The Negative Impacts of Subdivision Regulation on the Residential Built Environment: Jeddah's Experience

BY

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Abstract

Land subdivision plans (LSPs) are the basis of development and transform untouched lands into modern residential areas. Subdivision regulation (SR) plays a key role in the process of organisation, design, planning and development of residential areas.

The Kingdom of Saudi Arabia (KSA) relies on a single unified SR guideline formulated by the central government that applies one conventional development LSP approach for all Saudi cities. This approach does not take account of the provision of the final product or any particular part of it (e.g. housing units, public service plots, etc.), as well as after-sale services such as maintenance and management.

Situated in the American and Saudi subdivision literature, this research first examines the quality of what this type of regulated development produces at a macro (city) scale relating to the structure of the urban form being built in Jeddah. It finds that at this scale, low-density car-reliant urban sprawl results – exactly the type of development that misses the sustainable liveability rhetoric the SR documents espouse, and which undermines Jeddah's planning department's attempts to meet the city's 21st century challenges of rapid demographic and economic growth, and climate change.

The research then investigates the quality of the public services and facilities provision at a micro (district) level by appraising the quality of two conventionally developed subdivision districts in Jeddah. It finds the quality of the public services and facilities is poor, especially for those residents not using a car. Building plots stand vacant/semi-built for long periods of time, and soft infrastructure provision (schools, parks, community facilities) are often slow to arrive – if they arrive at all. A face-to-face survey of resident heads of households in these two districts revealed that these shortcomings made life very difficult.

The research also explored the regulations' content and implementation process and, as part of this element of the investigation, interviewed local planners and conventional developers to gain a better understanding of how they perceived their role, the quality of these localities, and the shortcomings in the system that produced this type of development. The conventional developers were of the view they already provided too much, and if anything the regulations should be relaxed, not strengthened; the planners'

perception was that the regulations were about right, requiring essential services but not so restrictive as to prevent development.

The residents' survey from the original case studies also revealed preferences for a number of other localities in Jeddah where provision was better. The research investigated the development practice of these localities ('non-conventional development'), by visiting the localities and interviewing the developers and found a smart growth/New Urbanism model of development, which could provide better quality public realm and up-front infrastructure provision, albeit at a cost and rather exclusively.

This thesis concludes that it is important to improve the current conventional practices of LSP development to enable Jeddah to provide a more sustainable and more liveable urban form than is currently created, and presents a set of recommendations to achieve this. These include recommendations to amend the SR guidelines based on comprehensive studies conducted with modern techniques incorporating residents' aspirations, developers' suggestions, officials' ideas, inputs from urban planners, and autonomy to local regulators (increased role and responsibility of Jeddah Municipality) cumulatively aimed at provision of better public facilities and services.

There are still some possible venues to conduct future researches, such as encouraging planning and consulting offices to reveal their views of the current SR code and LSP development. Moreover, residents' perceptions should be studied and included in unconventional subdivision plans to fulfil their satisfaction. Finally, it is useful to study and analyse the views of public services and facilities providers, particularly pertaining to their role within the LSP approval process.

Dedication

This work is a simple dedication to the memory of my beloved parents who are the light of my academic path

&

Who raised me and sacrificed their lives for me

To my beloved and affectionate mother's soul

&

To my beloved and dear father's soul

I would like to say to my parents that this achievement is due to your prayers

May God bless and keep them in your Heaven, Amen, Amen

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Declaration

I hereby declare that this thesis is the result of my own effort, work and investigation. Where others' work and sources of information have been used in this thesis, this has been duly acknowledged.

I also declare that this thesis has not already been accepted in substance and is also not being simultaneously submitted for any other degree.

Supervisor Name: Dr. Zan Gunn	Candidate Name: Emad Mohammed Qurnfulah
Signature:	Signature: .....
Date:	Date: .....

بسم الله الرحمن الرحيم

In the name of God, the most Gracious, the most Merciful

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Abbreviations

AIG	Alesayi Investment Group
APA	American Planning Association
APL	Architecture, Planning and Landscape
ARAMCO	Arabian-American Oil Company
CEFPI	Council of Educational Facility Planners International
CEQA	California Environmental Quality Act
CIC	Common Interest Communities
CID	Common Interest Developments
EPA	Environmental Protection Agency
GCC	Gulf Cooperation Council
GIS	Geographic Information Systems
GURU	Global Urban Research Unit
HAC	Higher Advisory Committee
HIA	Health Impact Assessment
IPCC	Intergovernmental Panel on Climate Change
KSA	Kingdom of Saudi Arabia
LID	Low Impact Development
LSP	Land subdivision plan
MC	Municipal council
MOEP	Ministry of Economy and Planning
MOI	Ministry of the Interior
MOMRA	Ministry of Municipal and Rural Affairs
NEPA	National Environmental Policy Agency
NFYDP	National Five-Year Development Plans
NRPA	National Recreation and Park Association
PLSPD	Planning of Land Subdivisions Plans Department
PUD	Planned Unit Development
SDSP	Subdivision Development Stages Process
SGSA	Saudi Geological Survey Authority
SR	Saudi riyals
SR	Subdivision regulation(s)
SREDCO	Saudi Real Estate Development Company

STC	Saudi Telecommunications Company
TA	Telal Arriyadh
TND	Traditional Neighborhood Development
TOD	Transit Oriented Development
UDC	Urban Development Company
UGB	Urban growth boundaries
VIC	Visual Interactive Code

CHAPTER ONE: RESEARCH INTRODUCTION

Chapter 1: Research Introduction

1.1 Introduction

The subject matter of this research investigation deals with negative impacts of subdivision regulations (SR) on the residential built environment in Jeddah city, the major city in the centre of the western part of the Kingdom of Saudi Arabia (KSA).

1.2 Evolution of Economic and Political System in Saudi Arabia

The Saudi Arabian economy has been totally transformed over the past century, as in its early days it was largely dependent upon international pilgrims because it was the home of the holy Islamic cities, while the rest of the economy was reliant on agriculture, trading and fishing. The whole economic trend changed totally in the 1930s after oil, gas and minerals such as gold were discovered that made the country wealthy and brought its economy up to the level of the strongest economies of the world (Shawly, 2007; GHA, 2010). In particular, the petroleum sector contributes 45 percent of the kingdom's GDP and also 80 percent of the revenue of the national budget (McGinley, 2011; MOEP, 2011). This trend has remained unchanged to date, though the government is attempting to diversify its economic system.

A report put Saudi Arabia in 36th place on the basis of its economy and 49th in terms of prosperity, while a city bank predicted that the kingdom's economy would be the richest in terms of GDP by 2050 with an average per capita wealth of US$98,000 (McGinley, 2011). It is also anticipated that the cities of Riyadh and Jeddah are among the 200 fastest growing cities in terms of average income and job creation, only outstripped by Shanghai (Brookings Institution, 2012).

