1 <sup>st</sup> , 2016 at 10:00AM Qatar Foundation CPD Education City	<ul style="list-style-type: none"> <li>• Future vision of mixed-use neighborhoods in Doha.</li> <li>• Main features of mixed-use neighborhoods</li> <li>• Government organizations roles</li> <li>• Urban planning process</li> <li>• Transit Oriented Development</li> <li>• Metro circulation and urban morphology</li> </ul>

## **4.5 Data Confidentiality**

All data gathered from observations, questionnaires, walkthrough assessment and interviews are analyzed and investigated by the author. In methodologies that require people participation such as interviews and questionnaires a consent form was sent beforehand or in the spot in the case of questionnaires. All questionnaire respondents' personal information is not disclosed in this research neither were they asked to provide any personal information. As for interviewees' information, in some cases an official letter from the university was required for their respective department's head to request permission for the interview.

## **4.6 Generalization and Limitation**

Mixed-use neighborhoods are distinctive planning typologies that share some characteristics with other mixed-use neighborhoods around the world; yet, each neighborhood maintains its own unique atmosphere. Often, mixed-use neighborhoods strongly depict the character of the social groups that occupy the area. Thus, majority of the findings can be generalized to other mixed-use neighborhoods in Doha with minimal alterations to fit the context of each neighborhood. One of the limitations of this research is that information regarding Qatar planning and zoning regulations are not readily available; furthermore, some of this information is confidential and not allowed to be published.

## **4.7 Conclusion**

Various research methodologies were selected for this research to investigate livability in mixed-use neighborhoods. The research used both qualitative and quantitative approaches and collected data from both primary and secondary sources. For

secondary sources, data were collected from local government entities such as MMUP, Qatar Statistics Authority, Qatar Rail and Ministry of Transportation. The data collection tools selected for this research are field observations, walkthrough assessment, questionnaires and semi-structured interviews. The walkthrough assessment was conducted based on an identified set of adopted livability principles for mixed-use neighborhoods in Doha and the questionnaire was directed towards users and residents of Najma. For semi-structured interviews, it was conducted with professionals in the field to enquire on existing conditions of mixed-use neighborhoods in Doha and how can it be improved.

## **5 CHAPTER 5: DATA ANALYSIS AND RESULTS**

This chapter discusses the research findings based on the different methodological approaches outlined in the previous chapter. It includes the site and morphological analyses for Najma; as well as, analysis for other findings collected from field observation, walkthrough assessment, interviews and questionnaires. These findings will help fulfill the objectives and research questions presented in this research.

### **5.1 Site Analysis**

Site analysis for Najma was done based on location and context, land use, building heights, building typologies, demographics, public realm, people movement and transportation. These characteristics are thoroughly analyzed as follows:

#### **5.1.1 Location and Context**

Najma neighborhood is located in Zone 26, per the numbering done by the Ministry of Municipality and Urban Planning, between the B and C Ring roads within the municipality of Doha. Najma belongs to the traditional core of Doha and is situated approximately 2 kilometers away from Al Corniche Waterfront. Najma is surrounded by Umm Ghuwailina neighborhood from the east, Al Hilal from the south, Al Mansura from the west and Al Doha Al Jadeeda from the east. Several main roads, specifically B Ring road, Al Matar Street, C Ring road and Najma Street, define the selected study area. The following figures show the exact location of Najma within the context of Doha and Qatar as a whole, in addition to the surrounding neighborhoods and streets that define the area of Najma.



Figure 27: Najma's Location. Source: OpenStreetMap Contributors, 2016

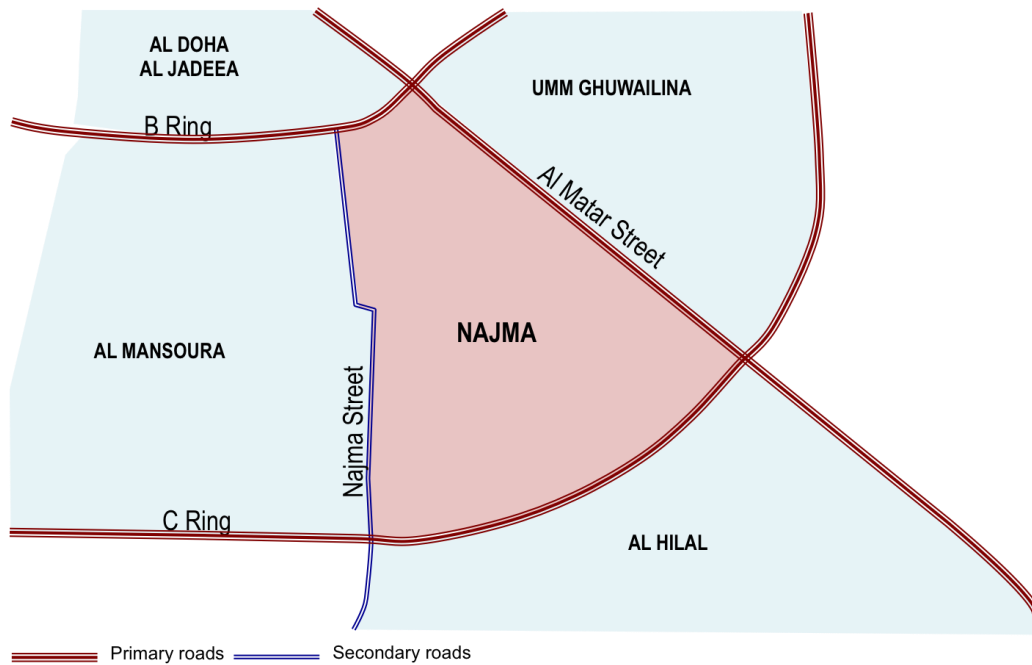


Figure 28: Surrounding street names and neighborhoods, developed by Author

Najma has seen rapid growth in terms of population and urban fabric from the 2000s; it is especially noticeable in the increase of development and residential projects. In a census done in 2010 by Qatar Statistics Authority, it is revealed that Najma have over 5,936 housing units and 1,012 establishments. Important landmarks in Najma include Souq Al Haraj, a traditional market for carpentry, Ahmed Bin Hambal Secondary School for Boys, Holiday Inn Hotel, Crown Plaza Hotel, Doha/Gulf Cinema, Toyota Towers and Future Doha Metro Station.

### **5.1.2 Land Use**

The land use map of Najma showcases that the dominant land use is residential in various types such as villas, apartments and labor camps. In addition there is a strong commercial presence in the neighborhood where all the streets that define the neighborhood are bustling with several kinds of commercial activities; for example, car dealers, hotels, supermarkets, cinema, offices and Souq Al Haraj located in the center of the neighborhood. In other cases these two land uses are mixed in an instance it is noted that the buildings facing the C Ring road are residential buildings with office frontage and some building facing Al Matar Street are residential with commercial frontage. Najma neighborhood does not have any empty lands for development as it is currently fully occupied nor does it have any open spaces for recreational activities. The following land use map is provided by the MMUP and edited by the Author after several site visits to assess the current existing land uses in Najma as of 2016.

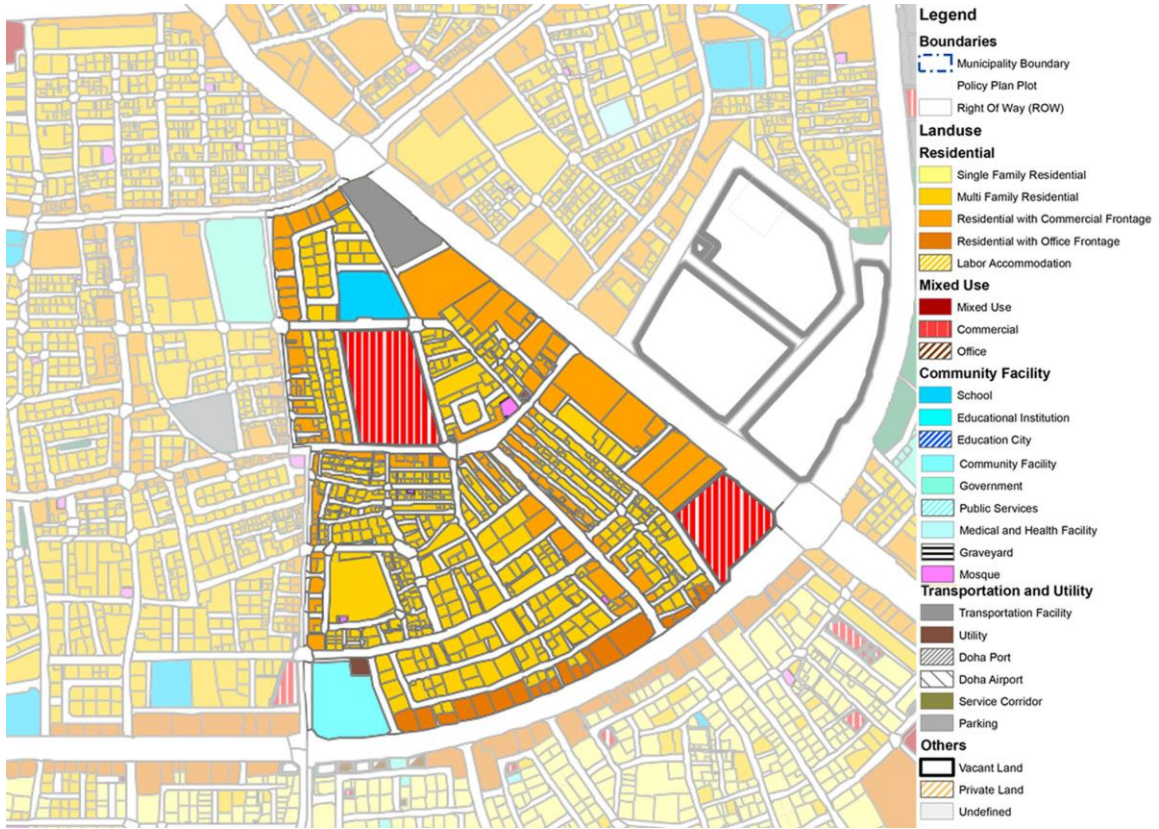


Figure 29: Land Use of Najma. Source: MMUP (2014), edited by Author



### **5.1.3 Building Heights**

The study area is mostly characterized by low-rise residential buildings inside the neighborhood surrounded by commercial buildings in the edges. The tallest building in Najma is the Toyota Tower standing at an approximated 30m height located in the east southern edge. Najma neighborhood is highly dense area with predominantly low-rise area, which makes it suitable to develop connections that are suitable for the human scale. Per the height restrictions issued from the Ministry of Municipality and Urban Planning for Najma neighborhood, the maximum allowable height for residential apartments is G+7, commercial buildings is G+M+7 and commercial offices is G+2. The following map points those height restrictions within Najma.

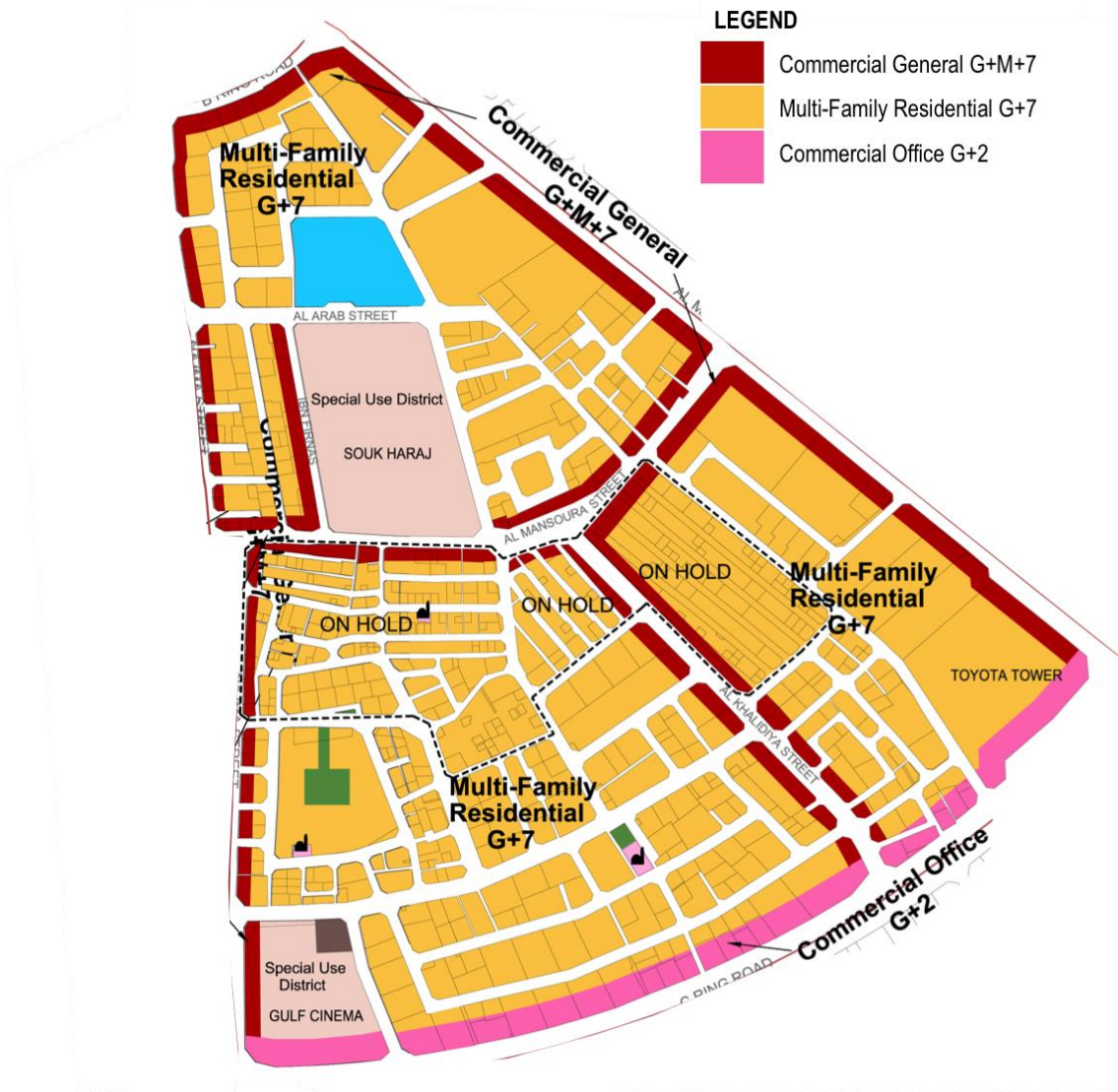


Figure 30: Najma (Zone 26) Height Restriction Map. Source: MMUP, 2014

#### 5.1.4 Demographics

The latest census of population by zone done in April 2015 revealed that the total population of Najma is 28,228 people. The table below shows Najma's population over the years.

Table 15: Najma's Population over the years. Sources: (Qatar Statistics Authority, 2010; Ministry of Development Planning and Statistics, 2015)

Year	Total Population
1987	9,141
1997	10,826
2004	16,697
2010	24,763
2015	28,228

It can be noted that Najma's population increased rapidly from 2004 onwards and from 2010 to 2015 the population increased by approximately 12%.

In a census done by Qatar Statistics Authority in 2010, the male population was 18,077 and female population was 6,686. Thus, it can be inferred that Najma area is highly male dominant where the male population comprised of 73% of Najma's total population. 83% of Najma's population were 20 years of age or older and 17% were younger than 20. As for literacy rate it was 96.5% and for employment rate, 74% of the total population were employed 14% of them were females and 86% were males.

The population density as of 2015 is 24,855.4people/km<sup>2</sup>, which indicates that Najma area is highly dense in comparison to other neighborhoods of the same size. The

table below presents a comparison done with other neighborhoods within the municipality of Doha.

Table 16: Najma's Population Density in Comparison to Other Neighborhoods (Ministry of Development Planning & Statistics, 2015)

<b>Zone no.</b>	<b>Neighborhood</b>	<b>Area (km<sup>2</sup>)</b>	<b>Population Density per 1km<sup>2</sup></b>
<b>26</b>	<b>Najma</b>	<b>1.1</b>	<b>24,855.4</b>
23	Ferej Bin Mahmoud	1.2	14,707.1
35	Ferej Kulaib	1.1	5,819.8
44	Nuajja	1.2	3,839.2

### 5.1.5 Public Realm

Najma area is perceived as a moderate living environment due to the dominancy of low-income and middle-income groups living in the neighborhood. Although the roads that surround the neighborhood are relatively in a good condition and the inner streets of Najma do not reflect that. The inner streets are very narrow with no consideration for pedestrian crossings and pedestrian pavements are only provided along the main streets. In addition the street furniture do not support social activities; there is no shading devises, street benches or garbage cans. Signage and way finding is another important issue since some of the very minor streets still remain unnamed and there is no proper signage system used within the neighborhood. These facts are supported by a series of photos taken in one of the site visits that shows the current conditions of Najma streets in the following figure.



Figure 31: Key map for the conducted photographic survey related to Najma's public realm





Figure 32: Existing Najma Streets and side pavements, photos taken April 2016. Source: Author

Picture A in the figure above shows that there is no signage available that shows the way or describes the buildings and in picture B it is noticed that two people are seated in the front stair of a shop since there is no benches available. Picture C is taken at Al Mansoura Street, which is considered a main street in the neighborhood that cuts the neighborhood in two halves. This main street is very narrow with one lane only per direction and there is no pedestrian crossings provided. Additionally, picture D shows some maintenance work done to sewages in Najma.

### 5.1.6 Transportation

In present situation, Najma area is accessed from three main roads and one secondary road. The main roads are B Ring Road, Al Matar Street and C Ring Road; and the secondary road is Najma Street. All those streets are characterized by extremely high traffic congestions during the day since the main mode of travel is traveling by car, as seen in the photo below.



Figure 33: C Ring Road Traffic Congestion. Source: Qatar Public Works Authority, Ashghal (2014)

Other modes of transportation available in Najma are buses provided by Karwa Company, although it is not widely popular and tend to be used by male workers mostly. There is one bus stop in Najma toward the southern part of the neighborhood. The bus routes dedicated for the Study area are highlighted in the following map. The existing

urban fabric does not support cycling as a form of transportation since there are no cycling lanes provided within the neighborhood.



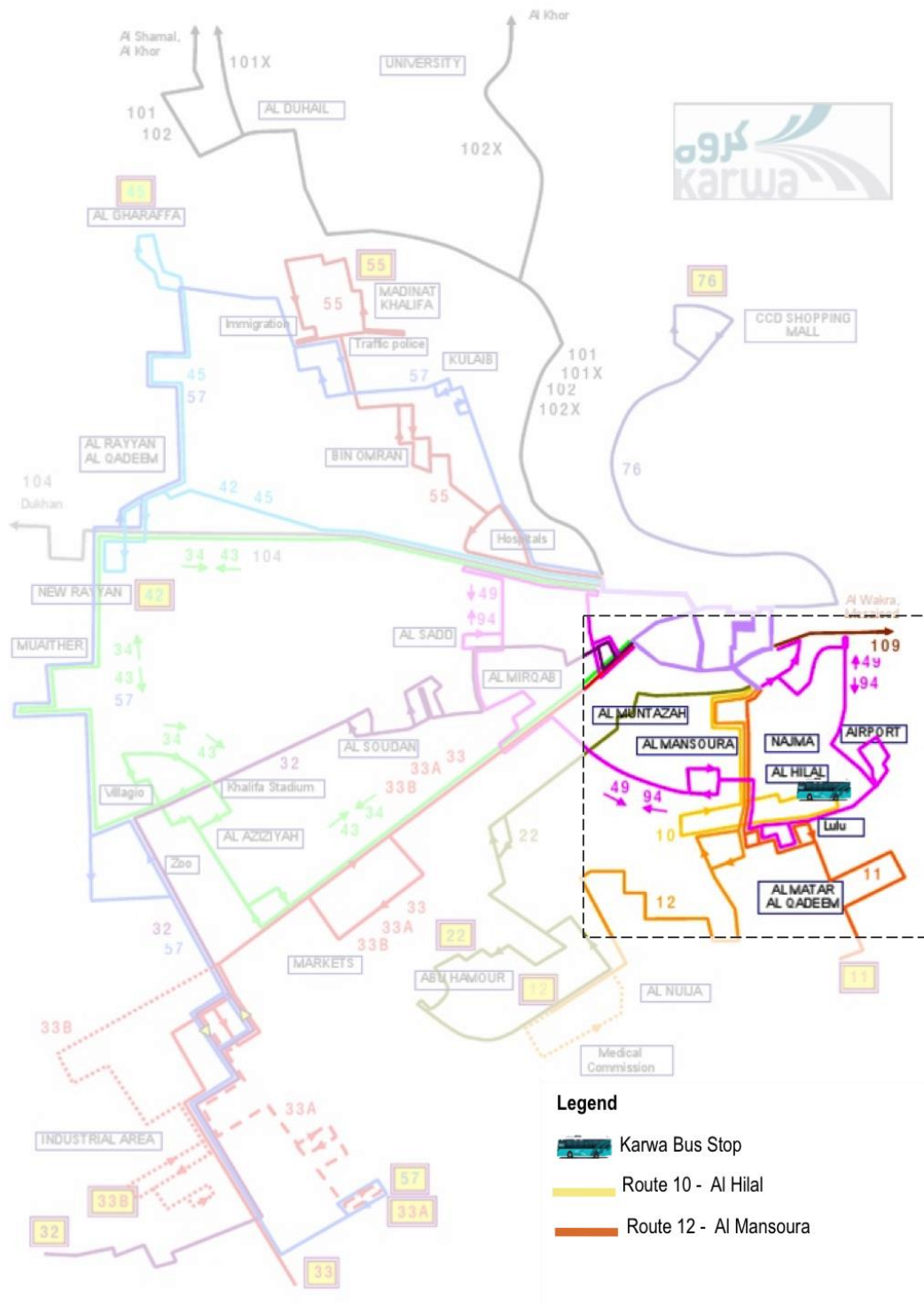


Figure 34: Karwa Bus Route Map for Doha focused on Najma. Source: Karwa, 2015

There is one metro station in Najma that is under construction and there is another station very close to Najma located in Al Mansoura neighborhood. The figure below shows Doha metro routes planned for phase 1 of the metro project. The green line in the figure denotes the metro passing through Najma.



Figure 35: Doha Metro Routes, Phase 1. Source: Qatar Rail (2015)



Figure 36: Najma Metro Station Construction Site, Photo taken in April 2016. Source: Author

## 5.2 Morphological Analysis

The evolution of Najma's urban fabric is better described through a series of aerial photos and satellite images retrieved from the Ministry of Municipality and Urban Development, these images are from 1963 to 2016. From each decade one image is selected and thoroughly analyzed based on the existing urban fabric at the time, the information extracted from each image include building blocks, streets, green areas and historical landmarks. The following figure summarized the urban evolution of Najma Neighborhood through the years.



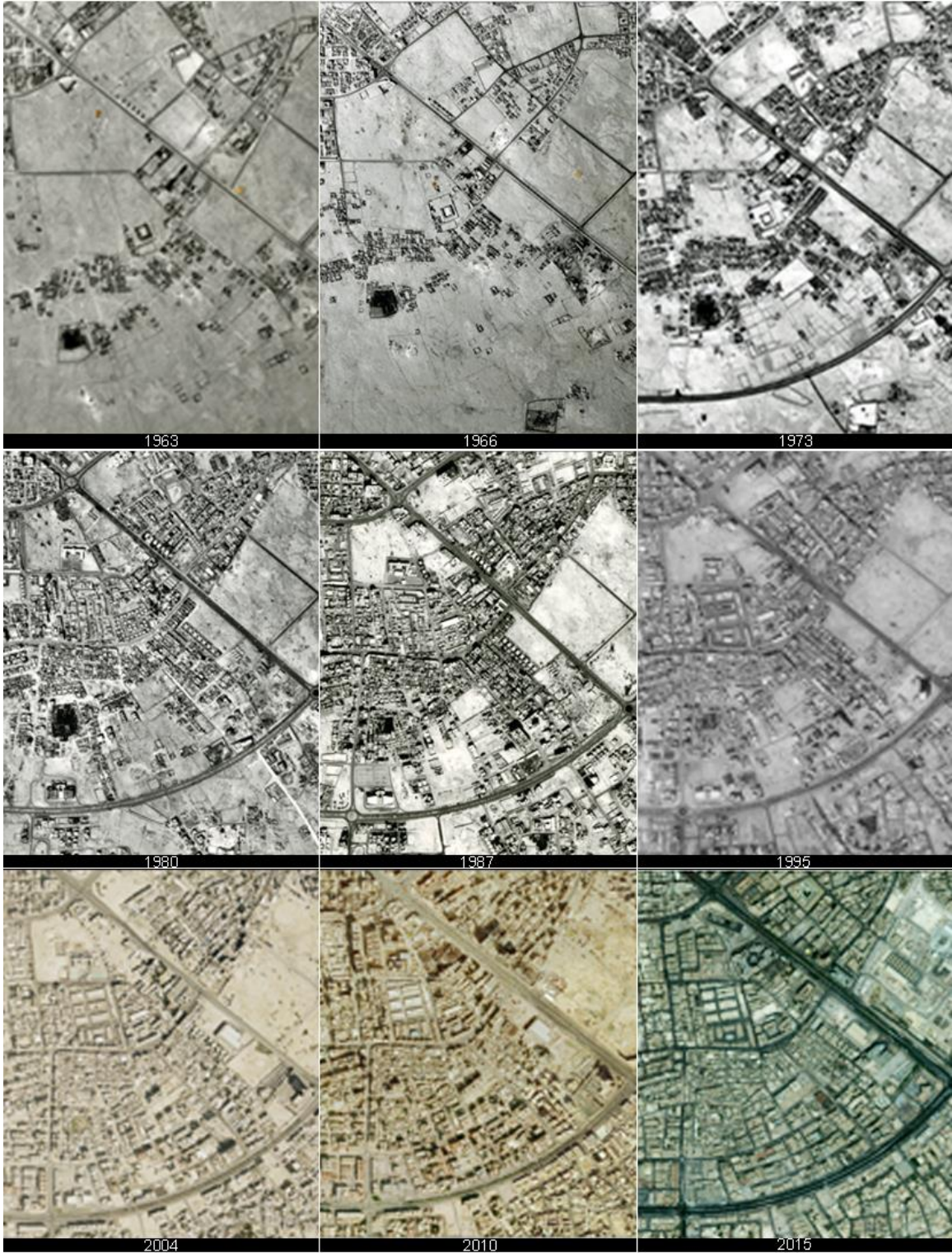


Figure 37: The Urban Evolution of Najma through the years. Source: MMUP, 2016

### 5.2.1 Najma in 1963

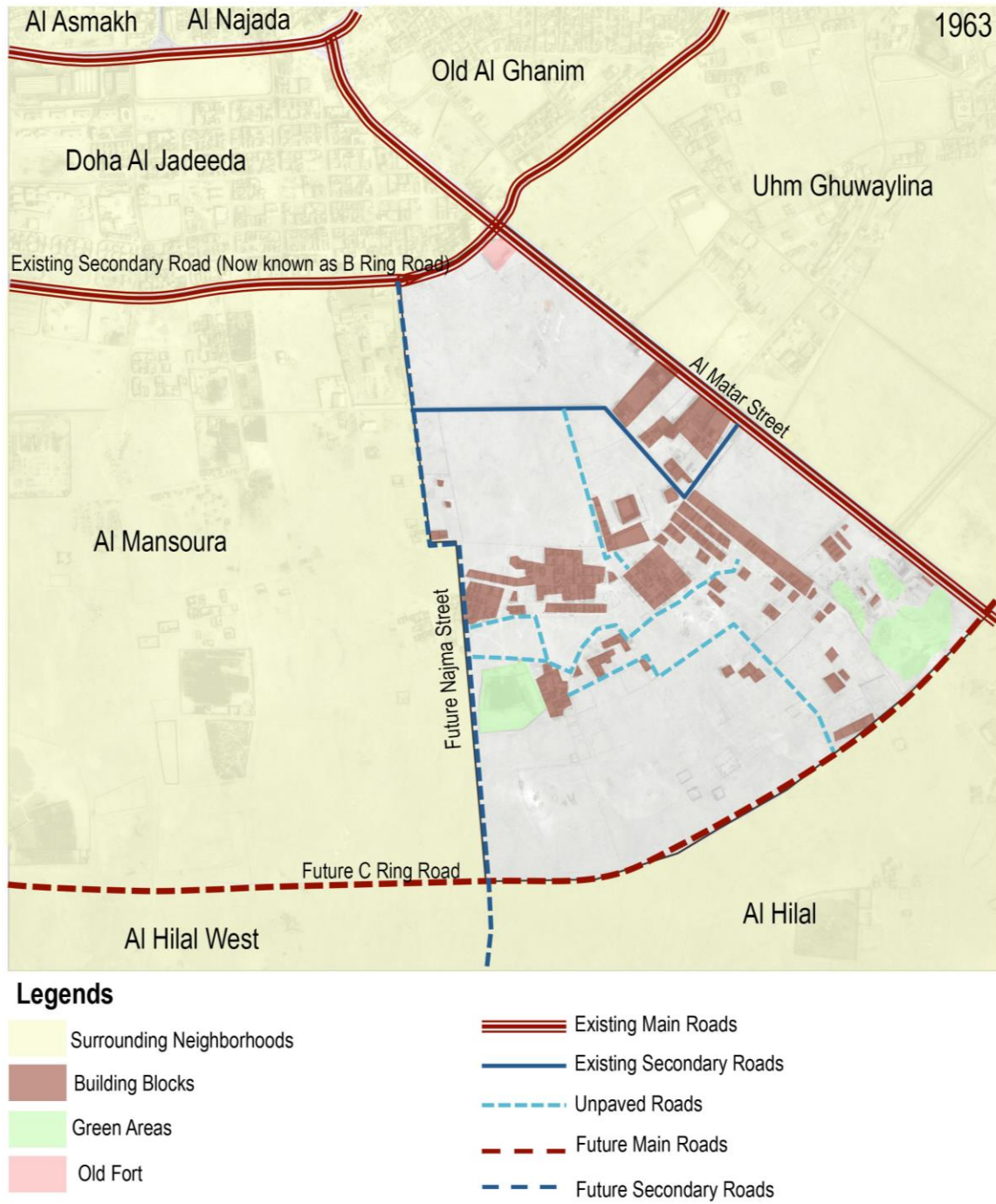


Figure 38: Tracing of Najma's Urban Fabric in 1963. Sources: Author, base map provided by MMUP

Najma in 1963 had few building blocks, mostly residential and most of the roads were unpaved roads. A fort existed in the northern eastern side of the neighborhood.

Table 17: Description of Najma’s urban fabric in 1963

Urban Fabric Element	Description
Building blocks	There were few buildings in 1963, most of which residential. The distribution of these buildings depended on the family relations and how people moved within the neighborhood. It is noticed that three or more houses were grouped together to form a residential quarter within a reasonable distance from another quarter.
Roads	Only one main road framed the neighborhood at the time, this road is Al Matar Street. A secondary street existed at the northern part of the neighborhood, currently this street expanded in a main road known as the B Ring road. For the western and southern parts of the neighborhood there were no paved roads during that time; with the exception of three roads, all the other streets were unpaved.
Green Areas	The green areas were private farms owned by the residents living nearby.
Landmarks	A fort existed in the northern eastern side of the neighborhood.



### 5.2.2 Najma in 1973

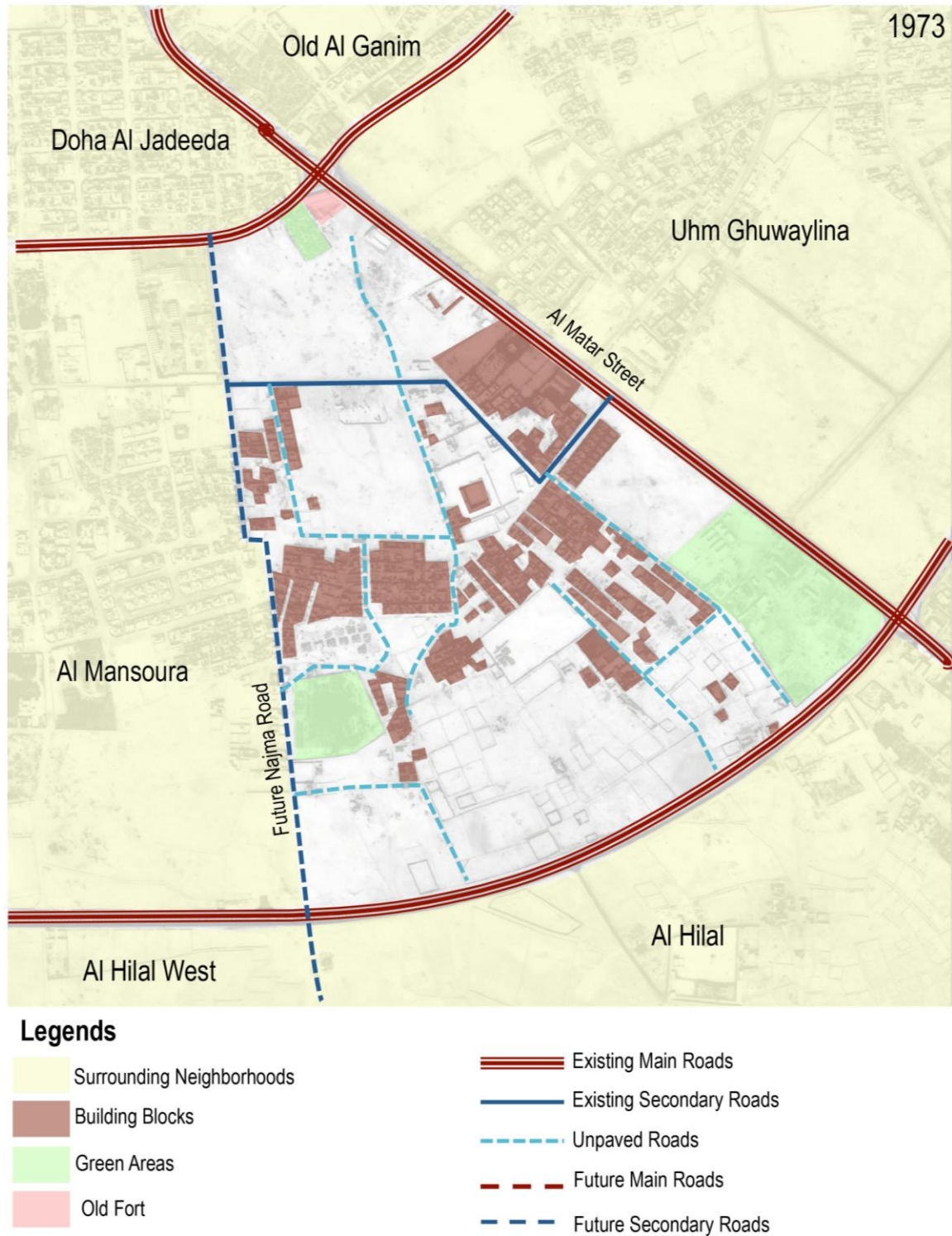


Figure 39: Tracing of Najma's Urban Fabric in 1973. Sources: Author, base map provided by MMUP

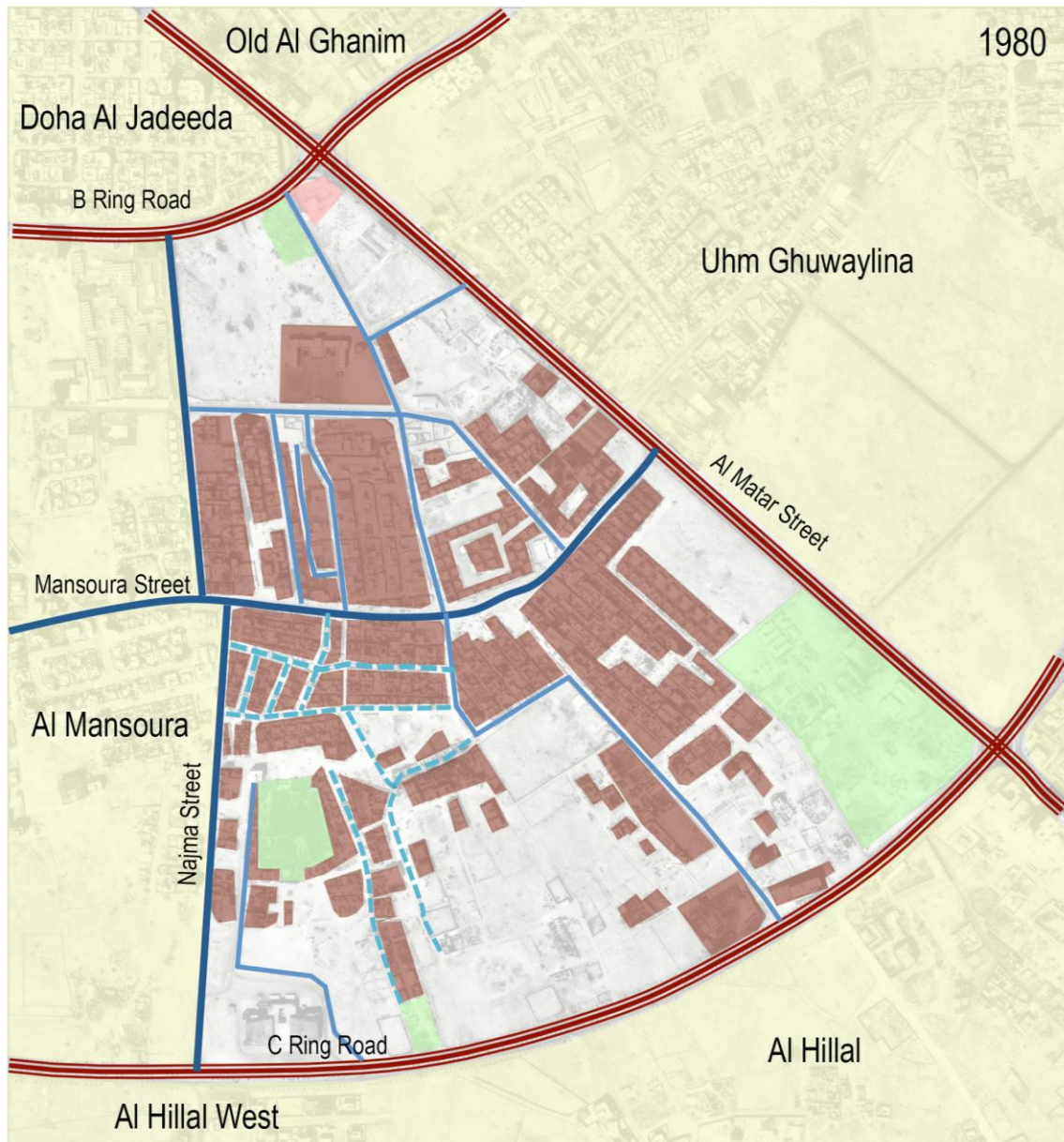
In 1973, more buildings were traced and it is inferred from the map that boundaries started to form to separate one zone from the other inside the neighborhood. The main roads framing the neighborhood were present, B Ring Road from the north, Al Matar Street from the east and C Ring Road from the south.