As economic growth in the country was initiated by Saudi monarchs after they founded the Kingdom of Saudi Arabia in 1932, a state-centred and highly centralised governance system evolved where most of the administrative, financial and other responsibilities were exercised directly by central government (De-Magalhaes and Carmona, 2009) that could definitely be defined as a centralised governance system with a top-down approach (Abdulaal and Aziz Al-Rahman, 1998).

The planning system in the country is also a direct product of its political system as most of the plan preparation, approvals and allocations are carried out at central

government level; hence, the planning system that exists in the kingdom is highly centralised, which does not necessarily reflect people's needs and aspirations at local level.

The centralised nature of governance and planning forms the basis for further discussion in this thesis about the pros and cons of subdivision regulations, which are executed mainly at local level in a city (from macro to micro levels).

1.3 Planning and Subdivision Regulations

This thesis sought to investigate reasons behind inefficient subdivision planning practices and to forward problem-solving recommendations. SR are one of the most important planning tools that have emerged in the modern era. They aim to control the conversion of raw lands into evolved regions and to ensure a certain standard of living for a city's inhabitants (Mandelker and Cunningham, 1979; Listokin and Walker 1989 [2013]). Such regulations appeared first in the US in the nineteenth century, and has been widely applied in several countries, including KSA. In KSA, SR appeared after the appearance of the first subdivision plan development. In 1930, in the eastern region of KSA, the Arabian-American Oil Company (ARAMCO) developed the first plan in Daharan. A year later, a second subdivision was planned and built in Ras-Tanura. A third plan was developed in Abqaiq in 1944. Later on, in 1947, the local governor of the eastern province requested assistance from ARAMCO to produce a layout plan for the cities of Dammam and Al-Khobar. The company's surveyors prepared the official LSPs and staked out the streets and blocks on the ground (e.g. Al-Hathloul, 1981; Alkhedeiri , 1998; Al-Naim, 2008; Al-Hathloul & Ur Rahmaan, 2011).

The subdivision plans that were imported and implemented in the 1930s created the basis for ideas of organising, designing and development of residential areas in the modern KSA (Alkhedeiri, 1998; Al-Naim, 2008; Al-Hathloul & Ur Rahmaan, 2011) (see Figure 1.1). The developmental concept of these plans depended on the following characteristics: subdivision of the land into different-sized plots in a narrow street network/grid layout pattern that did not provide or plan for infrastructure for public services. Space for public services and facilities was provided; as a result, there was no centralised utilities network. Space for footpaths and other pedestrian amenities was not included, which precluded pedestrian movement.

The development pattern has been widely utilised by developers in several Saudi cities, including Jeddah, and has become the standard approach to residential development. Since 1930, according to Aziz-Alrahman (1985), subdivision plans were considered a basic tool land development in KSA (see Figure 1.2). Between 1930 and 1970, SR had not appeared and the municipalities in the main Saudi cities used their own criteria, standards and experience to approve any land subdivision applicant (e.g. Alkhedeiri, 1998; Hathloul and Ur Rahmaan, 2011).

In 1972, the first SR requirements were established within the road and building law (Abdulaal, 1987; Abdulaal and Aziz-Alrahman, 1993). The regulations were simple, unified and universally applied. In practice, the requirements allowed for a limited number of standardised design templates that did not call for placing or otherwise contextualising a design, nor did it support provision for a diverse range of planning and design approaches. The simplicity of the regulations was confounded by poor implementation monitoring. This was advantageous to developers, because it allowed them to reduce their costs by reusing a single development plan across multiple subdivisions, independent of the unique characteristics of the physical, social and cultural context in each subdivision. Although the regulations did value provision for vehicles, developers overlooked pedestrian and cyclist mobility, as well as provision of public services, facilities and utilities. In sum, the regulations did not take user preferences or residents' needs into account.

Due to the increases in international oil demand, Saudi cities witnessed rapid economic acceleration, urbanisation and population growth. The economic growth propelled greater demand for new housing, thus instigating an expansion in subdivision development. The government formed a centralised ministry in 1975 to cope with the pace of change. This ministry is responsible for all planning aspects of KSA cities, and is known as the Ministry of Municipal and Rural Affairs (MOMRA) (Al-Hathloul, 1981; Al-Hathloul and Ur Rahmaan, 2011).

In 1976, MOMRA issued the first SR guidelines (Abdulaal, 1987). These were formed exclusively by the views of planners, rather than a wider information survey. The guidelines did not consider the desires and needs of urban residents, particularly with the rapid population growth and density, as well as the cultural shifts of an increasingly modernising and diversifying population. Additionally, specific forces impacting the city's morphology, such as its geographic location, climate, socio-cultural shifts, etc.,

should have been considered. Guidelines appeared in practice after 1976; they were then able to improve the standard of subdivision plans development to a minimum level in terms of street network, and even provided some utility networks and plots for public services and facilities, but at a basic level.

Figure 1.1: Example subdivision plan implemented in Dammam and Alkhobar by ARAMCO Co.
Source: Alkhedeiri (1998)