Table 18: Description of Najma’s urban fabric in 1973

<b>Urban Fabric Element</b>	<b>Description</b>
Building blocks	More buildings were constructed in 1973 most of which were residential and few commercial buildings were introduced. These commercial buildings were mainly offices facing Al Matar Street.
Roads	B Ring Road and C Ring Road were finally developed framing the neighborhood from the north and south respectively. However, the inner streets of the neighborhood and the street separating Najma from Al Mansoura neighborhood remain unpaved.
Green Areas	The green areas were private farms owned by the residents living nearby. A new addition was the farm beside the fort.
Landmarks	A fort existed in the northern eastern side of the neighborhood.



### 5.2.3 Najma in 1980



#### Legends











 Surrounding Neighborhoods	 Existing Main Roads
 Building Blocks	 Existing Secondary Roads
 Green Areas	 Unpaved Roads
 Old Fort	 Future Main Roads
	 Future Secondary Roads
	 Inner Streets

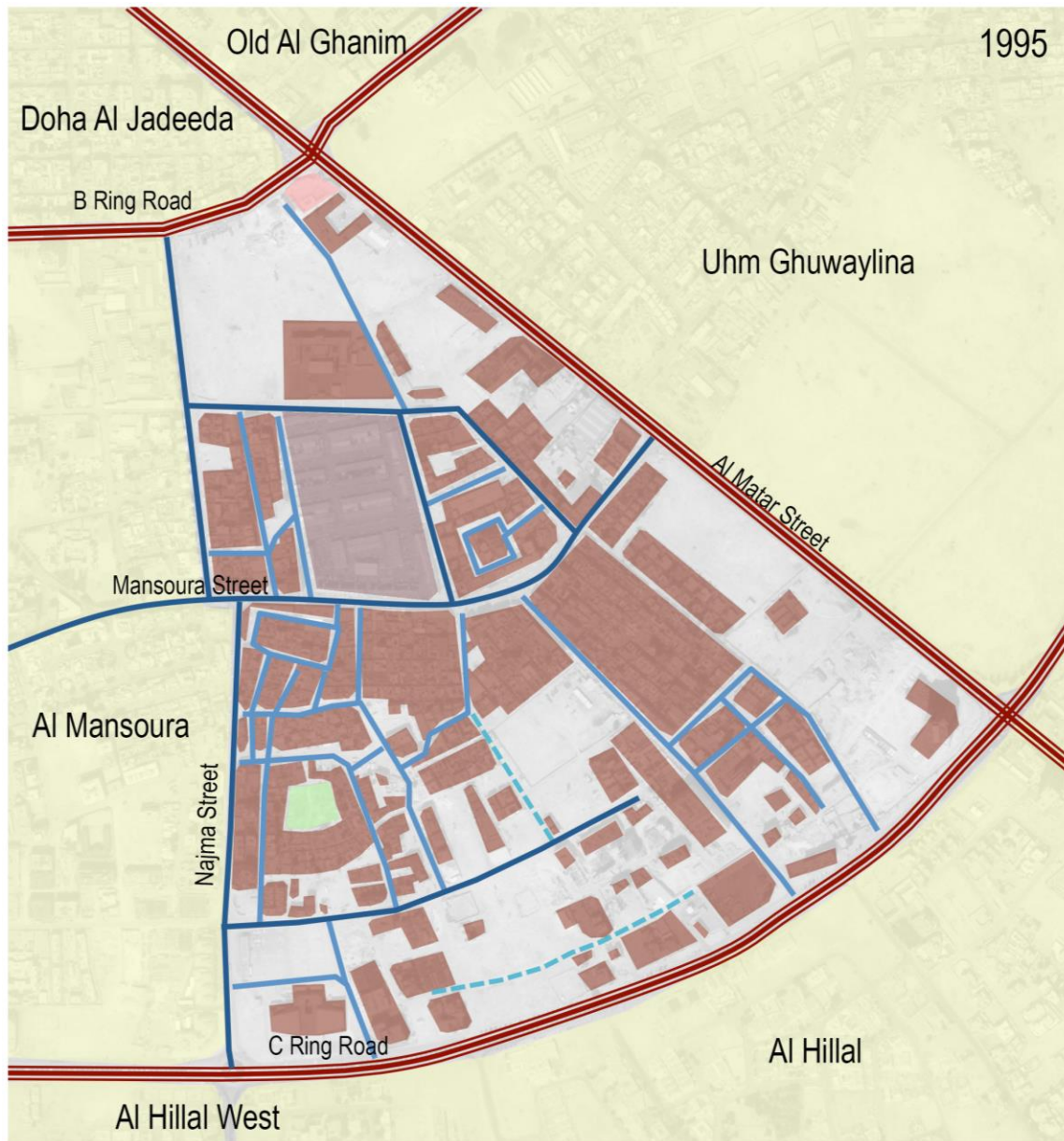
Figure 40: Tracing of Najma's Urban Fabric in 1980. Sources: Author, base map provided by MMUP

In 1980, Najma had a lot more variety in terms of uses in the neighborhood in comparison to previous decades.

Table 19: Description of Najma’s urban fabric in 1980

Urban Fabric Element	Description
Building blocks	A substantial increase on the built form was noticed in the neighborhood in 1980. A variety of uses were integrated in the neighborhood such as schools, shops and a theatre.
Roads	Najma street was developed, the street separating Najma from Al Mansoura neighborhood. Another street was Mansoura Street, which separated Najma into two halves. More inner streets were paved in contrast to the previous years, yet few of them remain unpaved.
Green Areas	A decrease in the amount of green areas in comparison to 1973. In a similar note, all the green areas were privately owned farms.
Landmarks	A fort existed in the northern eastern side of the neighborhood. A school for boys was introduced in the neighborhood.

### 5.2.4 Najma in 1995



#### Legends












	Surrounding Neighborhoods		Existing Main Roads
	Building Blocks		Existing Secondary Roads
	Green Areas		Unpaved Roads
	Old Fort		Future Main Roads
	Souq AL Haraj		Future Secondary Roads
			Inner Streets

Figure 41: Tracing of Najma's Urban Fabric in 1995. Sources: Author, base map provided by MMUP

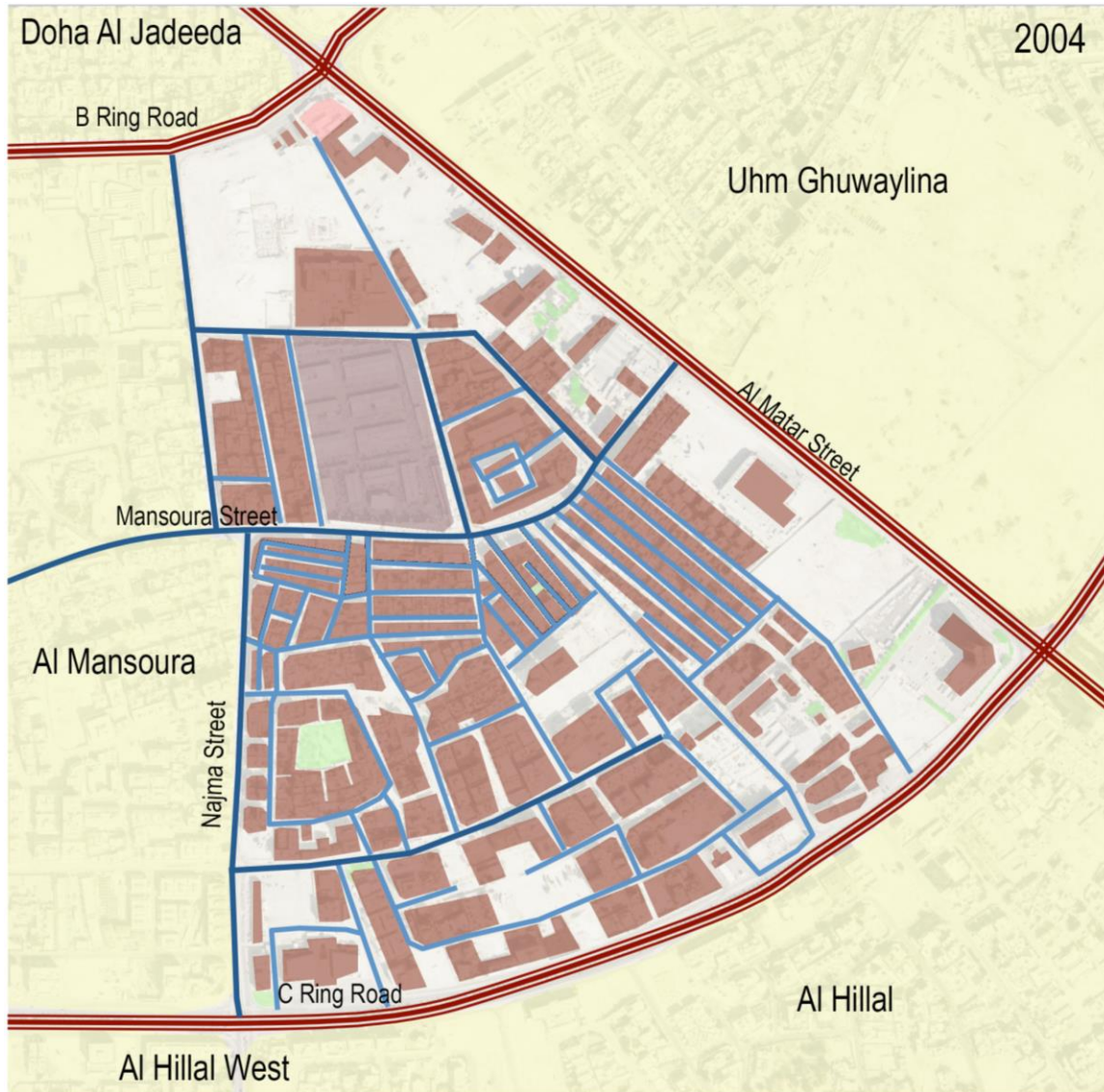
Najma in 1995 had few building blocks, mostly residential and most of the roads were unpaved roads. A fort existed in the northern eastern side of the neighborhood.

Table 20: Description of Najma’s urban fabric in 1995

<b>Urban Fabric Element</b>	<b>Description</b>
Building blocks	A slight increase in the number building blocks in comparison to 1980.
Roads	More roads were paved within the neighborhood.
Green Areas	A further decrease in the amount of green areas in a comparison the previous years.
Landmarks	A fort existed in the northern eastern side of the neighborhood.  A huge market ‘Souq Al Haraj’ was developed in the center of the neighborhood.



### 5.2.5 Najma in 2004



#### Legends












- |   |  |
|---|--|
|  Surrounding Neighborhoods |  Existing Main Roads      |
|  Building Blocks           |  Existing Secondary Roads |
|  Green Areas               |  Unpaved Roads            |
|  Old Fort                  |  Future Main Roads        |
|  Souq AL Haraj             |  Future Secondary Roads   |
|   |  Inner Streets            |

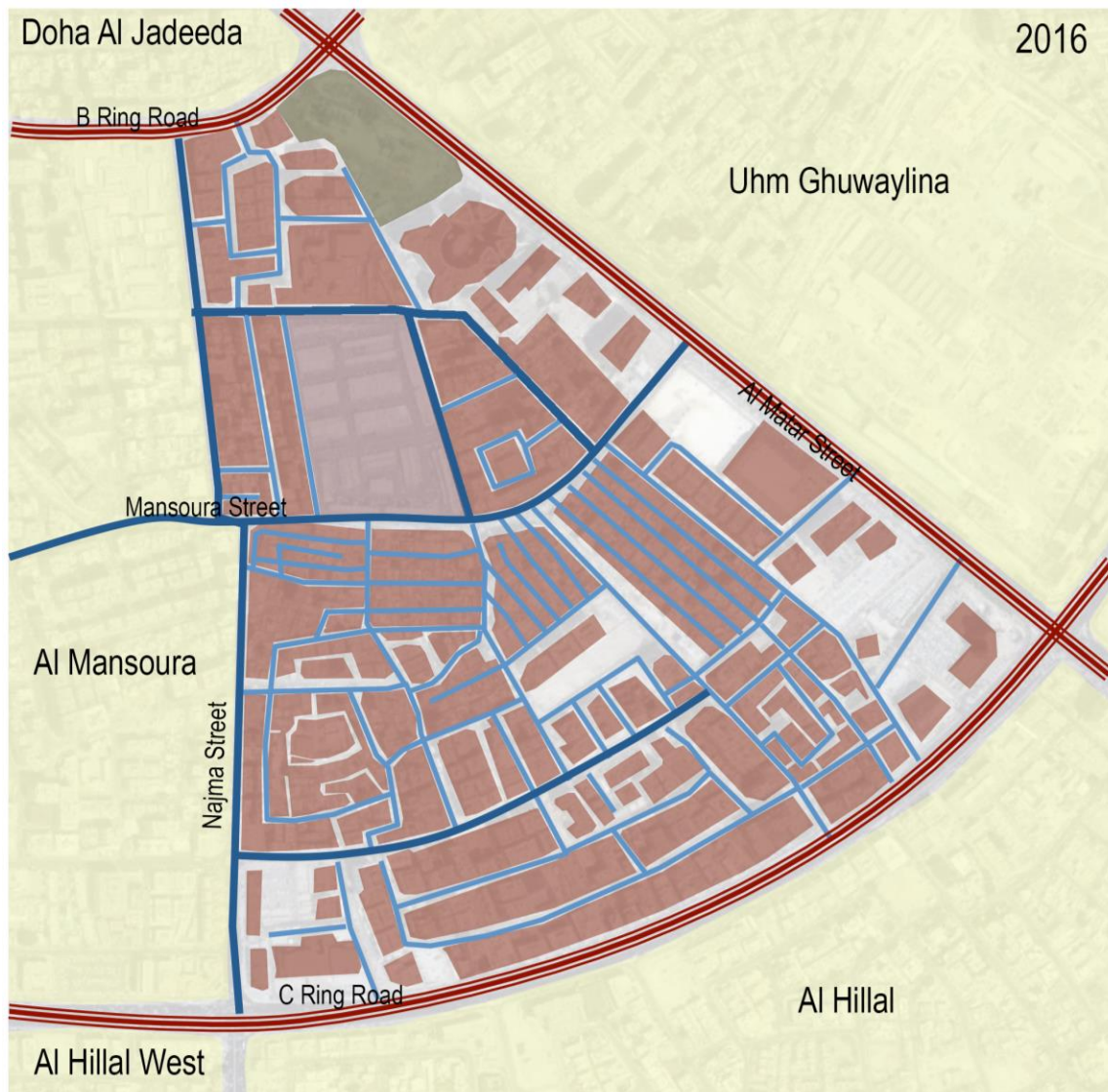
Figure 42: Tracing of Najma's Urban Fabric in 2004. Sources: Author, base map provided by MMUP

Najma in 2004 had few building blocks, mostly residential and most of the roads were unpaved roads. A fort existed in the northern eastern side of the neighborhood.

Table 21: Description of Najma’s urban fabric in 2004

<b>Urban Fabric Element</b>	<b>Description</b>
Building blocks	More development was traced on the southern part of the neighborhood.
Roads	All the neighborhood roads are paved
Green Areas	Few green areas left.
Landmarks	A fort existed in the northern eastern side of the neighborhood and the neighborhood local market known as ‘Souq Al Haraj’.

### 5.2.6 Najma in 2016



#### Legends

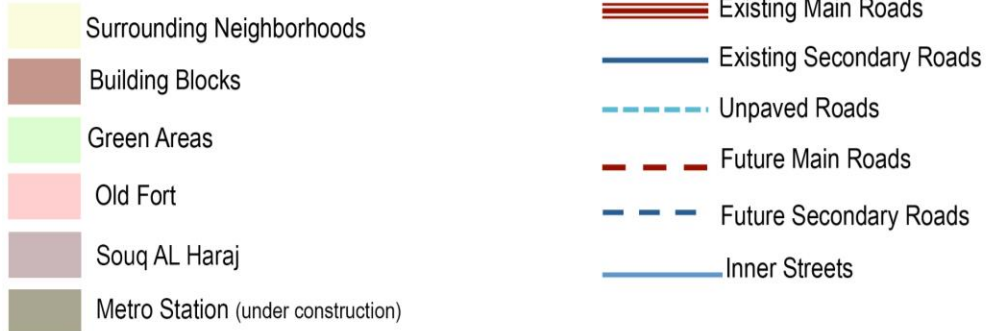


Figure 43: Tracing of Najma's Urban Fabric in 2016. Sources: Author, base map provided by MMUP

Najma in 2016 had few building blocks, mostly residential and most of the roads were unpaved roads. A fort existed in the northern eastern side of the neighborhood.

Table 22: Description of Najma’s urban fabric in 2016

<b>Urban Fabric Element</b>	<b>Description</b>
Building blocks	All the lands are occupied, which leaves few leftover lands to be used for development.
Roads	All the roads were paved; however, some minor roads remain unnamed.
Green Areas	No green areas left and no public park in the neighborhood
Landmarks	Souq Al Haraj and the new metro station. The old fort was demolished and replace by the new metro station.



### 5.3 Field Observations

The objective of the field observation was to assess the different physical, functional, social and perceptual aspects of the neighborhood. Several behavioral characteristics of the resident community were observed and are described and analyzed in the next sub sections. These observations are aided by a photographic survey of the neighborhoods taken at different periods.

#### 5.3.1 Physical Aspects



Figure 44: Key map for the conducted photographic survey related to Najma's physical aspects

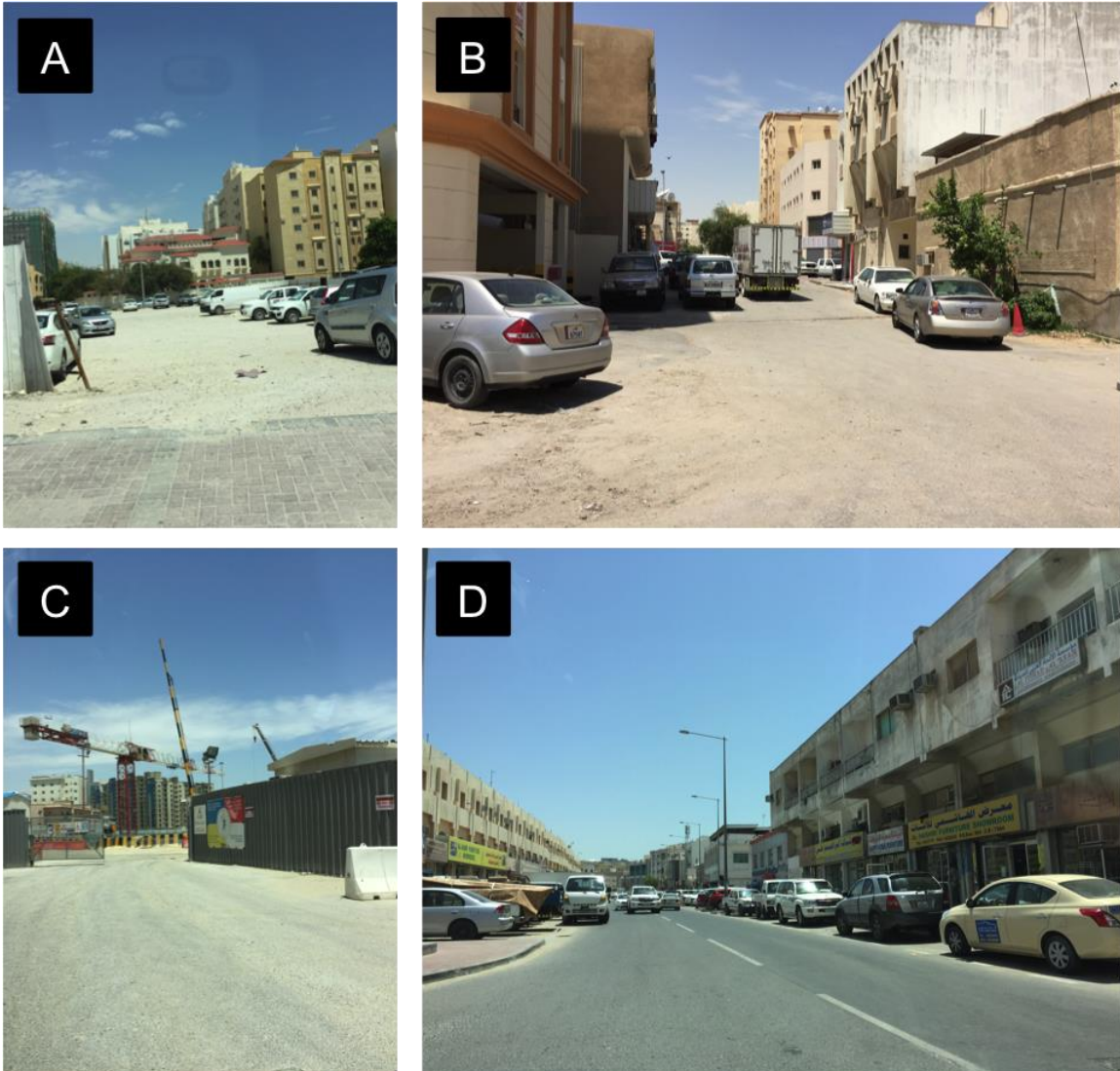


Figure 45: Roads Conditions in Najma, 2016. Source: Author

Photo A shows one of the very few empty lands and the empty land in the photo is used as temporary car park. Photo B exhibits one of the road inside the neighborhood and it is in a very poor condition, there is no proper signage available and there is no clear distinction between the vehicular and pedestrian circulation. Photo C shows the road leading to the future metro station in Najma and photo D is taken from Mansoura Street, one of the main roads inside the neighborhoods. Mansoura Street has one lane



only for each direction and limited car parking spaces are available on both sides of the street.



Figure 46: Different Building Facades in Najma, 2016. Source: Author

The series of photos above represents a sample of the residential apartments in Najma. In photo E a couple of cars are seen parked on the pavement designated for pedestrian use. Photo F shows some repair works done to the road and building shown is in the process of being demolished. Some of the better roads with good condition is show in picture G, although there is no proper street markings yet. The apartment building

shown in picture H seems to have a fusion of architectural styles that are reminiscent of Islamic architecture and old architectural style of Najd in Saudi Arabia. Photo I shows an apartment building that is still in use even though some of the arcades have fallen apart.

### 5.3.2 Functional Aspects

The neighborhoods provide a variety of uses such residential, retail and offices, schools, cinemas and mosques. Dense resident population and high traffic congestion characterize the neighborhood of Najma; therefore it may hinder the ease of access to the neighborhood from the main roads Al Matar Street or B and C Ring Roads. Several other functional aspects of the neighborhood are observed and described with the aid of the following series of photos.

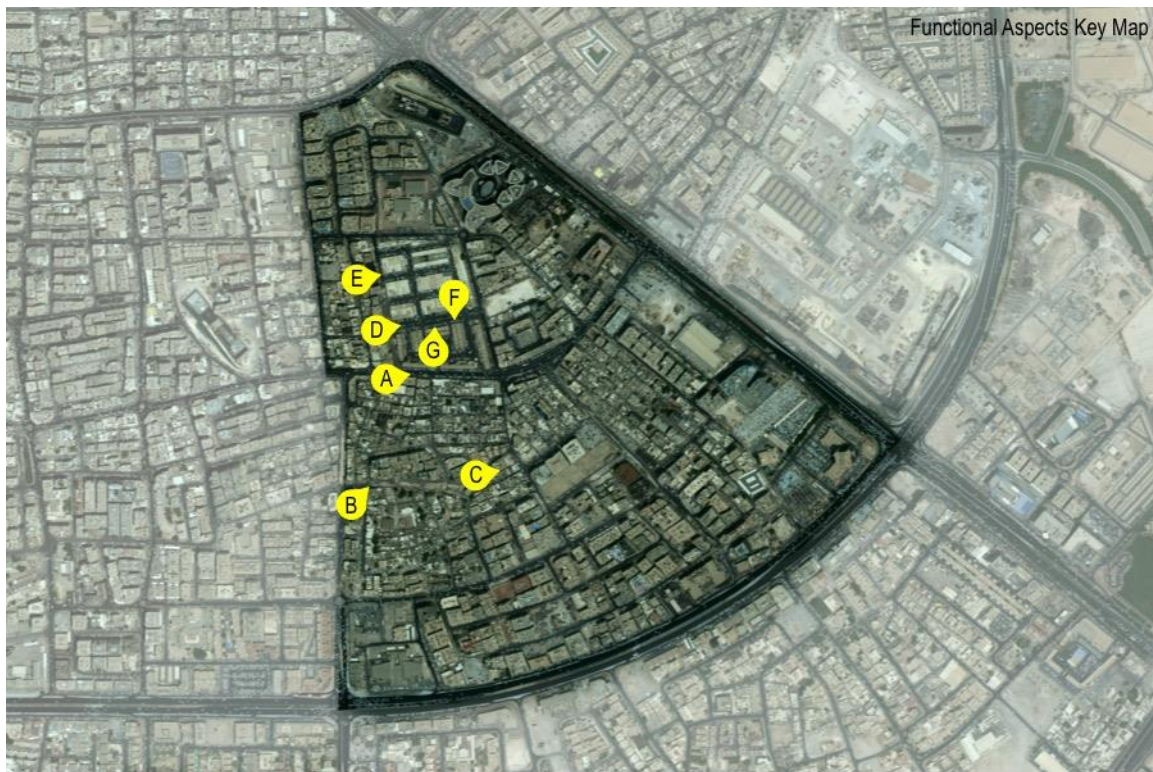


Figure 47: Key map for the conducted photographic survey related to Najma's functional aspects



Figure 48: Mansoura Street in Najma, 2015

The photo above is taken from Mansoura Street and it was during an emergency, since fire erupted in one of the buildings nearby. It can be noticed that there is no emergency lanes provided and since the street is very narrow the cars were facing each other at the time.



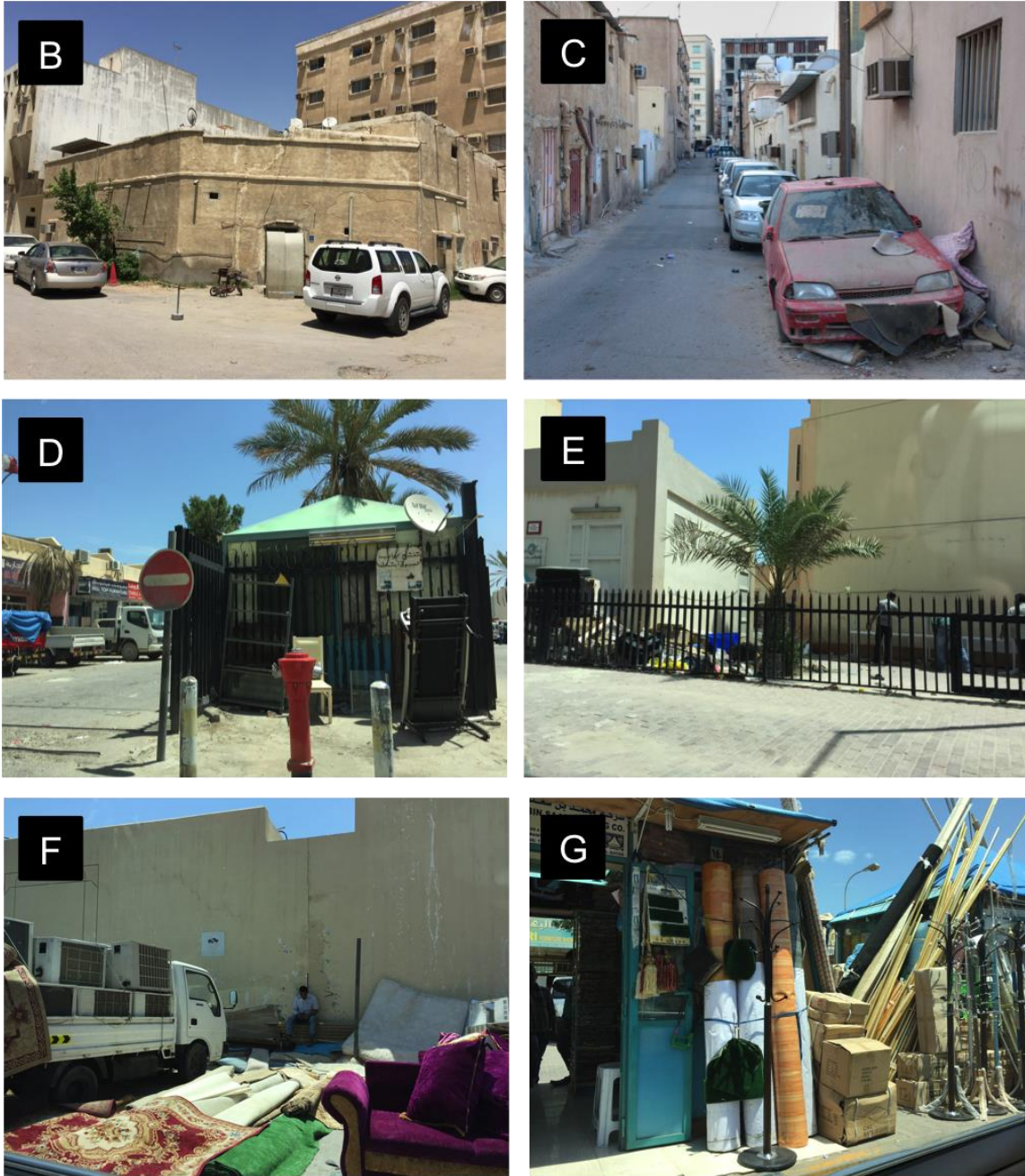


Figure 49: Photos taken in different locations within Najma, 2016. Source: Author

The street corners inside the neighborhood are in a very poor condition without sidewalks and proper signage and way-finding systems. Picture C showcases the condition of one of the street strips inside the neighborhood and as noticed the street

requires some repair works to be done on it; in addition, cleanliness should be encouraged and maintained throughout the neighborhood. Picture D shows that main Entrance to the Souq there is no signage system available to properly describe the property. Picture E is taken from side fence of Souq Al Haraj and it can be seen that there is no proper waste management system to the Souq and all the garbage are laid on top of the other. Picture F is the loading/unloading place for the arriving goods and as seen in the photo the goods are mainly placed on the street pavement without sufficient care. Moreover, picture G represent the current condition oh how the goods are placed inside the Souq. One thing all the photos have in common, all the chosen settings lack streetlights, which in turn decreases the sense of safety at night.

### **5.3.3 Social Aspects**

The area is very male dominated and full of migrant low-income workers coming from countries such as India, Nepal, Pakistan, Indonesia and Philippine. There is a very small female presence and the area lacks consideration for female and children in terms of safety and usage. The area does not have any open areas that can act as a social node for the community and the existing street furniture does help facilitate social interaction between the different social groups. People tend to sit in street pavements, stairs or fences since public street benches are not provided. Further social aspects are analyzed through the following pictures taken at different points within the neighborhood of Najma.



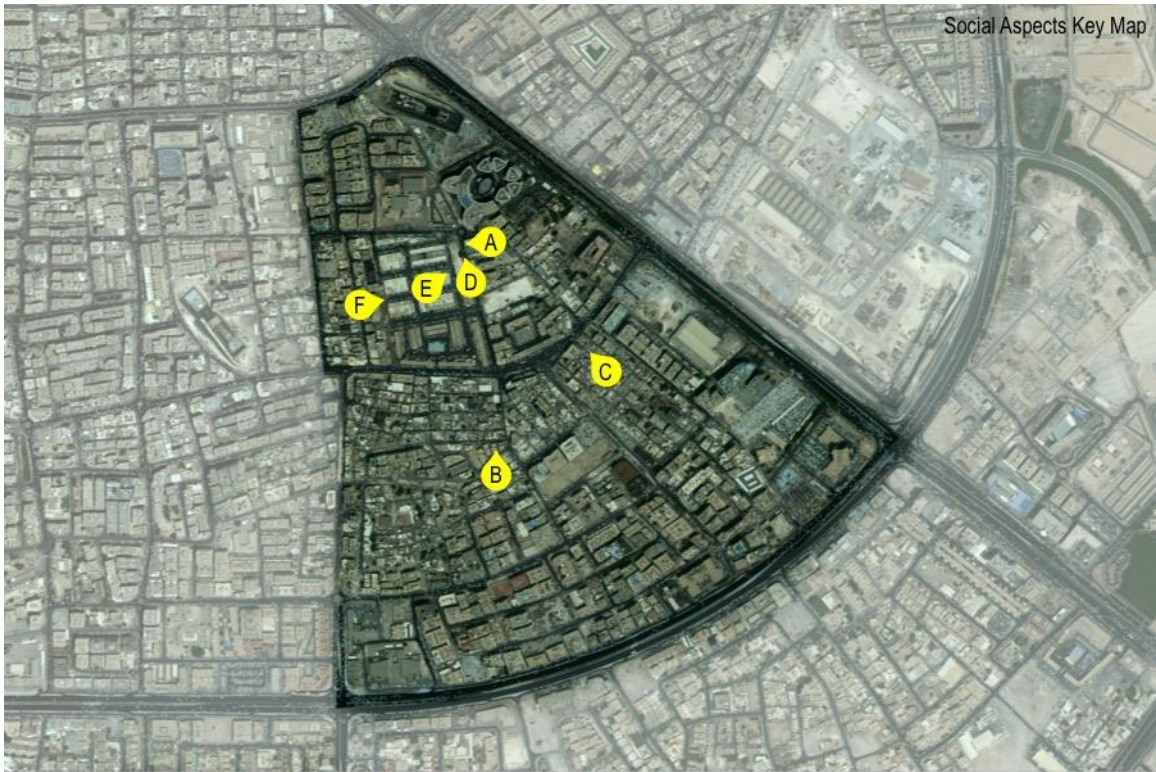


Figure 50: Key map for the conducted photographic survey related to Najma’s social aspects



Figure 51: Construction workers coming back from work. Najma, 2016



In photo A, construction workers are seen to come back from work via their company bus in the afternoon. It is evident from the picture that there is very minimal consideration for pedestrian circulation, since the workers are seen to walk on the roads designated for vehicular use. There is no pedestrian crossing provided and there is no proper signage system. All people shown in the photo are male seemingly from South Eastern Asian countries and in their twenties and above in terms of age.



Figure 52: Inner Street Strips. Najma, 2015

Photo B is taken at one of the inner street strips in Najma. The first thing that can be noticed is the deteriorating building conditions and the lack of setback between the road and the houses. There are pedestrian pavements provided and no signage to indicate this street name. Male workers crowded in very narrow spaces with no consideration to

privacy occupy the houses in the photo. The worker in the photo above is seen resting after a long day of work in one of the cars by himself. There is very low sense of territoriality in those kinds of street strips, since in a lot of cases the main entrance of the houses was left open.



Figure 53: Inner Street Strips. Najma, 2015

This photo is taken from another street strip in Najma. As can be inferred from the photo the street is very narrow with no markings that separate the vehicular circulation from the pedestrian. The buildings are in a very poor condition and do not have setbacks from the street, which hinders the safety of the occupants of those houses. Three people are seen walking along the street the workers with similar apparel are seen walking together, which indicates they are probably from the same social group. Another thing

that can be noticed is that the vehicles parked in the street are of similar type, most probably relating to the type of work they engage in, which seemingly requires loading and unloading of big and heavy objects.



Figure 54: Street Intersection. Najma, 2015

Photo D is taken in one of the street corners of Najma. People are seen gathering beside the streetlight to chat and along the steps of one of the shops. This street path connects to Crown Plaza hotel and the future metro station. Mostly migrant male workers use this street corner since they are the dominant population and it has a supermarket, sweets shop and a cafeteria that serves Indian cuisines. People in this type of setting tend to engage in activities that are repetitive in nature like working in morning through the afternoon and during breaks chatting with other workers from nearby shops. In the



evening the Indian restaurant are seen full of construction workers that just finished their shift from the neighboring metro station construction site.



Figure 55: Souq Al Haraj. Najma, 2016. Source: Author

The photo above is the first thing to be seen once you enter Souq Al Haraj and yet again it is filled with migrant male workers. The users of the Souq are seen engaging in several kinds of activities such as chatting with other workers or buying and selling. The shops are in a very bad condition in terms of appearance with no proper signage system. Markings are not available along the streets of the Souq, which jeopardizes the safety of

the users. Furthermore, there is no clear distinction between the vehicular and pedestrian circulation.



Figure 56: Souq Al Haraj. Najma, 2016. Source: Author

The photo above is taken at one of the gates of Souq Al Haraj, specifically gate 5 as marked by red in the fence wall. The market is access by cars and there are little regards for the pedestrian circulation and safety since there is no pedestrian pavement or proper signage system available. These market gates act as social node for the workers as they are seen resting and chatting with each other in the photo, mainly because these

fences provide some sort of shade against the sun. There is a lack of street furniture, thus workers tend to sit on the pavement by the car park.

### 5.3.4 Perceptual Aspects

The buildings within Najma are in a very poor condition and very ill maintained, mainly due to the fact that majority of Najma's population are transient and many of them do not feel the need to take care of their place since they share it with several other people; thus the sense of ownership over the place is reduced. Other perceptual aspects are analyzed in relation to the following series of pictures taken at different points inside the neighborhood.