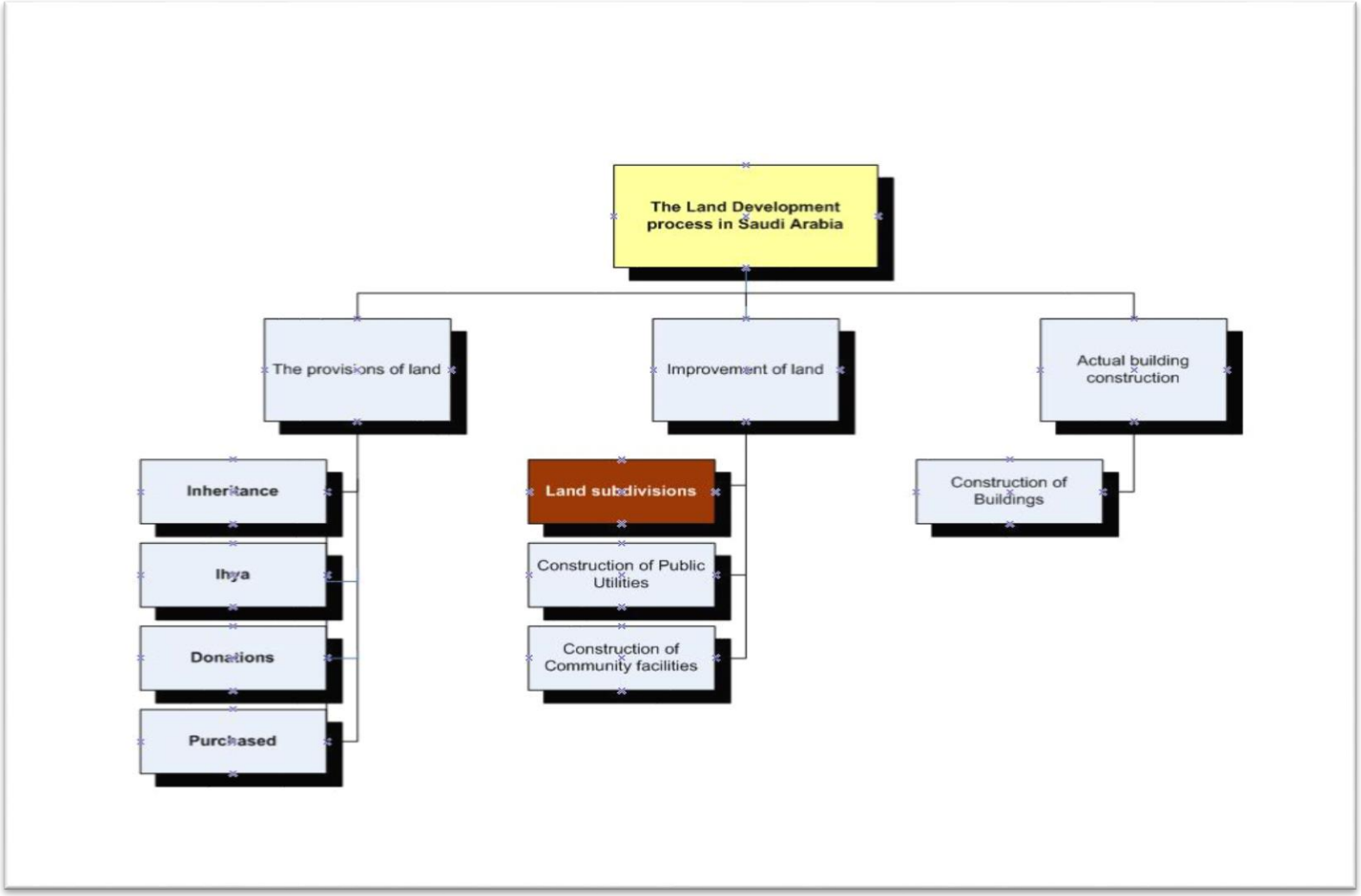

Figure 1.2: Land subdivision plans were the basic tool of land development in Saudi Arabia
Source: Aziz-Alrahman (1985)

In 1984, updated SR were created, replacing the previous ones. The updated guidelines contained a number of additional requirements, added to improve the residential built environment within cities. These made developers responsible for the street network, installation of some utility networks (electricity/water/telephone only), footpaths and lamp-posts (Qurnfulah, 2005). In 2003, the guidelines were updated again, but did not include significant differences from the previous release (Al-Oleat, 2004; Al-Freadi, 2008; Qurnfulah, 2012). For over 25 years, the local planning municipalities have used one standardised set of regulations for the processes of planning, design, and development of residential subdivisions.

Essentially, SR are implemented in the subdivision approval process, a standard process involving the regulator and developers. It does not take into account the perceptions and preferences of end-users, or allow for public participation during the process. As a result, the implementation rarely reflects consideration of broader challenges and needs of city residents. Thus, the regulations and their system for implementation has allowed, even encouraged, developers to use one plan for the development of subdivisions. The researcher considered this approach exclusively as the 'conventional' approach (see Figure 1.3). In this approach, developers are not required to provide public services, nor are they forced to plan for future service provisions. Consideration for housing units, mosques, parks, playgrounds, and maintenance or management for end-users is not given. Fragmented and incomplete service infrastructure has been the result, causing many physical, social, health and environmental problems. This is further complicated by urban sprawl, which is allowed by the currently unregulated growth of conventional land subdivision schemes. In Jeddah there are more than 1,500 conventional subdivision plans approved by regulators and implemented by developers shaping the current residential urban pattern.

Understanding SR as 'among the most powerful forces shaping the built environment' (Barnett, 2008:247), the impacts of current policies and their poor regulation are studied in detail in this thesis. Development codes and such SR are interpreted as the underlying language of place-making, directly shaping the city's structure (Ben-Joseph, 2005; Marshall, 2011).

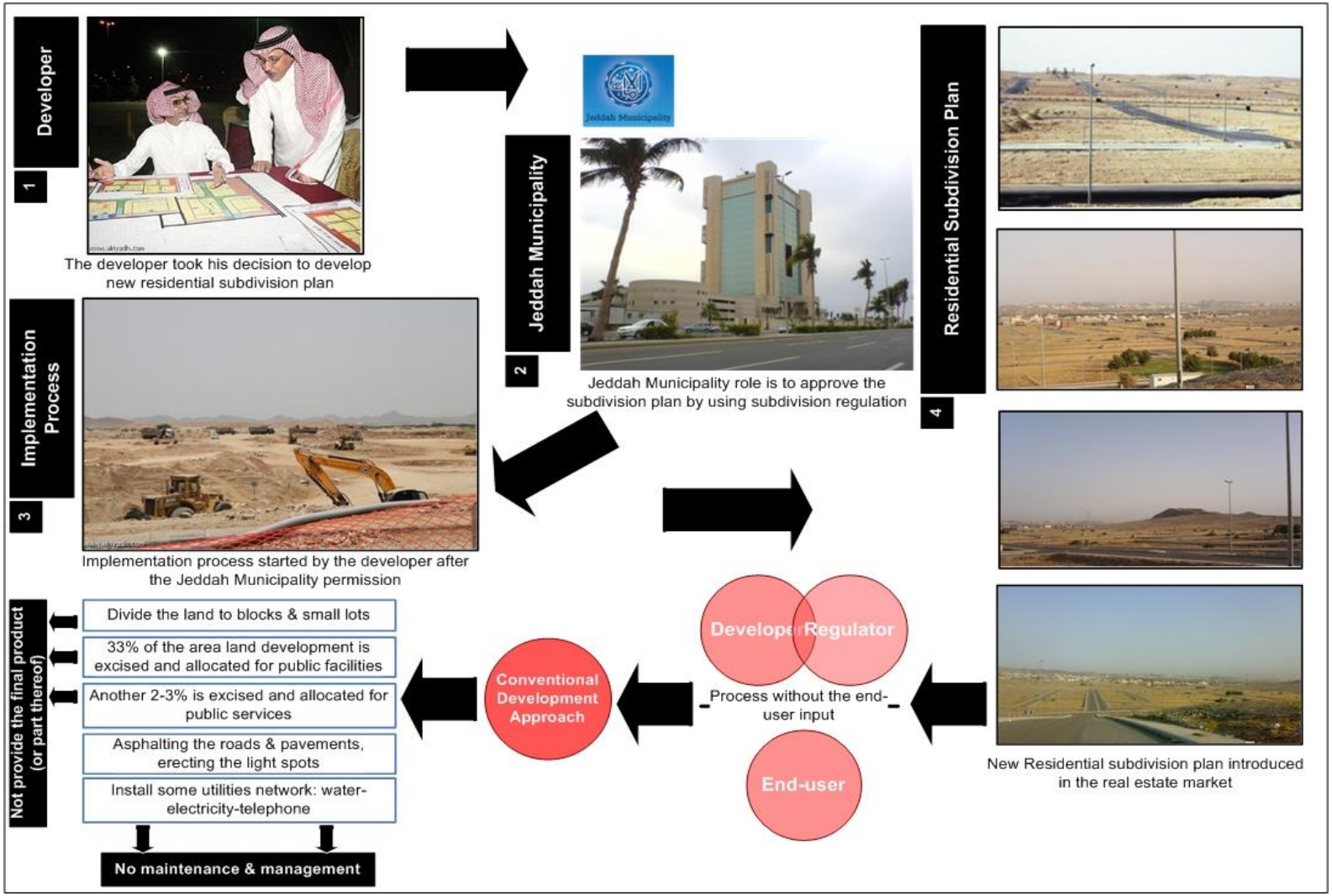

Figure 1.3: Example of conventional subdivision development process in Jeddah
Subdivision regulations play a significant role in the implement of the conventional pattern in Saudi cities

The justification of research into SR is the absence of studies accounting for the role of local regulators in the process of implementing it. Moreover, there is an information gap related to the way the subdivision approval process at the local level is carried out, the number of actors who involve in this process, studies prepared, and technology used. In addition, there is lack of information about the views of regulators regarding, for instance, SR, developers, and the pattern of development of residential subdivision plans in the studied city. Furthermore; another notable reason is the lack of data associated with the LSP activity in Jeddah. It was discovered that there are no recent analyses of the patterns and characteristics of subdivision plans in the city.

The lack of study in the area of SR is here discussed by Ben-Joseph:

> *Little has been written regarding the actual physical results of codes and standards upon built form. This may be due in part to the nature of their format, their complex array of qualifications, and/or their perplexing idioms. Existing literature in this area addresses a range of aspects on the subject either as isolated case studies, such as building codes, or in general terms, such as the economic impacts of standards and regulations on infrastructure development. There is little discussion of the reasons for their widespread adaptation in the realm of city planning and design. The lack of attention may also reflect an underestimation of standards' influence on form and spatial quality* (2012:353).

The lack of discussion, as well as the underestimation of the standards, impels this thesis to take a much broader and deeper approach to understanding the implications of SR. The intention of this research is to better respond to the needs of local residents within the unique composition of each city, or in the words of Ben-Joseph, to create better ‘spatial quality’.

The research into Jeddah’s subdivision development procedures serves not only as a framework for improving conditions in KSA, but also contributes to the field of local urban planning currently receiving little attention in both KSA and the rest of the world. As such, there is a general lack of qualitative or quantitative data available for the study of subdivisions. Adequate data about Jeddah's SR would serve to answer questions such as how subdivision plans are developed by the developers; how the process of design is normally carried out; how the planning and development of the subdivision plan is carried out; what the administrative and technical level of developers is; what the quality of schemes that are developed is; and what public opinion regarding SR and

regulators in Jeddah is. In addition, other questions concerning the local SR are examined as well: why have been there no amendments to local SR? Why is there no study of the perceptions and preferences of end-users? And why are regulators and developers not required to respond to people's' perceptions and preferences in development subdivision plans?

This thesis considers the local level related to SR including several aspects, stakeholders, and LSPs development processes in a large country such as KSA. The literature review will reflect on the research on SR and the land subdivision plan (LSP) development process internationally in Chapter 2 and locally in Chapter 3, and will situate the study in this wider literature there.

1.4 Jeddah: Geographic Setting

Jeddah is the second largest city of KSA, the largest city in Makkah region, gateway for pilgrims to the two holy mosques,[1] the commercial capital for the western part of KSA and the seat of several diplomatic missions located on the Red Sea coast (Figure 1.4).

For centuries the sea was considered a source of income for many families as most inhabitants made their livelihood from the sea. Following the unification of KSA in 1932, Jeddah became the country's formal diplomatic centre. In 1968 the government transferred all foreign embassies and the Ministry of Foreign Affairs to Riyadh, the capital of KSA, but Jeddah continued to play its role as an economic capital (Bokhari, 1978; Mandeli, 2011).

[1] In KSA there are two holy mosques for the Islamic religion. The first mosque is called Al-Masjid Al-Haram, which is located in Mecca or Makkah. It is the largest mosque in the world and surrounds one of Islam's holiest places, Al-Ka'abah. Al-Ka'abah was originally built by the prophet Ibrahim and his son, the prophet Ismael, in order to be the first house that was built for humanity to worship Allah (God) (Edrees, 2001). The second mosque is known as Al-Masjid al-Nabawi and was built by the Islamic Prophet Muhammad in 622 and situated in the city of Madina (Neyazi, 2007).

Figure 1.4: Geographic setting of Jeddah, Saudi Arabia
Source: Google Maps (2014)

Jeddah's social order was homeostatic in its adherence to the religious rules of Islam. Until the establishment of KSA as a nation-state, the unification of the Hijaz region in 1932, and the city wall demolition in 1947, the function, form, character and size of the city had remained relatively unchanged for centuries. Since the beginning of oil exportation in 1938, the general wealth of the country has risen spectacularly. For example, Jeddah's population and urbanised area has grown dramatically from more than 25,000 inhabitants in 2.5 km^2 in 1945 (within the old city walls), to more than 3.4 million in 1400 km^2 in 2010 (e.g. Daghistani, 1990; Al-Beeah Consultancy Office, 2004; Jeddah Municipality, 2009a; MOEP, 2010; Mandeli, 2011). Subdivision plan approval has increased from 25 approvals in 1960 to more than 1,500 in 2009. This increase is due to the rapid economic and population growth alongside government-ordered development schemes. The National Development Plans and applied master plans have also increased the number of subdivision plans submitted for development in Jeddah. A sustained rate of urban growth will inevitably exacerbate the existing urban problems if there is no adequate mitigation of their impacts. Problematic issues include social polarisation, traffic congestion, and urban sprawl (for more information about Jeddah see Chapters 4 and 5).

Today, Jeddah is the biggest city in the Hejaz region. Due to its location on the Red Sea coast, it carries many responsibilities. First, it is a major commercial, industrial and cultural centre. Second, it is an active financial centre, as it has an open policy towards

international communities. In addition, it serves as a leading tourist location due to its location on the Red Sea and the services available. Services such as recreation, housing and even shopping centres attract visitors. Jeddah is now a stylish metropolitan city, with a projected population growth of more than eight million people by 2030 (Al-Beeah Consultancy Office, 2004; Mandeli, 2011; Aljoufie et al., 2013).

The researcher has chosen Jeddah for the study, realising the fact that the city is facing a series of urban developmental planning-related challenges because of rapid population growth and unprecedented urbanisation. Understanding the origins of urban planning problems will likely give rise to their solutions, which are potentially applicable not only in Jeddah, but across KSA and beyond. The city has a strong history and a strong role in Saudi society. It has grown rapidly over the past decades in terms of population, urban area and subdivision plan activity. Important insights on urban planning issues will be gathered from a study of a city in such a rapid state of change. The rapid urban growth of Jeddah has exacerbated urban problems as no problem-solving studies, matching urban planning practices, have been carried out. This has resulted in the degradation of urban services and caused a general decline in the availability of public services and facilities. Because Jeddah's population is expected to reach more than eight million in the near future, there is high demand for new residential areas to accommodate the population increase (Al-Beeah Consultancy Office, 2004; Mandeli, 2011; Al-Menaa, 2012a). The demand for development raises concerns about repeating the same mistakes of past development patterns, particularly of subdivision plans.