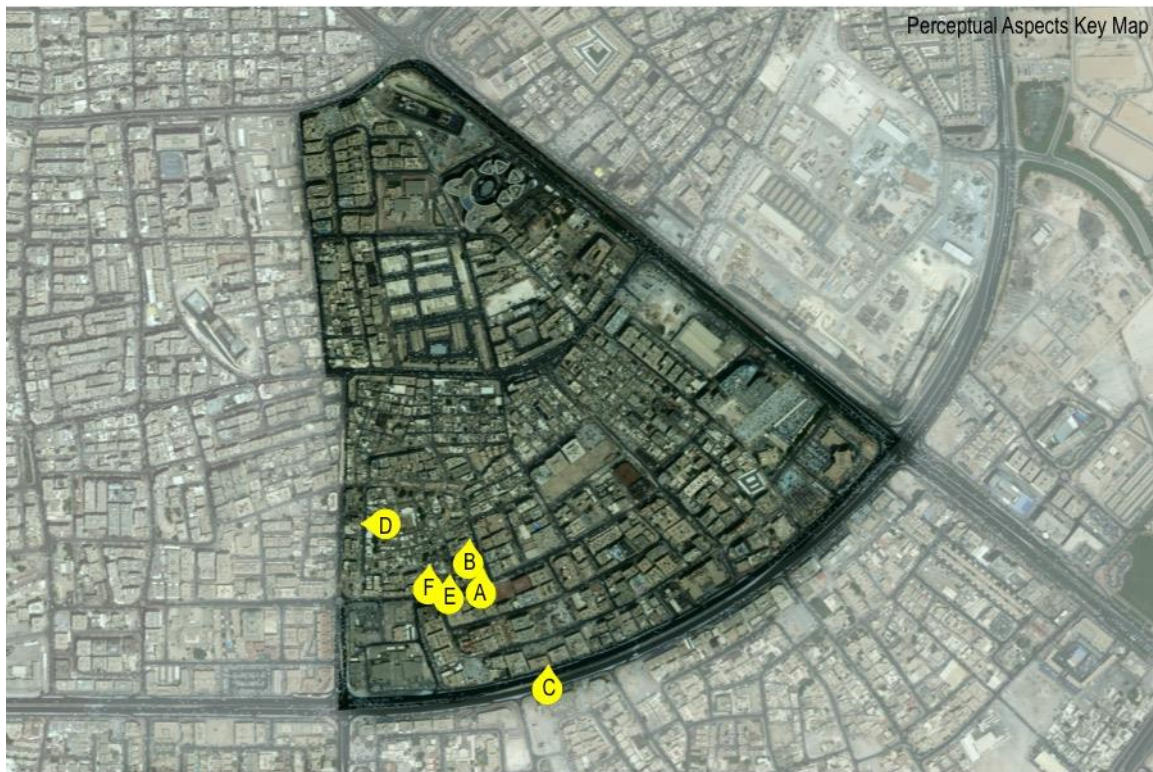


Figure 57: Key map for the conducted photographic survey related to Najma's perceptual aspects



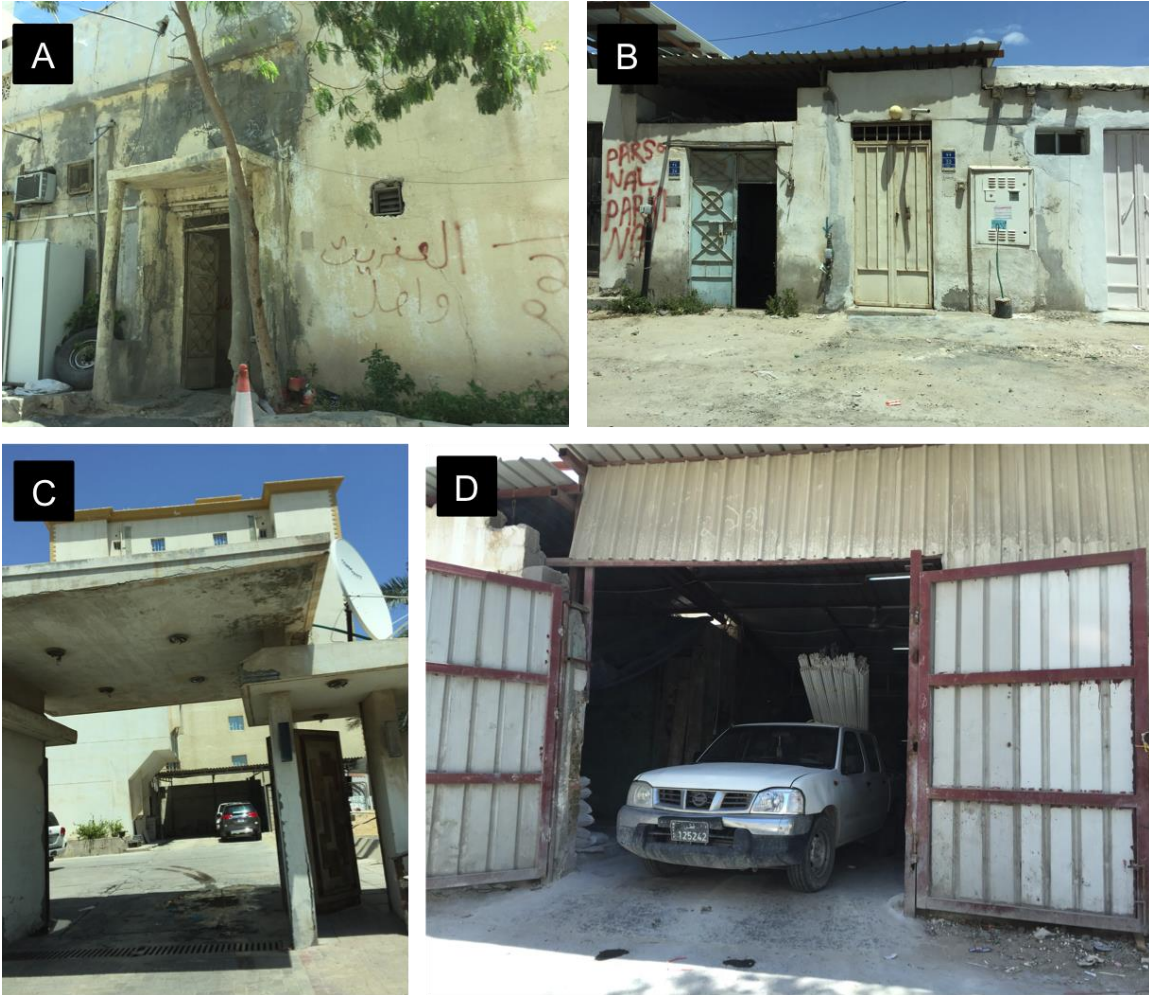


Figure 58: Gates and Entrances within the Neighborhood of Najma, 2016. Source: Author

From the photos A through D it is noticed that a lot of the gates and entrance of the houses of Najma are left open and in poor conditions. Scribbles and stains are all over the walls; some of the things written on the wall are “the ghost is inside” written in Arabic in photo A and “park no” in photo B meant to indicate that cars are not allowed to park there. In picture D, there are improper additions done to the old structure of the walls that are aesthetically unpleasant.





Figure 59: Unplanned vegetation in the houses of Najma, 2016. Source: Author

Picture D and E in the figure above, shows the unplanned infesting vegetation over the houses and used furniture thrown out the streets. Some personal possessions are casually hanged in front of the house; moreover, there is no signage available to indicate the house number in respect to the shown houses in the pictures. Overall, the perceived ambience of the neighborhood inner streets is unwelcoming and intimidating.

## 5.4 Walkthrough Assessment

The walkthrough assessment is done based on the extracted livability principles from the reviewed literature that is suitable to the context of mixed-use neighborhood in Doha.

Table 23: Walkthrough Assessment Results.

Livability Principle	Indicator	Status					Comments
		Highly Appropriate (1)		Inappropriate Highly (5)			
		1	2	3	4	5	
1. Endorse developments that are of mixed-use nature.	Density of mixed-uses within the neighborhood				*		Najma exhibits a variety of mixed uses along the neighborhood and within the same building  There are several unique local businesses such as the local Pakistani bakery that bakes the bread using an unground oven. These sorts of local business are under future threats of being evacuated once big developers overtake the area.  Majority of buildings are low rise.  Buildings are within close proximity to each other.
	Density of buildings that adopt more than one use				*		
	Growth of local business				*		
	Building heights and sizes				*		
	Distance from one building to another along the same street				*		
Average score for the first livability principle for Najma as a mixed-use neighborhood in is <b>4.4</b>							
2. Encourage a wider range of housing and design options that are culturally and climatically suitable, furthermore, those options should achieve commonly accepted levels of environmental sustainability and livability	Wide range of housing options				*		There is a wide variety of housing options, although some of them are in a bad condition.  There is a wide variety of housing options,  Some of the buildings inside the neighborhood do not have proper setbacks from the street intended for vehicular use.  Small trashcans are placed outside that house without proper maintenance.  There is none.
	Affordable housing for all income groups				*		
	Residential buildings setbacks from the street			*			
	Household waste collection			*			
	Available recycling Options		*				

expectations.			
Average score for the second livability principle for Najma as a mixed-use neighborhood in is <b>2.6</b>			
3. Improve the natural environment, air quality and livability of the municipality by removing harmful and polluting industries from mixed-use and residential neighborhoods.	Provision of open spaces such as parks or plazas	*	There is none
	Amount of green spaces within the neighborhood	*	There is none.
	Air quality	*	Difficult to measure; however, there is no green spaces available to filter the exhaust gases coming from the automobiles.
	Neighborhood waste management system	*	A lot of rubbish is accumulated in the side streets. Lack of sufficient trashcans.
Average score for the third livability principle for Najma as a mixed-use neighborhood in is <b>1.75</b>			
4. Encourage the use of public transport, since the private streetcar is the dominant mode of transportation, which increases traffic congestions.	Are other modes of transportation used	*	A lot workers use shuttle buses provided by their company to go from home to their work place and vice versa.
	Adequate parking space	*	There is a shortage of sufficient parking spaces.
	Provision of pedestrian lanes	*	Inadequate and only provided along the main streets.
	Provision of cycling lanes	*	There is none.
	Signage and Way-finding	*	Very poor and some of the smaller street strips does not have any sign to indicate the street name.
Average score for the fourth livability principle for Najma as a mixed-use neighborhood in is <b>1.8</b>			
5. Provide more open spaces that help facilitates social interactions and embraces diversity.	Open spaces that are within direct viewpoints.	*	There are no open spaces.
	Number of recreational spaces	*	There is none.
	Number of local events	*	There is none.
	Number of Najma's visitor's a t night	*	There are a big number of visitors at night to the point of overcrowding.
Average score for the fifth livability principle for Najma as a mixed-use neighborhood in is <b>2</b>			
6. Community involvement in the planning and management of the neighborhood.	Sense of place and belonging	*	Very minimal.
	Residents satisfaction with Municipality's efforts in developing Najma	*	Most of residents are not aware of the upcoming plans Doha Municipality have for Najma.
	Residents sense of safety	*	Very minimal.
Average score for the sixth livability principle for Najma as a mixed-use neighborhood in is <b>1.67</b>			

The average result from the walkthrough assessment is 2.37, which records in the scale proposed ‘inappropriate’ in terms of the general scheme of Najma’s neighborhood livability. Additionally, a SWOT analysis was generated after the walkthrough to help organize the notes taken during the assessment into a format that can easily be read.

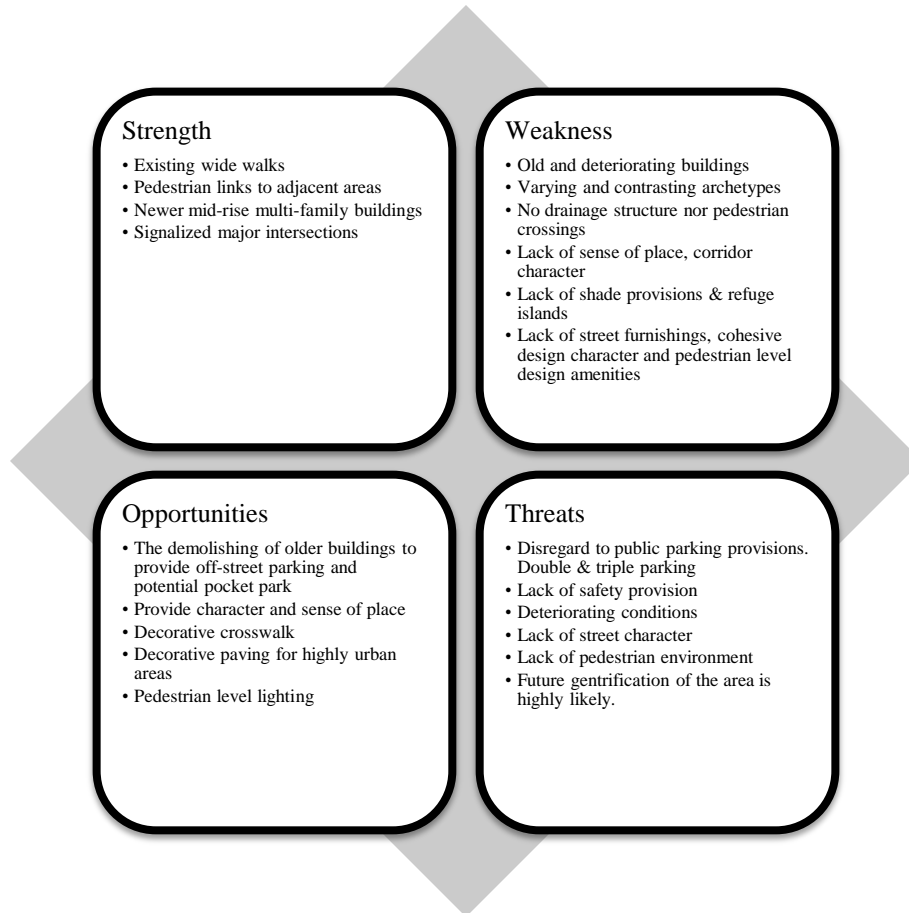
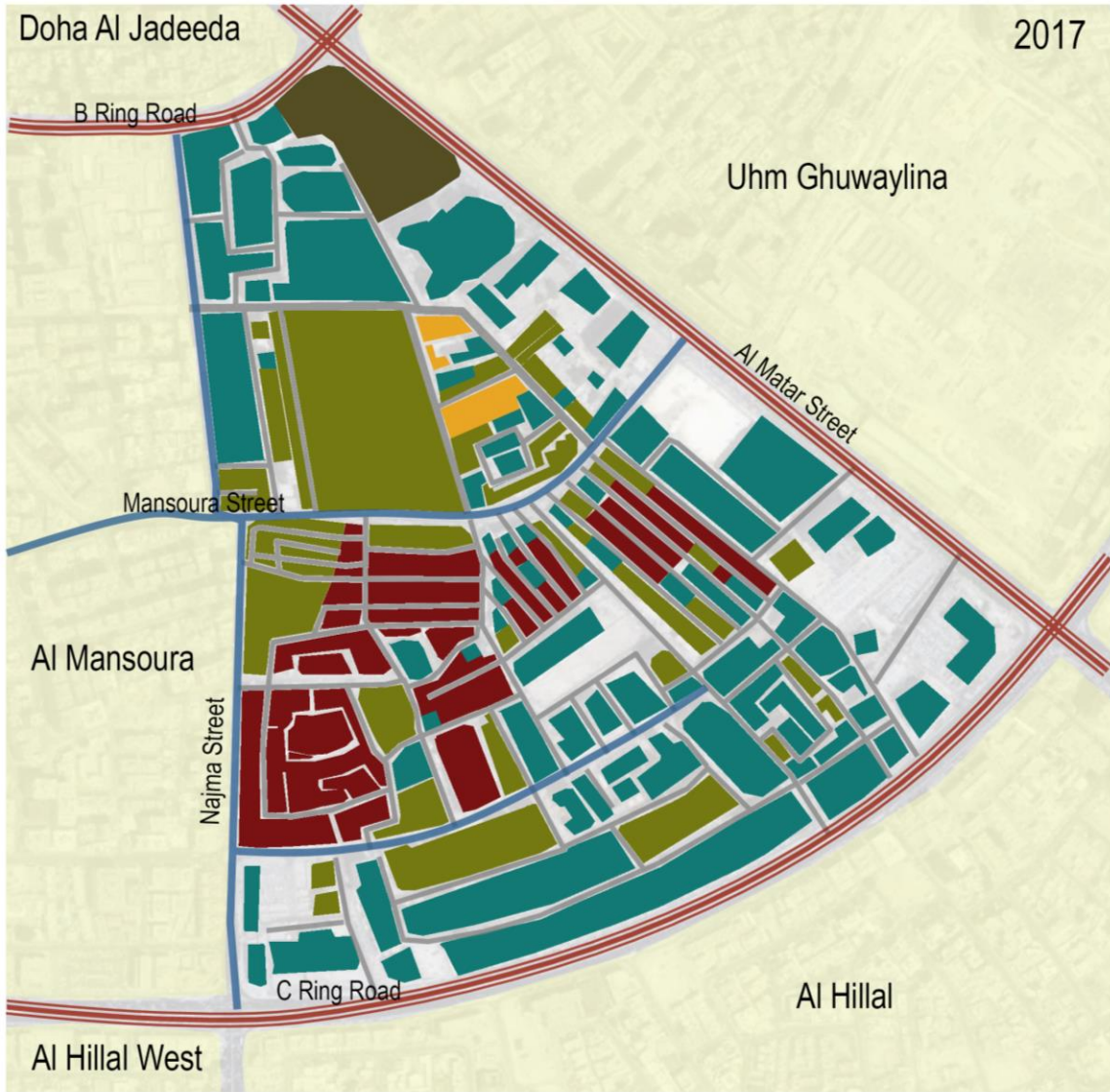


Figure 60: SWOT Analysis. Source: Author

## **5.5 Condition Analysis**

The purpose of the condition analysis is to analyze the conditions of the built environment in Najma, where the buildings will be categorized into four classifications: (1) sound state, (2) recoverable state, (3) irrecoverable state and (4) Demolished/to be demolished. Sound state means the buildings are in a generally good condition and do not need any interventions. A recoverable state means the buildings are adequately functional, but requires few modifications or maintenance work. Whereas, irrecoverable state means the buildings are in a very poor condition and requires major intervention works. The following map highlights those four categories.



**Legends**

- Surrounding Neighborhoods
- Sound State
- Recoverable State
- Irrecoverable State
- Demolished/to be demolished
- Metro Station (under construction)
- Existing Main Roads
- Existing Secondary Roads
- Inner Streets

Figure 61: Condition Analysis of the Built Environment in Najma. Source: Author

## **5.6 Questionnaires**

The result of the questionnaire offers an insight into the situation the users of Najma face today through analyzing the responses collected from the participants' responses. The questions asked are multiple-choice questions that includes, yes or no questions, satisfactions and ranking questions. In total 106 questionnaires were collected from residents and users of Najma.

### 5.6.1 Part I: Respondents' General Information

The population sample comprised of 74% male and 26% female of which 6% were Qataris, 28% Arabs, 52% Asians and 16% belonged to other cultural backgrounds. For the non-Qataris, a large percentage of them lived in Qatar for 1-5 years and only 2% of them have been living in Qatar for more than 20 years. The following table presents a summary of the findings related to the first part of the questionnaire.

Table 24: Questionnaire Survey Results

Questions	Answers	Percentage
1. Age	18-25 years old	19%
	26-35 years old	42%
	36-45 years old	17%
	More than 45	23%
2. Gender	Male	74%
	Female	26%
3. Nationality	Qatari	6%
	Arab	28%
	Asian	51%
	Others	15%
4. Years living in Qatar for non-Qataris	Less than 1 year	24%
	1-5 years	36%
	5-10 years	24%
	10-20 years	14%
	More than 20	2%
5. Are you a resident of Najma?	Yes	60%
	No	40%
7. For residents, how long have you been living in Najma?	Less than 1 year	31%
	1-5 years	44%
	5-10 years	22%
	10-20 years	0
	More than 20	3%
8. For non-residents, how often do you visit Najma?	Daily	14%
	Once a week	14%
	Once every week	14%
	Once a month	57%
	Once every 3 months	0
	Other	0



The age groups of the respondents were varied, 42% of them were 26-35 years of age, 23% of them were more than 45 years old, 19% were 18-25 years old and 17% were 36-45 years old. Questions 7 and 8 are intended to find out how long did the respondents lived in Najma for the case of residents and as for visitors it intends to find how often do they visit the are. These information are important since it indicate how familiar they are with study area and thus, they can clearly point out the advantages and disadvantages of Najma and the aspects that can be improved in terms of urban design.

## 5.6.2 Part II: Household size and Choice of Location

Table 25: Questionnaire Survey Results, Continued

Questions	Answers	Percentage
9. Family size	2 members	25%
	3-5 members	36%
	6-10 members	32%
	More than 10 members	8%
10. What type of accommodation do you live in?	Company Housing	19%
	Apartment	17%
	Villa	28%
	Labor Camp	26%
	Other	9%
11. Your house is ...	Owned	13%
	Rented	87%
12. Does the company cover your housing expenses?	Yes	40%
	No	60%
13. What are the reasons for you to live in your respective location?	Rent	9%
	Travel Distance	11%
	Personal Preference	36%
	Other	43%

The purpose of this section of the questionnaire is to estimate the average household size of the respondents. About 36% of the respondents have a family size of 3-5 members, whereas only 8% of them have a family of more than 10 members. Majority of the respondents live in either villas or labor camps and the percentages are 28% and 26% respectively. Of all the respondents only 13% of them live in a dwelling that they own themselves and 87% answered they have to pay a monthly rent. As for the reason behind their locational choice many stated that it is a personal preference while other respondents provided different answers than the ones listed, those respondents cite

reasons like “it is company provided housing” or “close to other family members or friends”.