1.5 Thesis Methodology

An examination of the relationship between SR and its impact on Jeddah's residential built environment is conducted primarily with two research approaches. This approach is derived from Ben-Joseph (1995a) for the interpretation of data. Two research methods are used, descriptive and inductive; inclusion of descriptive and inductive research approaches into one framework is critical in the study of urban regional planning. As Moudon (1992) suggests, urban exploration should do more to integrate a historical descriptive analytical research strategy in order to build on accumulated knowledge and experience, to compensate for drawbacks of focused empirical research. The integration of these research approaches is fundamental, because it provides an overall framework, and sets the parameters for a more rigorous exploration of complex urban challenges.

The descriptive approach is historical in nature, and relies on the analysis of the literature and reviews of historical accounts (Ben-Joseph, 1995a). The mode is primarily used to set up general background on the research topic, and to highlight key theoretical and procedural processes; for instance, the historical context of SR, its mechanisms, goals, application, socio-cultural impact, development process, and main actors. The first part of this thesis (Chapters 2 and 3) provides a literature review of SR as well as the LSP development process at both the international and local levels, identifying gaps in knowledge. Documented successes of SR abroad are assessed for what can be learned and, in turn, applied to the planning practices in Jeddah.

The inductive mode relies on empirical procedures and draws on findings from case studies, surveys, observations, interviews, Geographic Information Systems (GIS) models, etc. A major component of the inductive mode relates to the information gathered in an initial pilot study and from the main fieldwork study. The pilot study was conducted to test data collection methods in order to improve the data-gathering process. Fieldwork was carried out for primary data collection to obtain stakeholder perceptions. Data was collected in two of Jeddah's districts from residents, conventional and unconventional developers, and regulators (i.e. Jeddah Municipality officials). During the process of this research investigation, one pilot study was conducted in summer 2008, and two fieldwork study trips: one from December 2009 to February 2010, and the other from January 2010 to February 2011.

The second part of the thesis (Chapters 4–10) contains data analyses. The thesis divides data gathering and analysis into the following analysis types: formal urban planning analysis at both the macro (city) micro (district) levels, perceptions of regulators and developers and then the perceptions of residents. There are two types of data acquisition methods and five approaches to data analysis. The first is a formal method in urban planning, looking at city maps, zoning, land subdivision plats, demographics, and other professional means of data communication to appraise the quality of service provision in the two localities. The second is an analysis of stakeholders' preferences and perceptions for built environment outcomes.

1.5.1 Macro (City) Level Analysis

The contextual analysis and assessment reveals a number of challenges facing the city which supports the introduction of new SR meant to improve development (Chapter 4 illustrates information about Jeddah's challenges).

The form and characteristics of Jeddah's residential areas have changed between the Islamic and the modern era (see Section 5.5), when the first subdivision plan appeared, and what the role is of such elements as SR, regulators and developers in the process of LSP development. SR has contributed to an improved form, type and characteristic of residential areas in Jeddah (Chapter 5 gives detailed information about the role of SR to improve the form, type and character of residential neighbourhoods). In Jeddah there are two basic types of development: conventional (only the land plots are offered for sale) and unconventional (providing land plots with some sort of public services and facilities, and also after-sales support). These types are assessed in relation to SR during the period from 1970 to the present, but the focus is primarily on the plans' application files.

A pilot study helped to coordinate data collection in Jeddah for a number of reasons. First, communicating with the local municipality proved essential for obtaining permits to visit municipality departments. Second, access to the archive department was critical for obtaining information on subdivision plan records, as well as previous master plans and planning reports. Third, the ability to interview municipality officials was invaluable for their first-hand knowledge and experience of Jeddah's development stages. Fourth, the pilot study also identified key individuals for interview outside the municipality who held information about Jeddah's historical development. In many ways, the study provided a road map of the type of data needing to be collected and the appropriate methods to use. Finally, the pilot study also helped to gather academic textbooks, databases and local newspapers that discussed issues in Jeddah related to urbanisation, increased housing needs, floods in Jeddah, environmental pollution, traffic congestion and utility networks.

1.5.2 Micro (District) Level

Two of Jeddah's residential districts were selected for study. One district has a low population density and the second has an average density. The purpose of this selection of Al-Mouhamadeyah (low density) and Al-Naseam (medium density) here is to define

the impact of SR on this level. The micro-level study shows the practical realities of SR or their outputs within two types of district in Jeddah. Qualitative and quantitative methods are used to collect and analyse information. Information is collected on the districts' layout, street network, footpaths, tree cover, shade availability, connectivity, and public services and facilities. In addition, this level demonstrated three important aspects: the importance of GIS as a visualisation tool, of the cooperation or involvement of public services and facilities providers, and of in-depth analytical studies on such planning aspects as traffic impact during the design, planning and approval process of subdivision plans. The micro-level study provides a detailed explanation of the conventional residential development approach in Jeddah, linking the development type to particulars of the SR.

The pilot study has also played a significant role in testing a number of data-gathering methods before applying them. The methods used for observation, survey and photo capture were tested. This step also accounts for the method used to select the case study areas in Jeddah. It helped in the collection of GIS spatial data layers for the two study areas within Jeddah Municipality (see Chapter 7) and defined collection limitations. The micro-level study generally depends on observation, fieldwork, photo capture, and GIS data layers as the main collection and analysis methods.

1.5.3 Regulators' and (Conventional) Developers' Perceptions

It is important to examine the views and perceptions of regulators and conventional developers because they are the stakeholders who more or less consider whether SRs are suitable.

The survey of Jeddah's municipal authorities focuses on the public officials; the researcher interviewed nine of them. The main purpose of the survey is to understand their perceptions of current SR, of developers and of the land subdivision development process. It also makes inquiries into the significant reasons for there being no amendments or other improvements to SR in the last 25 years. The historical background of the subdivision approval process, which defines the current approval process and accounts for the main actors involved in development (see Chapter 3), is given. The shortcomings of the LSP approval process include the lack of visualisation and analytical studies, which has been expressed by the regulators themselves and which needs to be changed (for more detail see Chapter 6).

The pilot study defined methods of data collection, sample type and size, and obtained the necessary permissions for data collection, including from Jeddah Municipality. The municipality has many departments: one deals with applying the SR and the approval of subdivision plan applications. There are a number of departments both inside and outside the municipality building involved in the approval process. By coincidence, during the pilot study the municipality created a Higher Advisory Committee, consisting of four specialists with the role of reviewing the planning department's approved plans. The administrative change led to an increase in the sample size; five interviews were conducted with officials from the planning department, which is responsible for reviewing subdivision plan applications and then sending them to the Advisory Committee members. Four interviews were conducted with the Advisory Committee. This committee reviews the application at its final stage before it is sent to the city mayor for signature.

Two types of developers are involved in SR: conventional and non-conventional. The developers have been questioned for their opinions on SR, as well as subdivision plan design, planning and development. Developers were also asked whether they were willing to and interested in developing subdivision plans based on user preferences.

The conventional developer is the most common in Jeddah. These developers are of an older generation and have more experience with subdivision ordinances. The conventional developers' development type has created the urban sprawl and excessively expansive growth pattern in Jeddah in the last 25 years. The sample size was small (ten respondents) due to time limitations and lack of interest on the part of the developers. Semi-structured interviews were conducted with ten developers. These presented comparative results of developers' views regarding work experience, the number of residential subdivision plans developed, the average area of developed residential subdivision plans, the working team in developers' offices, developers' own satisfaction with their residential subdivision plans, the extent to which users' preferences were fulfilled, and reasons behind their failure to complete residential plans. Developers were also asked to indicate their design, planning and organisation methods, and whether there was any intention to study the preferences of the residents in order to provide responsive plans. Developers' views of the SR and approval procedures of the LSPs, and whether they play any further role following the sale of the land plots to the end-users, were also discussed (see Chapter 6).

The second type of developer is the unconventional developer who brought in a new urban design and sustainability framework through their development; the researcher believes they could be a source of inspiration for regulators and conventional developers and for the changes to SRs. The perceptions of these non-conventional developers are further discussed in this chapter.

1.5.4 Residents' Perceptions and Preferences

The two districts are also examined from the view of inhabitants living in each district. This theme explored people's perceptions of factors of the built environment directly linked to the SR. Factors considered include the availability, accessibility and safety of public services and facilities. Availability primarily looks at whether the services have been provided and adequately maintained. Accessibility reflects on whether public services and facilities are within walking proximity for residents to use practically. Safety takes into consideration whether residents can safely get to and from the service sites. If the services were not available for use due to one of these factors, the residents were asked about the compromises to their quality of life; for instance, whether physical or social harm had been done. Residents were asked their views on the subdivision development approach as well as the developers' role in this process. A face-to-face interview questionnaire protocol was used to collect the data. The residents' built environment preferences were measured. Residents were also asked to speculate on how they would like future subdivision plans in terms of services, infrastructure, organisation, design, planning and even development. In addition, an understanding of residents' preferences regarding the developer's role in future subdivision development was measured. This part of residents' preferences is considered a brief guideline for regulators and developers in Jeddah.

The pilot study tested the data collection method. Initially, questionnaires were distributed to residents of the two target residential districts, but this was changed to face-to-face interviews due to a poor response. Individuals in the interview setting helped to refine and focus questions posed, as well as scale back the number of residents' interviews. The sample size was also impacted by the Saudi reluctance to interview, due to the private nature of the culture, and the timely nature of collecting data through interview from 319 respondents.

1.5.5 The Perceptions and Preferences of Non-Conventional Developers

The second type of developer – the unconventional developer – is not common in Jeddah. To locate these developers, the questionnaire asked residents for alternative residential areas in Jeddah to which they wished to relocate. Four subdivision plan projects were mentioned by numerous residents. These developments reflect developments which have emerged out of US ideas such as smart growth, New Urbanism and gated communities – but importantly they do effectively provide higher-quality public realm and services when the more conventional model has not managed to do so. These were built by large real-estate companies using forward thinking development philosophy. The unconventional developers work by providing public service infrastructure and integrating systems, valuing pedestrian and cyclist provision and relevant analytical and marketing studies, and using innovative design. In addition, unconventional developers provide after-sale services such as property management and maintenance.

The semi-structured interviews protocol was used to define research themes. Critical information was discovered through discussing four case studies in detail with the developers and site visits for each development. These visits aided the experiential and photographic analysis of the developments' built environment quality. The interviews revealed the developers' views regarding current SR in Jeddah, regulators' role in the development process, the pattern of conventional subdivision plans in Jeddah, and possible amendments to the regulations (see Chapter 10).

1.5.6 Ensuring Data Quality while working with enumerators

The researcher deployed enumerators to carry out the household survey with the help of a questionnaire. These enumerators were primarily accountable for collecting first-hand information from household heads, and the accuracy of this data was important. To ensure the quality of the data, the researcher chose enumerators with a sound background in urban planning investigations who, at the very least, were undergraduate students in the discipline with fluency in Arabic and English languages. Prior to completing the survey, enumerators attended a one-day long training session held by the researcher to explain the purpose, the techniques of data collection, ethical issues, and what to do if there was a problem in collecting information. Apart from the above, it was also guaranteed that the enumerators:

- Study and understand the instructions stated in the guide.
- While completing the survey, communicate with researcher on the procedures to execute the survey and report on a daily basis.
- Be sure that the material (the questionnaire survey, and written introduction to the purpose of the survey, confidentiality clauses, and use of the data) required to execute survey was sufficient and suitable.
- Introduce themselves in their capacity, and the purpose and intention of the research so that the individual of household could enthusiastically participate in the survey.
- Ask questions in a kind manner with full clarity and ask all the questions using the exact wording.
- Do an appraisal to clarify answers that are not clear.
- Record responses in a clear and ordinate manner with accuracy.
- At the end, revise and double check the survey to remove errors and wrap up the completed survey as authentication of the correctness of the survey.
- Make sure the standard code of conduct (honesty and integrity, confidentiality, ethics, neutrality and professionalism) is adhered to.

Finally, the researcher personally cross-checked randomly selected filled questionnaire with the sampled household heads to assure reliability and validity of gathered data by enumerators.

1.6 Thesis Orientation

Understanding and accounting for the impact of the current SR on the residential built environment and on the community in Jeddah are the primary goals of this research. In order to achieve the thesis goals, a number of objectives are investigated concerning SR, specifically the ones that have been applied in Jeddah. In this thesis, the questions and objectives about the SR are grouped into two: the first group concerns the theoretical, context, and development processes, while the second concerns the perceptions of stakeholders.

Questions about theoretical, context, and development processes:

- theoretical and procedural processes that led to the creation of SR;
- meaning and context of SR;

- availability, accessibility, means of egress, traffic and safety of public services and facilities;
- subdivision plan development process and the main actors in the process;
- whether and why alternative developments may compel residents to move;
- relationship between the current SR for residential neighbourhoods and social and physical attributes associated with them;
- impact of SR according to critical international and local studies.

Questions about the perceptions of stakeholders:

- municipality officials' views of the current SR and land subdivision process, and what obstacles may impede improvement;
- developers' views regarding current SR, for the purpose of understanding why the conventional approach is favoured;
- why conventional developers provide systematically fragmented products;
- residents' perceptions regarding their neighbourhoods;
- residents' feedback on improving current residential subdivision plan practice;

Responses to these questions can be given only after establishing a theoretical framework for analysis and by further contextualising the specific research questions. A review of SR at the international level provides the theoretical framework for understanding both such regulations and the land subdivision development process. Studies at local level in KSA, and in Jeddah specifically, raise highly contextual questions about the practice of creating subdivisions. The theoretical and contextual framework of the research investigation has been stated below.