While doing a cross analysis with different parts of the survey it is noticed that 6% of the Qatari respondents answered that they have a household size of more than 10 members and they live in villas that they own themselves. This sort of analysis indicates that certain groups that are settled in Najma for the long term have a bigger household size. On the other hand, majority of the 51% Asian respondents have a family of 2-5 members and they live in a company provided dwelling and for the 28% Arab respondents they had mixed responses in terms of household size and ownership.

### 5.6.3 Part III: Measuring Social Capital and Unity

The objective of this part of the questionnaire is to measure the social capital and unity for the community of Najma. It consist of six questions, one question about whether they participate in their neighborhood activities and the other question is about ranking the several options provided behind their reason to locate in Najma in order of importance. In addition, the last four questions are satisfaction questions regarding the different facilities provided in Najma.

Table 26: Questionnaire Survey Results, Continued

<b>Question</b>	<b>Answers</b>	<b>Percentage</b>
14. Do you participate in your neighborhood local activities? (For example social and religious activities: mosque, open areas, parks)	Yes	25%
	No	75%

In the question above most of the respondents answered that they do not participate in any neighborhood local activities, mostly because the existing facilities does not support any local events and it lacks any open areas or parks that the community could use. Only a quarter of the respondents stated that they do participate in some sort of local events in the neighborhoods, mostly related to religious activities.

**15. Rank in order of Importance the reasons for you to locate in Najma**

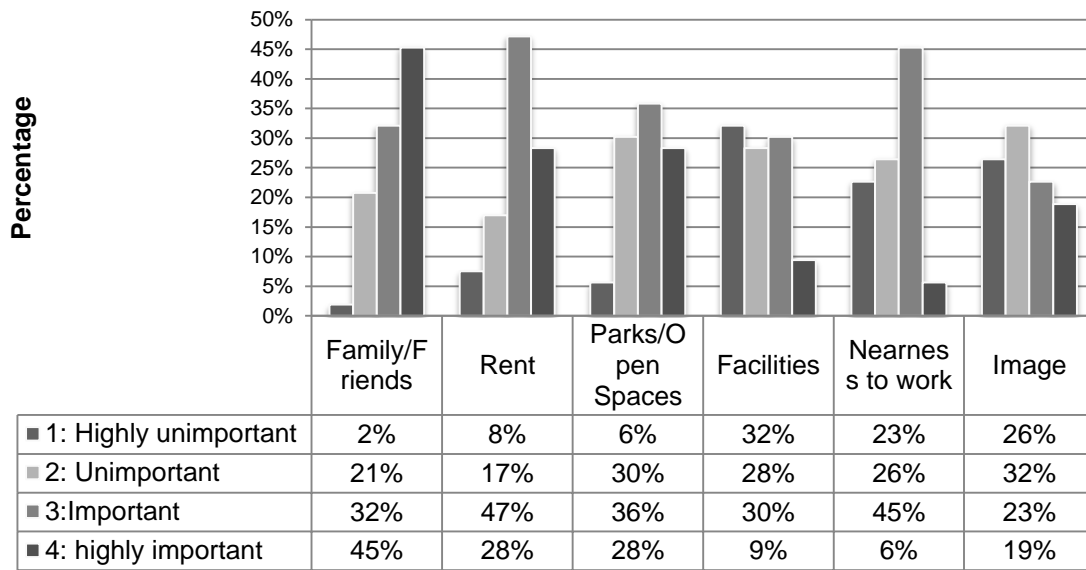


Figure 62: Questionnaire Survey Results, Continued

For question 15, the respondents were asked to rank in order of importance the reasons for them to locate in Najma. The reasons listed were family/friends, rent, parks/open spaces, facilities, nearness to work or image; and they were ranked based on highly important, important, unimportant or highly unimportant. 48% of the resident community cited that family/friends as highly important reason, while 28% of them chose rent as highly important and the minority chose nearness to work as the most important reason. In a similar manner, 32% of the resident community chose facilities as the highly

unimportant reason behind their choice in living in Najma and smaller percentage 2% of them chose family/friends as highly unimportant. Thus, a ranking based on importance behind their choice in living in Najma can be developed as shown below.

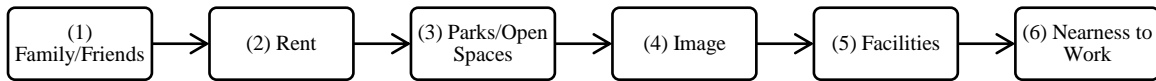


Figure 63: Questionnaire Survey Results, Continued

### 16-19. Questions about residents and users Satisfaction

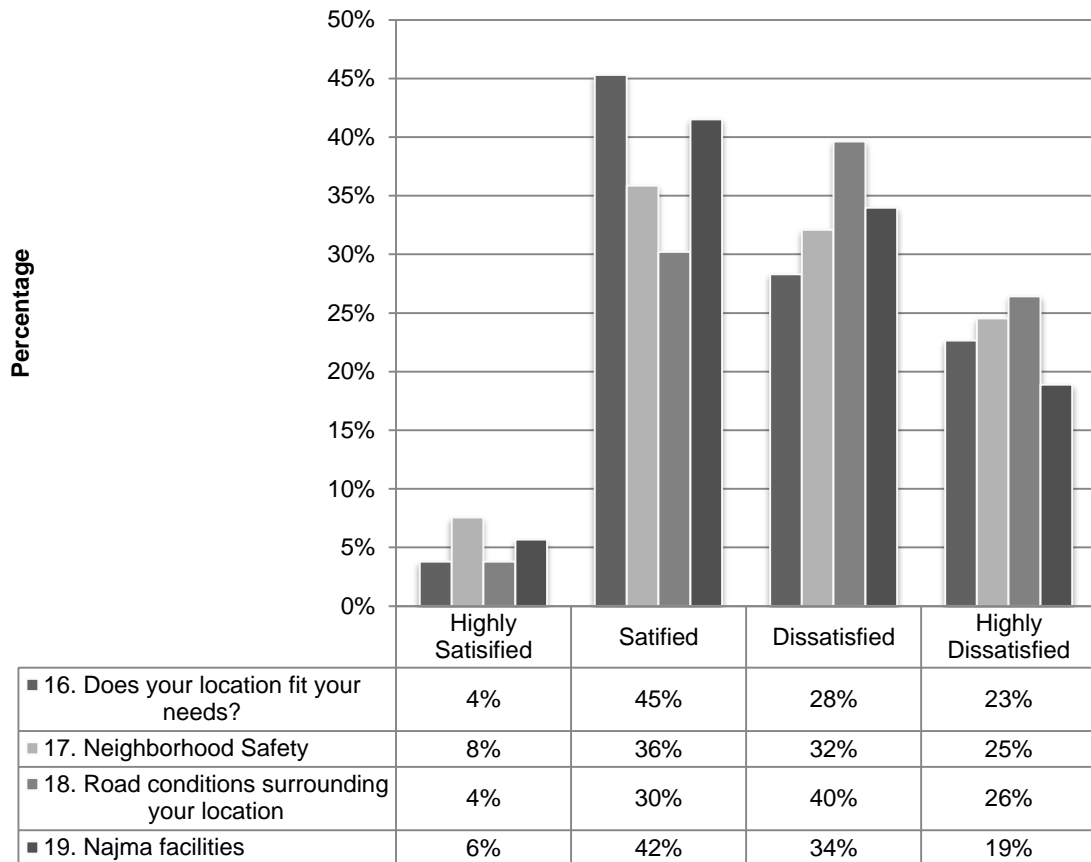


Figure 64: Questionnaire Survey Results, Continued

Questions 16 through 19 aimed to assess the level of satisfaction of the residents and users of Najma in terms of location, safety, road conditions and facilities. For the question asking if the location of Najma fits their need, 45% answered they were satisfied, 28% were dissatisfied and 23% were highly dissatisfied. In regards to the neighborhood safety 36% were satisfied, 32% were dissatisfied and 25% were highly dissatisfied. In question 17 about the roads conditions in Najma 40% of the respondents answered they were dissatisfied, 30% were satisfied and 26% of them were highly dissatisfied. In relation to the facilities provided in Najma 42% of the respondents were satisfied, 34% were dissatisfied, 19% highly dissatisfied and only 6% of them were highly satisfied.

#### 5.6.4 Part IV: Transportation

The last part of the questionnaire was about transportation in regards to Najma and it consisted of four questions concerning travel distance, automobile ownership, walkability and cycling.

Table 27: Questionnaire Survey Results, Continued

Questions	Answers	Percentage
20. How long does it take from home to your working place?	5-10 minutes	25%
	10-15 minutes	9%
	15-30 minutes	40%
	1 hour	23%
	2 hours	2%
	More than 2 hours	2%
21. Do you, or anyone from your household owns an automobile?	Yes	42%
	No	58%
22. How often do you walk	Never	49%

around Najma area for any purpose? (Work, school, errands, enjoyment, exercise, etc.)	Once to three times a month	23%
	Once per week	23%
	More than once a week	6%
23. How often do you ride a bicycle from your home to your intended destination?	Never	49%
	Once to three times a month	25%
	Once per week	21%
	More than once a week	6%

Majority of responses revealed that 40% of the participants take 15-30 minutes to arrive to their workplace, 25% take 5-10 minutes and very few of them take about 2 hours or more. In regards to private automobile ownership, 58% of the respondents do own an automobile in their household while 42% of them do not. 49% of the respondents revealed they never walk around the neighborhood for any work, school, errand, exercise or enjoyment purposes; whereas only 6% of the respondents walk around the neighborhoods several times a week.

## 5.7 Interviews

For the semi-structured interview form, refer to appendix B. The form was sent to the interviewees few days prior to the meeting. The table below discloses the interviewee information and the list of topics discusses during the interview.

Table 28: Interviewee Information

<b>Interview</b>	<b>Affiliations</b>	<b>Date and Place</b>	<b>Topics</b>
Ashraf Nalakath Pallathu Urban Planner GIS Qatar	Ministry of Municipality & Urban Planning	March 8 <sup>th</sup> , 2016 at 10:00AM Ministry of Municipality & Urban Planning, 1 <sup>st</sup> Floor, West Bay	<ul style="list-style-type: none"> <li>• Urban Morphology of Najma</li> <li>• Land use of Najma</li> <li>• Characteristics of mixed-use neighborhoods in Doha such Najma and Al Najada neighborhoods</li> </ul>
Lorena Suteu <i>Senior Architect &amp; Urban Planner</i> <i>Design Management</i>	ASTAD Project Management Qatar Foundation Education City Master Planning	Sunday October 30 <sup>th</sup> , 2016 at 8:00AM Commercial Bank Plaza, 10 <sup>th</sup> Floor, West Bay	<ul style="list-style-type: none"> <li>• Future vision of mixed-use neighborhoods in Doha.</li> <li>• Main features of mixed-use neighborhoods</li> <li>• Government organizations roles</li> <li>• Urban planning process</li> <li>• Transit Oriented Development</li> <li>• Metro circulation and urban morphology</li> </ul>
Gabriele Acquaviva <i>Senior Architect</i>	Restoration of Historic Structures in Education City Al Shaqab Arena Project in Education City	Tuesday November 1 <sup>st</sup> , 2016 at 9:00AM Qatar Foundation CPD Education City	<ul style="list-style-type: none"> <li>• Future vision of mixed-use neighborhoods in Doha.</li> <li>• Main features of mixed-use neighborhoods</li> <li>• Government organizations roles</li> <li>• Urban planning process</li> <li>• Transit Oriented Development</li> <li>• Metro circulation and urban morphology</li> <li>• Najma future development strategy</li> </ul>
Samah Izzeddin <i>Project Manager</i>	Qatar Academy Projects Education City World Cup Stadiums	Tuesday November 1 <sup>st</sup> , 2016 at 10:00AM Qatar Foundation CPD Education City	<ul style="list-style-type: none"> <li>• Future vision of mixed-use neighborhoods in Doha.</li> <li>• Main features of mixed-use neighborhoods</li> <li>• Government organizations roles</li> <li>• Urban planning process</li> <li>• Transit Oriented Development</li> <li>• Metro circulation and urban morphology</li> </ul>



### **5.7.1 Part I: Discussion about Mixed-use Neighborhoods in Doha**

For the future vision of the mixed-use neighborhoods in Doha, Suteu disclosed that there is already a shift in Qatar urban planning to apply the concept of integrating residential and retail space to existing neighborhoods. With developments such as Msheireb and Lusail, the overall strategic urban planning objective tend to encourage neighborhood isolation from one another and urban sprawl due to the over reliance on private cars as the main mode of transport. Furthermore, the main features to be considered in relation to the development of mixed-use neighborhoods in Doha are:

- Neighborhood context and how well does it react to surrounding neighborhoods
- Connectivity; is the neighborhood well connected with its built environment and surrounding neighborhoods.
- Ease of access; how well does the neighborhood can use the neighborhood. The urban design of the neighborhood has too be inclusive, that is including people of all types and age.
- Provision of variety of mixed uses and different activities.

In the case of Najma neighborhoods, Acquaviva reasons that for the future development of the area a trace of the old fabric should be preserved to keep the place real and further elaborates that people in Doha nowadays are living in segregated zones and are not well integrated together. The existing urban renewals in Doha are doing what is called gentrification; they are evacuating the low-income groups in the area and pushing them to the peripheries of Doha as what happened to Msheireb. For a place to be successful it should integrate people from all social groups.

Concerning governmental organizations role in the development of mixed-use neighborhoods, there is a need to implement policies that are compatible with the conceptual forms of mixed use. One of the issues here in Qatar is that most urban planning policies are kept confidential, while most other countries around the world have their policies published in online portals, therefore most researchers, consultant companies and urban planners do not know these documents exist and thus, it results in miscommunications between the several parties involved and increase in time and cost. Other issues that are necessary as well is providing a mix housing options that are affordable. Additionally, the planning process for mixed-use neighborhoods are more difficult since it requires several negotiations with local authorities, and therefore the process of decision-making is more complex and lengthy.

### **5.7.2 Part II: Discussion about Transit Oriented Developments in Doha**

It is difficult to separate transportation and the urban form from each other; these two aspects help determine how people interact with one another, land use, density and people movement within the neighborhood. Similar to how the traditional fabric of Doha was built on the basis of people interaction and relationships as the predominant factor to the urban design.

All the interviewees agree on the fact the future Doha metro project will help reduce traffic congestions and the future metro station in Najma presents a big opportunity for the neighborhood, the area surrounding the station is important because it has the opportunity to be beautiful and interesting if well planned. There are two important issues to consider, the first impression for the visitors once they get off from the station and how to link the whole neighborhood to the station. Acquaviva suggests

that the local government authorities should stop or minimize the foreign consultants involvement in the design aspects instead they should hire someone who have some sort of sensitivity to the culture. Moreover, there should be opportunities for people to walk, and provision of shaded pathways and streetlights to increase the sense of neighborhood safety. In addition to the metro, other modes of transportation should be encouraged.

Suteu argues that Najma neighborhood will be a challenge to redevelop since it is an existing development with an existing infrastructure. For the future redevelopment of Najma, the interviewees suggest to:

- Utilize leftovers from existing development to create open spaces
- Buildings built in 1970s and 1980s that do not reach a certain level of proper infrastructure and safety requirements should be demolished.
- Encourage small local development to take place.
- Connectivity from Najma to other neighborhoods
- Naming of smaller streets

## **5.8 Conclusion**

This chapter discusses and analyzes the various data collected from the different methodologies proposed in this research for the case of Najma neighborhood. The site analysis done for Najma studies aspects such as site location and context, land use, building heights, demographics, public realm and transportation. Then, there is the morphological analysis, which concerns the urban evolution of Najma from 1963 to 2016. The conducted questionnaire is intended to provide an insight to the current situation of the resident community in Najma and users of the area. In addition, other methodologies were used to provide a comprehensive analysis for Najma neighborhood.

As for the interviews it took place with industry professionals discussing two main topics, which are mixed use neighborhoods and transit-oriented development in Doha. The proposed scenario will take into consideration all the data analyzed in regards to Najma and what is the way forward in terms of urban design policies.

## **6 CHAPTER 6: PROPOSED SCENARIO FOR NAJMA**

The purpose of this chapter is to assimilate all the findings of this research into a potential scenario proposal for Najma. A scenario is proposed incorporating all information gathered from previous chapters of this research to generate a comprehensive urban design framework for Najma. The urban design framework is divided into four parts where each part will provide potential development strategies and recommendations for the current situation in Najma in terms of land use, circulation, open spaces and public realm and built environment.

The main objective of this scenario is to create a livable neighborhood community for Najma, also this scenario provides potential development strategies for other mixed-use neighborhoods in Doha.

### **6.1 Significance**

The significance of the proposal is that it develops potential urban design policies and development strategies for a mixed-use neighborhood like Najma in order to enhance the livability of the area. Additionally, These recommendations can be expanded to include other mixed-use neighborhood in Doha. Nevertheless, urban planners and researchers in the topic of livability of mixed-use neighborhoods in Doha can also use and benefit from the urban policies proposed in this research.

#### **6.1.1 Vision**

The vision of the proposed scenario of potential development strategies for Najma is to create a livable community that caters to the everyday needs of its residents.

### **6.1.2 Objectives**

The objective of the proposed scenario for Najma is to:

- Provide variety of mixed uses and housing options
- Support the area with integrated transportation network to decrease reliance on car use.
- Establish a lively local economy and encourage private and public partnership.
- Provide a high quality public realm
- Preserve neighborhood identity and diversity

### 6.1.3 Livability Principles and Guidelines for Najma

The walkthrough assessment tool used in the methodology and based on the different livability principles examined in this research, the following principles have been adopted in regards to Doha’s mixed-use neighborhoods with Najma as a case study; these guidelines will be incorporated on the proposed potential scenario for Najma:

Table 29: Adopted Livability Principles and Urban Design Guidelines for Najma

<b>Livability Principle</b>	<b>Urban Design Guidelines</b>
1. Endorse developments that are of mixed-use nature.	<ul style="list-style-type: none"> <li>• Density of mixed-uses within the neighborhood, especially around the metro station.</li> <li>• Density of buildings that adopt more than one use</li> <li>• Encourage growth of local businesses</li> <li>• Building heights and sizes that are compatible with the neighborhood density</li> </ul>
2. Encourage a wider range of housing and design options that are culturally and climatically suitable, furthermore, those options should achieve commonly accepted levels of environmental sustainability and livability expectations.	<ul style="list-style-type: none"> <li>• Wide range of housing options</li> <li>• Affordable housing for all income groups</li> </ul>
3. Improve the natural environment, air quality and livability of the municipality by removing harmful and polluting industries from mixed-use and residential neighborhoods.	<ul style="list-style-type: none"> <li>• Provision of open spaces such as parks or plazas</li> <li>• Amount of green spaces within the neighborhood</li> </ul>
4. Encourage the use of public transport, since the private streetcar is the dominant mode of transportation, which increases traffic congestions.	<ul style="list-style-type: none"> <li>• Use of various modes of transportation</li> <li>• Provide adequate number of parking space</li> <li>• Provision of pedestrian lanes</li> <li>• Provision of cycling lanes</li> <li>• Clear Signage and Way-finding systems</li> </ul>

<p>5. Provide more open spaces that help facilitates social interactions and embraces diversity.</p>	<ul style="list-style-type: none"> <li>• Open spaces that are within direct viewpoints.</li> <li>• Provide a number of recreational spaces</li> </ul>
<p>6. Community involvement in the planning and management of the neighborhood.</p>	<ul style="list-style-type: none"> <li>• Improve residents satisfaction and sense of place and belonging</li> <li>• Inform and/or involve residents with Municipality's efforts in developing Najma</li> </ul>



## 6.2 Urban Design Framework

There are four elements to the urban design framework considered in the study, which are: (1) Land Use, (2) Circulation, (3) Open spaces and public realm and (4) built environment.