1.6.1 Theoretical Framework

The theoretical framework is derived from a comprehensive literature review about the defining qualities of SR and the land subdivision development process (see Chapters 2 and 3) within the international experience, particularly in the US,[2] in addition to the local level (KSA). Specifically, it examines:

- the role of SR in shaping the residential areas in the past, present and future;
- the definition of SR;

[2] The US experience was selected because the first LSPs in the KSA were imported and implemented by an American company in the 1930s (see Section 1.1).

- the purpose of SR;
- the concept of SR;
- the content of SR;
- current SR work;
- who the main actors are;
- the development process mechanics;
- whether SR can have positive impacts;
- whether SR can have negative impacts.

1.6.2 Contextual Framework

The contextual framework is essentially the theoretical framework applied to Jeddah. The questions are highly sensitive to the unique socio-cultural context of KSA, and therefore provide new insights into the strengths, weaknesses, and future possibilities of current thinking and practices surrounding subdivision development. The questions examine:

- how and why SR were adopted in KSA;
- current SR mechanisms used both nationally and by Jeddah Municipality;
- why legislation on SR has stagnated;
- residential land subdivision practice;
- main actors in the design, planning and development process;
- positive and negative impacts of current SR on Jeddah;
- frequency of subdivision plan use;
- challenges caused by the conventional development approach;
- output of current SR on the ground;
- availability of public services and facilities, their locations, implementation dates, accessibility, means of egress, traffic and safety, etc.;
- regulators' opinions of current development regulations' performance;
- regulators' opinions of current land subdivision practices by developers;
- conventional development practices;
- methods used by developers to design, plan and develop subdivision plans;
- degree of attention to users' needs and preferences paid by developers in the planning and design stages of subdivision plans;

- why conventional practices produce incomplete and fragmented infrastructure and public services;
- conventional developers' opinions of current development regulations and approval process.
- residents' awareness of current SR;
- residents' opinions of subdivision developers;
- residents' aspirations for their neighbourhoods, city and country;
- inclusion of citizens' opinions in the development process;
- citizens' residential preferences;
- how citizens' residential preferences compare with current conditions;
- unconventional development practices;
- how unconventional development practices compare and contrast with conventional practices;
- unconventional developers' views regarding aspects such as: the conventional pattern and their developers, SR, and approval process.

1.7 Thesis Structure

The second chapter has two sections: the first discusses land subdivision development, particularly in the North American context, and the main actors and their roles in the development of subdivision plans are identified and explained. The second discusses the conceptual framework of SR, including their definitions, purposes, positive impacts, components, and the process of land subdivision approval procedures.

Chapter 3 has also two sections; the first section outlines the Saudi model of SR, including SR content and its relationship with town planning. It also defines the subdivision approval process, the requirements and contents of SR, the general process of land subdivision development, and it identifies the main actors of this operation in the Saudi context. The second section critiques SR and LSP practices at international and local level. The international level demonstrates urban sprawl or deficient urban patterns of land subdivision developments. The local-level reviews work by a number of local Saudi scholars discussing the negative aspects of SR and its output in Saudi cities, highlighting gaps in their research. Later in this chapter, researcher discussed potential problems associated with policy transfer between different socio-economic-political-cultural contexts

The second part of the thesis contains the analysis chapters (Chapters 4 to 10). Chapter 4 looks at various factors affecting the overall landscape of Jeddah, which in turn creates a variety of challenges for subdivision planning. Chapter 5 shows the impact of SR at the macro (city) level in Jeddah. Chapter 6 examines the role of Jeddah Municipality and their opinions (regulator's) of the SR and the manner of land subdivision development. Additionally the chapter discusses with a sample of conventional developers the quality of what is being produced and why, and what might be produced. Chapter 7 clarifies the impact of SR on Jeddah at a micro (district) level, and presents the output of subdivision this regulation in two districts. Chapter 8 depicts residents' perceptions of their built environment in the two districts. Chapter 9 describes the inhabitants' typological preferences in terms of form and manner for future residential development. Chapter 10 contains two parts: the first section presents four development projects of unconventional developers perceived as more desirable places to live by the current residents. The second offers arguments for these four unconventional developers regarding SR, regulators and conventional developers' practices. Chapter 11 presents the thesis findings and recommendations, and also possible future studies.

1.8 Thesis Limitations

Several obstacles were faced in the preparation of this thesis. The limited availability of academic studies on SR caused some difficulty in developing a framework for analysis and appropriate data collection methods. Because the approach is largely new, the research demanded a broad survey of information. The breadth required increased the number of stakeholders considered in the development process. The wealth of information proved somewhat cumbersome in developing the thesis's theoretical framework. Additionally, the depth of empirical research has been limited by the number of actors in the process of developing LSPs. The research was cumbersome in that it required data collection from Jeddah's city officials and residents as well as the conventional and non-conventional developers. On the other hand, there were a number of other obstacles such as data entry, translation of data from Arabic to English, and use of computer programs. Another major limitation faced by the researcher was in data collection, as he failed to obtain the perceptions of female heads of households, because it was difficult to get female enumerators due to religious and cultural norms; hence, the researcher focused only on investigating male-headed households to perceive their

views on SR. Despite its obstacles, the current study can be taken as a model for other researchers in KSA and will serve as a useful planning reference for those unfamiliar with the subdivision development and urban planning processes of Jeddah and KSA more broadly.

1.9 Conclusion

In this chapter, the major themes of research investigation were discussed including the research aim, backgrounds, methodology, assurance on quality of data gathered by enumerators, thesis orientation, objectives, thesis structure and limitations.

CHAPTER TWO: CONCEPTUAL FRAMEWORK OF SUBDIVISION CONTROL: IMPACTS ON THE RESIDENTIAL BUILT ENVIRONMENT

Chapter 2: Conceptual Framework of Subdivision Control: Impacts on the Residential Built Environment

2.1 Introduction

Today's land subdivision regulations (SR) are the product of decades of rules designed to promote particular practices. Originating from the desire to improve conditions in urban areas in the late nineteenth and early twentieth centuries, SR became an essential tool for solving problems of health, safety and morality (Ben-Joseph, 2005).

This chapter gives an overview of the thesis's conceptual framework, which includes accounts of SR and the land subdivision development process, including critical evaluations of the main actors in the regulation and development process, as well as the positive and negative impacts on built environment. The account, which begins with the North American practice, relies extensively on a review of relevant literature as well as policy data concerned to local planning and administrative structures.

The chapter has been divided into four major sections. Section 2.2 defines land subdivisions and introduces the stages and processes of subdivision, paying attention to the main actors, and required studies and tasks. Section 2.3 demonstrates SR, its definition and purpose, and SR's positive impacts supporting campaigns to adopt it. The content of SR, the relationship between SR and planning and zoning are discussed. The land subdivision approval process is discussed in detail. Section 2.4 presents the conclusion and the lessons learned in the chapter.

2.2 Land Subdivision, Development Process, Main Actors and Subdivision Regulations

A city's land subdivision eases its planned expansion; it is a process of dividing or delimiting undeveloped land for developmental purposes. It is a good quality of a city planning department to have fair land subdivisions. This is distinct from the unregulated form of development, and most of the world's urban communities have rules and regulations to control the subdivision of land in their own city. A number of North American planning academics have tried to define land subdivision, its processes and the main actors engaged in its process.