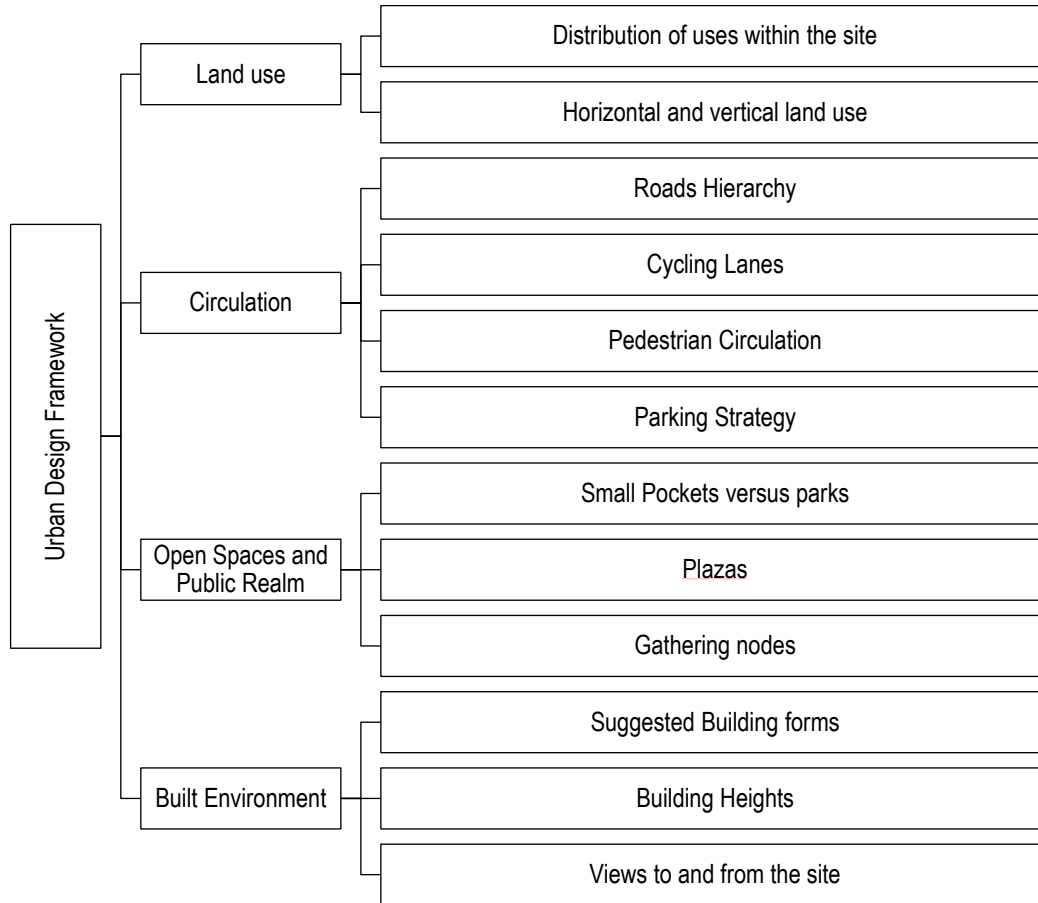


Figure 65: Adopted Urban Design Frameworks for Najma. Source: Author

## 6.2.1 Land Use

A set of design polices related to Najma’s land use are described in the following table along with potential development strategies for each land use policy.

Table 30: Land Use Policies and Development Strategies for Najma

<b>Policies</b>	<b>Development Strategies</b>		
<u>Land Use Policy 1:</u> Variety of mixed uses	Ensure that the uses within the neighborhood conveniently satisfy residents’ everyday needs.	Mixed horizontal and vertical land uses.	Create community/public buildings that are multi-use. <i>Example: Reduce parking spaces by adopting a shared parking system.</i>
<u>Land Use Policy 2:</u> Various housing options	Affordable housing	Housing for all types of people and age groups.	Improve labor camps within Najma.
<u>Land Use Policy 3:</u> Development of local economies	Provide incentive for local businesses to develop. <i>Example: Preserve the local crafts developed in the area such as carpentry and traditional furnishing items.</i>	Maintain the unique local character of the neighborhood. <i>Example: Souq Al Haraj and local crafts developed in the Souq.</i>	Encourage private and public partnership <i>Example: The Ministry of Commerce could provide loans for local business to be established.</i>
<u>Land Use Policy 4:</u> Uses and services integration between buildings	Enhance/increase services around Najma’s metro station.	Provide local public parks that are well connected to residential buildings.	Provide clear connections in terms of character and degree of use between one building to another.
<u>Land Use Policy 5:</u> Create an employment hub	Create offices around Najma metro station to ensure constant flow of people.	Increase employment opportunities in Najma with preference to local residents.	Provide professional training opportunities/centers. <i>Example: Training could take place on the school located in Najma in the evening after the students went home.</i>

Subsequently a revised land use map is developed to integrate all the proposed development strategies with a focus on intensifying the mixed-use character around the metro station, refer to Figure 66.

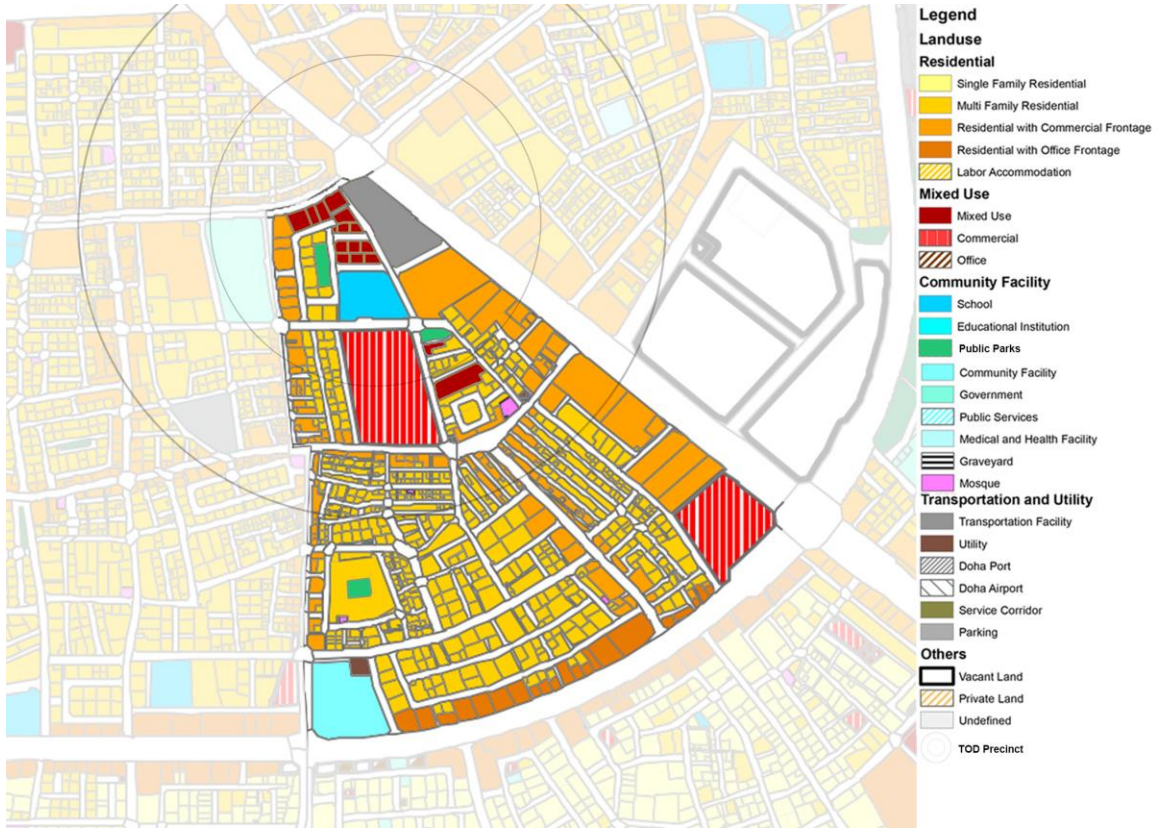


Figure 66: Revised land use map for Najma. Edited by: Author

## 6.2.2 Circulation

A set of design polices related to Najma’s Circulation are described in the following table along with potential development strategies for each circulation policy.

Table 31: Circulation Policies and Development Strategies

Policies	Development Strategies		
<u>Circulation Policy 1:</u> Multi-mode transit that is well connected and balanced	Manage/decrease clashes between the usage of one transit mode to the other	Provide various transportation options	Improve neighborhood urban structure to cater to different transportation options
<u>Circulation Policy 2:</u> Promote the use of other modes of transportation to reduce the reliance on cars	Make the use of other transportation modes appealing to users	Adopt lean design strategies to decrease the travel time needed to use the get in the train/use the bus	
<u>Circulation Policy 3:</u> Signage system and way-finding	Provide clear and readable signage system	Improve travel distance from one destination to the other in Najma by providing safe pedestrian connection along the highly dense streets.	

### 6.2.2.1 Bicycle network

Since Najma neighborhood has no designated cycling lanes, a proposed cycling network scheme is illustrated in Figure 67.



Figure 67: Proposed Cycling Network for Najma. Source: Author

### 6.2.2.2 *Pedestrian connectivity*

The following map showcases proposed improvements to be made for the pedestrian network in Najma.

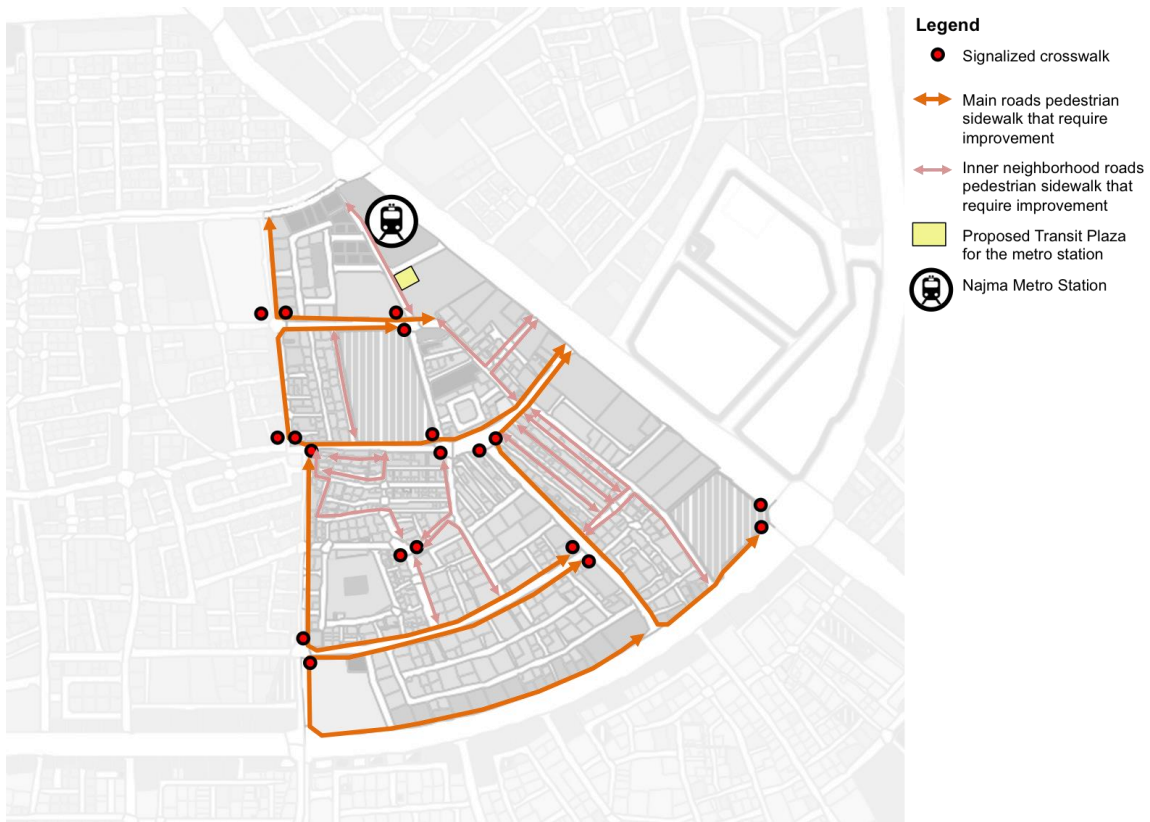


Figure 68: Proposed Improvements for Pedestrian Connectivity for Najma. Source: Author

### 6.2.2.3 Parking strategy

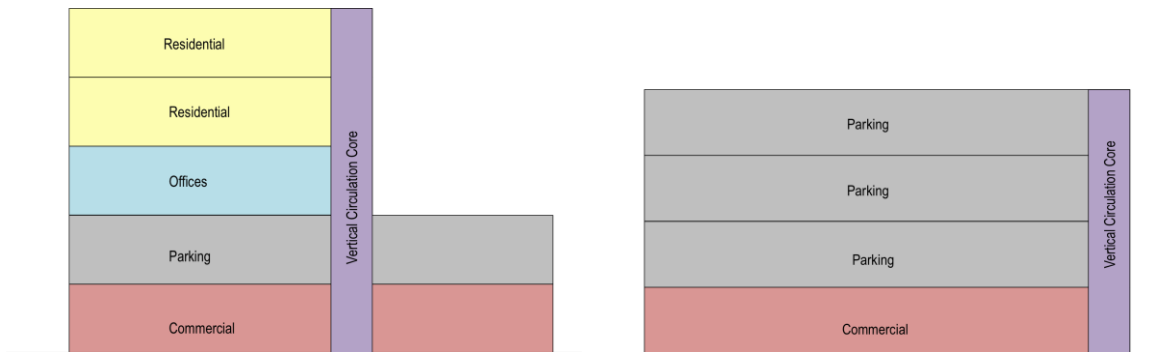


Figure 69: Stacking Diagram Proposal for Parking Strategies for Najma (Stacking proposal A & B). Source: Author

As a form of multi-use within a building it is recommended to use stacking proposal A for area within close proximity to the metro station, since the land around the metro

station will be valuable, thus it is recommended to diversify the uses by adopting this option.

For stacking proposal B, it is recommended to be used within the neighborhood as form of multi-story parking and as for the commercial ground floor it is to generate income and not leaving the building to be deserted incase the parking is not fully occupied. In addition according to QSAS, Qatar Sustainability Assessment System, multi-story parking is considered sustainable.

### 6.2.3 Open Spaces and Public Realm

A set of design polices related to Najma’s open spaces and public realm is described in the following table along with potential development strategies for each policy.

Table 32: Open Spaces Policies and Development Strategies

<b>Policies</b>	<b>Development Strategies</b>	
<u>Open Spaces and Public Realm Policy 1:</u> Increase number of open spaces	Create a number of pocket open spaces around the neighborhood. Refer to Figure 70	Establish gathering and social nodes for the residents
<u>Open Spaces and Public Realm Policy 2:</u> Improve street views	Increase green elements along the main corridors	Beautify the border fences surrounding the historical market for Souq Al Haraj
<u>Open Spaces and Public Realm Policy 3:</u> Create recreational facilities	Integrate recreational facilities to other uses in the neighborhood	Provide several recreational options



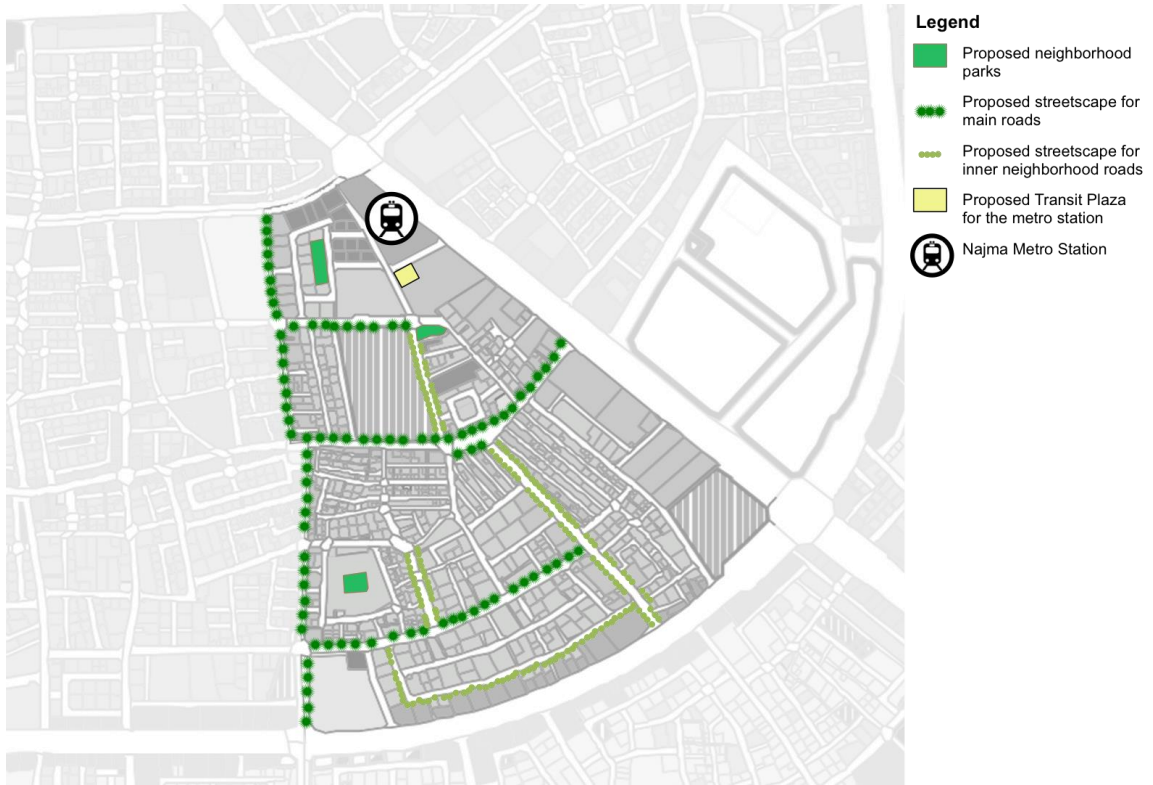


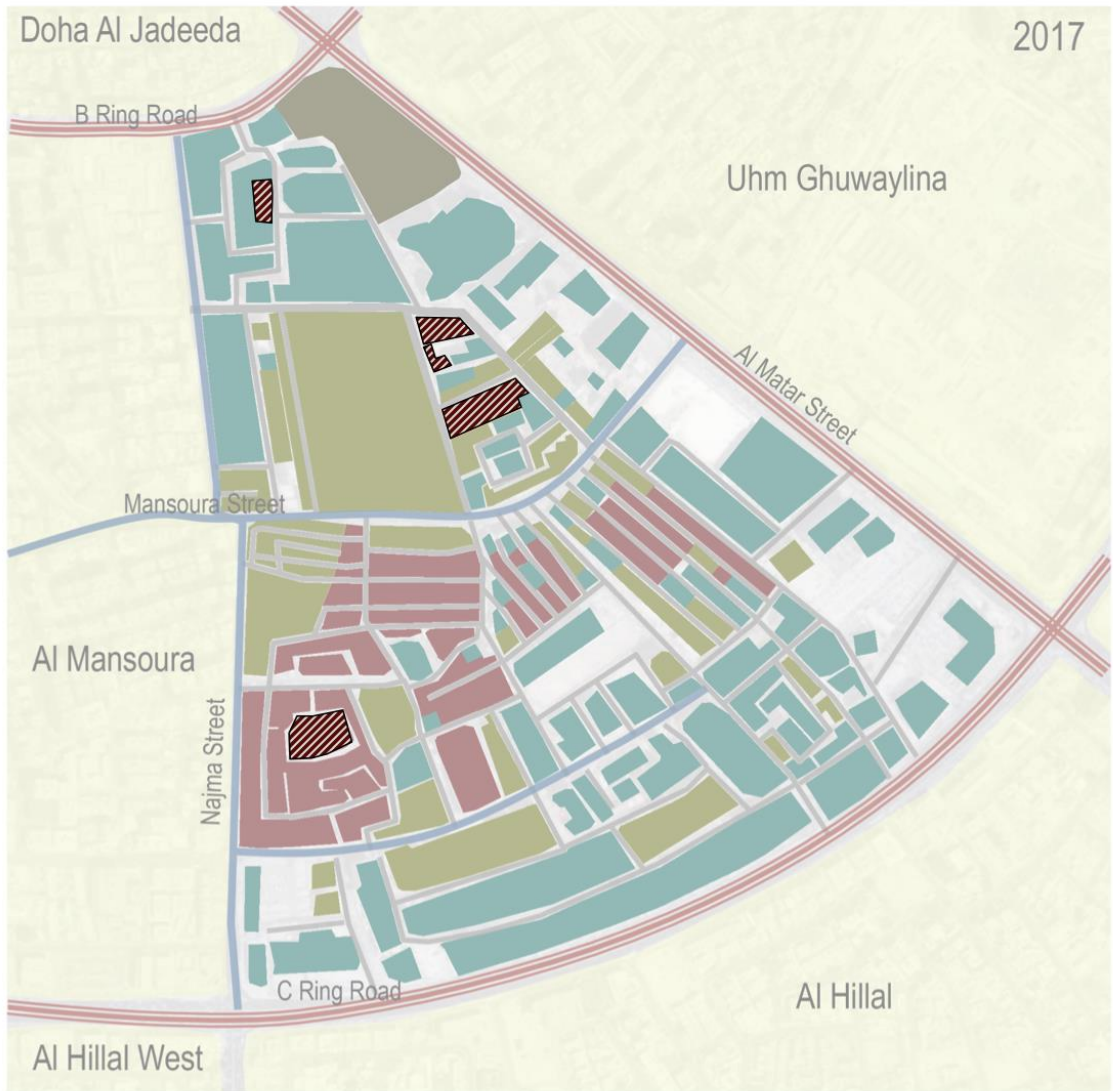
Figure 70: Proposed Scenario of Open Spaces for Najma. Source: Author

## 6.2.4 Built Environment

A set of design polices related to Najma’s built environment is described in the following table along with potential development strategies for each policy.

Table 33: Urban Design Policies and Development Strategies

Policies	Development Strategies		
<p><u>Built Environment Policy 1:</u> Preserve the local identity</p>	<p>Restoration and adaption of the historic quarter of Najma</p>	<p>For demolition, adapt selected smart demolition and reconstruction when needed. Refer to Figure 71</p>	<p>Improve spaces of historical significance, such as Souq Al Haraj</p>
<p><u>Built Environment Policy 2:</u> Intensify development around the metro station</p>	<p>Provide an ease of access to and from the station</p>	<p>Provide high intensity of mixed uses</p>	<p>Limit development sizes around the metro to provide sufficient space to accommodate the flow of people. <i>Example: provide a public plaza in front of the metro station.</i></p>



**Legends**

- Surrounding Neighborhoods
- Sound State
- Recoverable State
- Irrecoverable State
- Demolished/to be demolished
- Metro Station (under construction)
- Existing Main Roads
- Existing Secondary Roads
- Inner Streets

Figure 71: Proposed Selected smart demolition for Najma. Source: Author

### **6.3 Conclusion**

The purposed set of guidelines in this chapter is a part of a potential scenario for development strategies for Najma and these strategies can also be applicable to other mixed-use neighborhoods in Doha. The main objective of this scenario is to create a livable environment for Najma based on the different livability principles reviewed in this chapter, and then a group of design guidelines was developed for each principle.

Finally, the proposed design framework for Najma covers four main part, which are land use, circulation, open spaces and public realm and built environment. Each part consists of different policies with its respective development strategies; afterwards illustrative maps were used to further explain the concept behind each policy and what it entails to Najma's urban fabric.

## **7 CHAPTER 7: CONCLUSION AND RECOMMENDATIONS**

The final chapter of this research offers a summary of all the findings related to investigating livability in mixed-use neighborhoods in Doha, using Najma neighborhood as a case study. Along with the summary of findings it provides answers to the research questions proposed and recommendations for future studies.

### **7.1 Summary of Findings**

The subject of livability has long been discussed in urban design and planning, especially of residential neighborhoods. In this research the main discussion is about mixed-use neighborhood general livability how to measure it to arrive at conclusions for how to enhance and improve it. The main case study of this research is Najma neighborhood in Doha chosen for its mixed-use nature and density. Najma neighborhood is located within the center of Doha and is one of the few remnants of the traditional neighborhood in Doha.

In the first chapter of the study, it explores the significance and implication of the study to the city of Doha, major developments in the city, problem statement of the research, research design, goals and research questions. The formulated research questions were:

- How livable is the urban environment of Najma?
- How the upcoming development projects such as the metro will impact Najma's urban form?
- What are the main features that should be considered when designing mixed-use neighborhoods in Doha?

Following the introduction and based on the main research questions, a literature review was developed based on three central concepts, which are: mixed-use neighborhoods, livability and transit oriented development. For each concept, several definitions were poised, to select the best definition best suited to the scope of the study in addition to benefits, challenges, principles, impacts and the current situation in Doha regarding each concept. The intention of carrying out the literature review was to assess the background information about the concepts being studied and to extract a list of principles and potential solutions that could be adapted to fit the context of mixed-use neighbourhoods in Doha.

In chapter 3, case studies of best practice, three neighborhoods were selected. The first case study was a local case study, the second one a regional case study and the last one is an international case study. The purpose of this approach is to collect various views and experiences of what approaches were taken to improve those neighborhoods. The thing that all these case studies have in common is that they are mixed-uses neighborhood. The first case of Msheireb neighborhood, a local neighborhood located in the same city as Najma between the B and C Ring road and have a lot of shared characteristics between each especially before Msheireb neighborhood was subject to an urban renewal project. Thus, Msheireb structures faced complete demolishing losing its old urban fabric. The second case study of Satwa neighborhood in Dubai, shares similar population character as current Najma today in terms of prevalent percentage of South East Asian population, especially low-income male workers. For Satwa neighborhood, it is one of the few old neighborhoods of Dubai that is still survived till today, although development plans were supposed to be carried out back in 2009, but they were halted in

order to preserve the unique character of the place. The third case of Ala Moana neighborhood in Hawaii was highly relevant to the research study as they have massive transit oriented development plans that links all the neighborhoods together. Lastly, a comparison analysis was done between all the three case studies to extract an adopted potential design framework that suits Najma.

The fourth chapter defines the methodological approach of this research, the case study selection and why was Najma particularly chosen as the case study, primary and secondary data collection. The primary data collection tools were site analysis, morphological analysis, field observation, walkthrough assessment, questionnaires and interviews. Data collected from secondary sources are satellite and historical maps, population census, planning policies and regulations, bus stops and taxi services, metro stations and neighborhood spatial planning maps.

In chapter 5, data analysis and discussion, all the data gathered were analyzed in order to provide a comprehensive report of the current livability conditions in Najma. This chapter was divided into seven parts:

- Site Analysis, where it discussed the location and context of Najma, current land use, building heights, demographics, public realm and transportation.
- Morphological analysis, a detailed analysis performed based on the satellite image retrieved from the Ministry of Urban Planning and Development regarding Najma urban development.
- Field observation based on the physical, social, functional and perceptual aspects of Najma

- Walkthrough assessment done based on adopted livability principles for mixed use neighborhoods in Doha. The average score of the assessment is 2.37, which records in the proposed scale ‘inappropriate’ in terms of the general scheme of Najma’s neighborhood livability.
- Condition analysis for Najma disclosed which buildings that are in sound state, recoverable state, irrecoverable state and demolished/ to be demolished buildings.
- Questionnaire distributed to residents and visitors of the neighborhood were thoroughly analyzed to gauge the general satisfaction level of respondents on the current conditions of Najma.
- Interviews with industry professionals were discussed in regards to the topics of mixed-use neighborhoods and transit-oriented development.

Based on the discussion done in chapter 5, chapter 6 proposes a potential urban design framework to enhance livability in Najma developing a set of potential urban design policies and development strategies centered on land use, circulation, open spaces and public realm and built environment. The developed set of urban policies is not only limited to Najma, but can be used to other mixed-use neighborhoods in Doha, especially those within the B and C Ring Roads.

## **7.2 Answers to Research Questions**

For the research study, three main research questions were formulated to investigate livability indicators in Najma. The answer to these research questions is as follows:

1. *How livable is the urban environment of Najma?*



The purpose of this question was to investigate how livable the current neighborhood of Najma is. The unique character of Najma was assessed through its spatial structure, community organization population density, local facilities and other activities of the area. Research findings reveal that Najma neighborhood is highly dense, in fact it is the densest neighborhood in Doha in comparison with other neighborhoods of similar area size. It is both dense in terms of population and built environment, there is barely any vacant land for any future project to develop. Furthermore, some of the houses are in a severe deteriorated state with patched walls and doors left open.

Most importantly the neighborhood does not facilitate social interaction or enhance the community spirit between different people, as it does not have any open area, plazas or parks.

For connectivity, the neighborhood lacked a proper network for pedestrian, within the interior streets pedestrian pavement was in most cases not provided. Cycling lanes were not considered at all and it only had one bus stop throughout the whole neighborhood

In the walkthrough assessment conducted for Najma it scored an average 2.37 which measures in the proposed scale as 'inappropriate' in terms for the livability principles adopted to the context of mixed use neighborhoods in Doha. The adopted livability principles that severely affected this assessment score are:

- Livability Principle 3: Improve the natural environment, air quality and livability of the municipality by removing harmful and polluting industries from mixed-use and residential neighborhoods.

- The findings revealed that there is no open spaces and green spaces within the neighborhood
- Livability Principle 4: Encourage the use of public transport, since the private streetcar is the dominant mode of transportation, which increases traffic congestions.
  - There is a shortage of adequate parking spaces
  - Pedestrian pavement were only provided along the main streets
  - No cycling lanes
  - Inadequate signage and way-finding system, some of the smaller streets does not have any sign to identify its name
- Livability Principle 6: Community involvement in the planning and management of the neighborhood.
  - Very minimal sense of place and belonging since of the population are transient.
  - Residents' satisfaction with Municipality's efforts in developing Najma was minimal since they are not well aware of any future plans for the neighborhood.

2. *How the upcoming development projects, such as the metro will impact Najma's urban form?*

It will greatly affect the urban form, especially since Najma is a highly dense neighborhood with high traffic congestions. The land near the metro station will increase in prices and most likely to be owned by private entities seeking new business ventures

and local businesses are in danger to be overtaken by them. In addition, the land area in close proximity to the metro station will be highly dense in terms of services and commercial activities. If the connection to and from the metro station is well maintained businesses will flourish and if not then it will be a place that hinders the safety of the residents. Nonetheless, pedestrian connections will be strengthened since most people will walk to and from the metro station and inner streets will be improved to cater to the ongoing people flow. Furthermore, it will help mitigate traffic congestions by providing other means of transportation.

Eventually, the need for parking spaces will decrease; therefore these spaces can be transformed into open or green spaces since Najma currently has none.

*3. What are the main features that should be considered when designing mixed-use neighborhoods in Doha?*

First of all types of residents and how will they use the neighborhood and what are their wants and needs. For the neighborhood to be sustainable in the long run it has to meet people needs in all stage of life and not only in a certain period of time. Provision of variety of mixed uses and services that adequately meet residents every day requirements.

Another major factor to consider is employment, it is one of the main reason people move from one place to the other, the neighborhood have to provide employment opportunities for all types of people and age. Development of a local economy that is unique to the neighborhood to ensure visitors flow to the neighborhoods and to ensure residents will occupy the area for a long time.

Well-connected transportation system whether private or public, it has to be established in a way that helps decrease traffic congestion and alleviate some of the load on the use of private street cars. In addition a strong and safe pedestrian network to encourage walkability within the neighborhoods and to nearby places. Moreover, another feature to be considered is the creation of soft neighborhood edges as to not isolate the neighborhood from other neighborhoods and a clearly well-defined neighborhood center.

### **7.3 Recommendations for Future Studies**

Future studies on the topic of livability of mixed uses in Doha can be further developed to include neighborhoods that are relatively new in terms of age to assess if livability principles were ever considered in the design of these neighborhoods. Several neighborhoods in Doha can be studied at once to properly compare and contrast between neighborhood old or new. A similar study can be carried out in manufacturing districts in Qatar to investigate livability in those districts, since more often the not negative reports are being broadcasted in news in regards to the general livability conditions and residents satisfaction.

Furthermore, once the future metro station in Doha is fully operated, more research can be done on the subject of transit-oriented development and how can it enhance the general livability of neighborhoods in Qatar. An assessment can be made on how successful the metro project is and how well it is connected to other modes of transportation.

### **7.4 Conclusion**

To conclude, the research provides solutions to enhance livability of mixed-use neighborhoods in Doha, extracting from research findings potential urban design

framework and development strategies that can be implemented. All these research findings and the different methodologies were essential to answer the research questions formulated.

The summary of findings discussed in this chapter provides a brief overview of the outcomes of each chapter and how it is significant to the research study. Then, each research questions was discussed separately based on the findings from the previous chapters.

Further recommendation for future research can include different scenarios of mixed-use neighborhoods in Doha and other types of neighborhoods and also due time this research can be expanded to include more information of the metro once it is fully operated.

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## 9 APPENDICES

### 9.1 Appendix A: Questionnaire Form

#### INVESTIGATING LIVABILITY OF MIXED-USE NEIGHBORHOOD | CASE OF NAJMA, DOHA

The research investigates the livability of mixed-use districts, focusing on Najma area as a case study. Mixed-use neighborhoods are not properly maintained due to the fast development of other areas in Doha, that the existing mixed use neighborhoods cannot keep up with. Najma’s population is highly transient; hence the minimal sense of place and highly male dominated population. The commercial activities in Najma happen to be concentrated in one type of activity. Insufficient parking spaces along with the lack of public transportation lead to traffic congestion in the study area, in addition to poorly planned pedestrian circulation networks. The current situation is a result of uncontrolled globalization and rapid urbanization that have severed the local urban identity of mixed-use districts, favoring the boxed shopping malls instead. The research will depend on the data collected from both secondary and primary resources. The data collected are processed and analyzed in relation to the literature reviewed and the different theories presented. Observations are carried out from several points in Najma area to understand the context in which those urban areas are constructed and how are they influenced by the parameters defined in the research and what makes them sustainable in the long term. This questionnaire will only take **five minutes of your time. This questionnaire is strictly for educational purposes.**

Part I: General Information					
1. Age	<input type="checkbox"/> 18-25	<input type="checkbox"/> 26-35	<input type="checkbox"/> 36-45	<input type="checkbox"/> More than 45	
2. Gender	<input type="checkbox"/> Male		<input type="checkbox"/> Female		
3. Nationality	<input type="checkbox"/> a. Qatari	<input type="checkbox"/> b. Arab	<input type="checkbox"/> c. Asian	<input type="checkbox"/> d. Others	
If you answered ‘Qatari’, then skip question 4					
4. Years living in Qatar	<input type="checkbox"/> Less than 1	<input type="checkbox"/> 1-5 years	<input type="checkbox"/> 5-10 years	<input type="checkbox"/> 10-20 years	<input type="checkbox"/> More than 20
5. Are you a resident of Najma?	<input type="checkbox"/> Yes		<input type="checkbox"/> No		
If you answered No, then skip the next two questions					
6. Where did you live before Najma?					
7. Years living in Najma	<input type="checkbox"/> Less than 1	<input type="checkbox"/> 1-5 years	<input type="checkbox"/> 5-10 years	<input type="checkbox"/> 10-20 years	<input type="checkbox"/> More than 20
8. If you answered ‘No’, how frequently you visit Najma	<input type="checkbox"/> Daily	<input type="checkbox"/> Once a week	<input type="checkbox"/> Once every 2 weeks	<input type="checkbox"/> Once a month	<input type="checkbox"/> Once every 3 months
Part II: Household size and choice of location					
9. Family size	<input type="checkbox"/> 2 members	<input type="checkbox"/> 3-5 members	<input type="checkbox"/> 6-10 members	<input type="checkbox"/> More than 10 members	
10. What type of accommodation do you live in?					
<input type="checkbox"/> Company <input type="checkbox"/> Apartment <input type="checkbox"/> Villa <input type="checkbox"/> Labor camp <input type="checkbox"/> Other, please specify _____					
11. Your house is ...					
<input type="checkbox"/> Owned			<input type="checkbox"/> Rented		
If you answer ‘owned’ then skip to next two questions					
12. Does the company cover your housing expenses?					
<input type="checkbox"/> Yes			<input type="checkbox"/> No		
13. What are the reasons for you to live in your respective location?					
<input type="checkbox"/> Rent <input type="checkbox"/> Travel distance <input type="checkbox"/> Personal preference <input type="checkbox"/> Other, please specify _____					

**Part III: Measuring social capital and unity**

14. Do you participate in your neighborhood local activities? (For example social and religious activities: mosque, open areas, parks)

Yes  No

15. Rank in order of importance the reasons for you to locate in Najma.

	1: Highly unimportant	2: Unimportant	3: Important	4: highly important	Rank
Family/friends					
Rent					
Parks/open spaces					
Facilities					
Nearness to work					
Image					

Satisfaction questions

16. Does your location fit your needs?

Highly satisfied  Satisfied  Dissatisfied  Highly dissatisfied

17. Neighborhood Safety

Highly satisfied  Satisfied  Dissatisfied  Highly dissatisfied

18. Road conditions surrounding your location

Highly satisfied  Satisfied  Dissatisfied  Highly dissatisfied

19. Najma facilities

Highly satisfied  Satisfied  Dissatisfied  Highly dissatisfied

Comment(s): \_\_\_\_\_

**Part IV: Transportation**

20. How long does it take from home to your working place?

5-10 min  10-15 min  15-30 min  1 hour  2 hours  More than 2 hours

21. Do you, or anyone from your household owns an automobile?

Yes  No

22. How often do you walk around Najma area for any purpose? (work, school, errands, enjoyment, exercise, etc.)

Never  One to three times a month  Once per week  More than once a week

23. How often do you ride a bicycle from your home to your intended destination?

Never  One to three times a month  Once per week  More than once a week

Additional comments:

\_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_ Thank you.

## 9.2 Appendix B: Semi-structured Interview Form

Date: October 26, 16

Dear Participant:

This semi-structured interview is an attempt to investigate livability indicators in Doha's mixed-use neighborhoods in order to develop a set of urban policies that can guide the development of mixed-use neighborhoods in Doha. Your input is an important element to this study and will be kept strictly confidential. This information will be used for educational purposes only, you will only be asked to answer the topics addressed below, if you feel the need to add anything during the interview you are free to do so. This will take approximately 10 minutes from your time; your time and effort are highly appreciated. If you have any queries about this study, please feel free to contact me. If you would like to have a summary of the results, please e-mail me at [aa082370@qu.edu.qa](mailto:aa082370@qu.edu.qa)

Thank you,

ALMaha Ahmad E R AL-Malki

The interview to include, but not limited to the following topics:
<b>Mixed-use Neighborhoods</b>
<ul style="list-style-type: none"><li>• Future vision of mixed-use neighborhoods in Doha</li><li>• What are the main features that should be considered when designing mixed-use neighborhoods in Doha?</li><li>• Role of National Government Organizations in the welfare of mixed-use neighborhoods</li><li>• Existing planning process including permitting process, involved stakeholders and design</li></ul>
<b>Transit Oriented Development</b>
<ul style="list-style-type: none"><li>• How the upcoming development projects, such as the metro will impact urban form of Doha?</li><li>• Metro circulation and its impacts on mixed-use neighborhoods</li></ul>