The next section will give the definition of land subdivision, the process of land subdivision development and its main actors, followed by a critical discussion on SR.

2.2.1 Definition of Land Subdivision

Juergensmeyer et al. note that:

> *The Standard City Planning Enabling Act did not define the term "subdivision". As a result, the definition of subdivision in statutes and ordinances varies and is unclear in many states. Most broadly it is the division of one parcel of land into more than one parcel […]. In general; the term subdivision is defined so as to require that the division be for the purpose of sale, lease or building development. Division for other purposes may not constitute a subdivision* (2003:260).

The above quote clarifies that there is no universal definition of subdivision, though it refers to splitting or parcelling of land into several parts for development. Eisner et al. (1993) explained the term 'subdivision' in an urban planning perspective as:

> *Subdivision of land is the method of transforming a city plan into a reality. Many elements in the overall plan are realized at the time the land is developed. Highways are dedicated, streets and alleys are paved, sewer and water lines and electric power are installed, new schools are constructed, transportation lines are extended, and police and fire protection is expanded. The city plan is either realized or it is lost in the subdivision of land. The control a community retains over land subdivision is the means by which the elements of the General Plan are enforced* (1993:453).

The regulations, according to this formulation, serve to make ideas about the city into reality by offering a methodological framework. Freilich and Shultz also proffer subdivision as:

> *Any land, vacant or improved, which is divided or proposed to be divided into two (2) or more lots, parcels, sites, units, plots, condominiums, tracts, or interests for the purpose of offer, sale, lease, or development whether immediate or future, either on the installment plan or upon any and all other plans, terms, and conditions. Subdivision includes the division or development of residentially and nonresidentially zoned land, whether by deed, metes and bounds description, devise, intestacy, lease, map, plat, or other recorded instrument. Subdivision includes resubdivision and condominium creation or conversion* (1995:56).

The regulations, according to this formulation, describe how land comes to have specified uses and how this process is definitive of the greater objectives of city shaping.

From the above, it is intelligible that land subdivision is a legal base which makes city's development achievable. Land subdivision is a critical step in city development articulated through SR. According to Yearwood, the character and quality of a development is linked with the quality of its land subdivision and the standards on which buildings are built.

Often this quality is linked to the adequate or inadequate representation of public interests and values. Given that land subdivision patterns will have significant impacts on living conditions, Yearwood (1971) describes the necessity of representing public interests and values well in such divisions. An inability to represent or a misrepresentation of these interests and values can have consequences for years to come, and additionally may be extremely costly to rectify. As such, getting development right the first time is of critical importance.

2.2.2 Land Subdivision Development Process and Main Actors

Lynch (1984:40–41) describes cities as being built and maintained by a host of agents: families, industrial organisations, city bureaux, developers, investors, regulatory and subsidising agencies, utility companies and the like. Each city has its own particular interests and needs, producing cities of different types and kinds, and with different development processes and needs. The decision-making process itself is normally fragmented, diverse and characterised by the tendency to bargain and negotiate among stakeholders to reach agreement. Typically the primary agents are single-purpose actors, whose aim is to increase their revenue or profit margin in the completion of a sewer system for instance. The agents support the real-estate market, or maintain a taxation system, etc. These activities generate revenue that which helps sustain the city.

In North America the process of land subdivision development has evolved since the 1870s–80s when many real-estate entrepreneurs entered the subdivision business. Subdividers' work focused on purchasing acres of undeveloped land, such as agricultural land, on the fringes of the city. The developers would subdivide the land purchases, creating smaller building plots that were then made available for individual purchase. Building plots were sold either directly to prospective owner-residents, to

speculators interested in profitable resale, or to small builders. The results of this process were subdivisions of a poor quality (Weiss, 2002; Miles et al., 2007).

The subdivided plots consisted of little more than a few stakes in the ground, marking out property boundaries. The plots would not have graded and surfaced roads, landscaping, or any utility infrastructure. Most unimproved subdivisions did not include public improvements, which would have come after the sale of a plot for development. The developments for public improvements would have been financed through special tax assessments for the new plot owners. The development process described here created a premature subdivision pattern (Weiss, 2002). During the 1920s and 30s, some of the larger subdividers began shifting their practice to include building. These developers would build homes that would go directly to sale along with the plots. The developers using this model discovered that the combination of plot/house sales were more stable, profitable and even marketable than the individual plot sales. Many land subdividers followed this development model known also as 'community builders' (Weiss, 2002:45).

The model became particularly popular and common after the speculative subdivisions' resale strategy boomed and then collapsed in the late 1920s (Weiss, 2002). Using the speculative model, developers changed the nature of the American land development during the early decades of the twentieth century. For instance, land subdivision development has itself been developing from a basic process, as that in which land is subdivided providing housing plots for sale, to a more complex process, which focuses on providing the complete development of communities (Weiss, 2002; Miles et al., 2007). Authors such as Schultz and Kelley (1985) reinforce the distinction between the basic and complex models by describing the differences between the developer and the builder in America. Schulz and Kelley indicate that the developer acquires raw land, subdivides it, and installs improvements such as streets, kerbs, pavements, sewers, water mains and other amenities. But the builder, on the other hand, ordinarily acquires already subdivided and improved plots and constructs houses on them. In the end, the distinction between each actor has become less important in recent years, and at present most developers perform both functions.

Converting and improvement in the world of subdivision development has led to a shifting of roles and responsibilities for the many stakeholders involved. There are

many interests involved in the development process including those of the original land owner, the developer, the prospective buyer, and the city as a whole.

Usually it is the 'entrepreneur' or developer who brings together and coordinates the agencies, agents, and capital together, adding value to each of them. Authors see the subdivision development process as a series of transformations (Ambrose, 1986; Eisner et al., 1993; Kone, 2006; Miles et al., 2007). In this process capital is converted into raw materials and labour, bought as commodities in the marketplace. Materials and labour are converted into another saleable commodity (i.e. a building), which is then converted back into capital by selling the commodity in the marketplace. For the process to be profitable, the amount received from plot or house unit sales must be greater than the cost of production.

Healey (1992) similarly defines the development process, stating:

> *the transformation of physical from bundle of rights, and material and symbolic value of land and buildings from one state to another, through the effort of agents with interests and purpose in acquiring and using resources, operating rules and applying and developing ideas and values* (p.36).

Moreover, Batbilg (2010) delineated land development as a process of converting the undeveloped land into developed land; in the process the value of land is affected, and is often increased.

Even the process of designing, planning and producing the land subdivision development has evolved. The process includes a variety of 'actors' or decision-makers, each with their own objectives, motivations, resources and constraints that are all connected in various ways (Inam et al., 2002). As Ball (1998) argues, the development process is a function of social relations specific to time and place, involving a variety of key actors (e.g. landowners, investors, financiers, developers, builders, various professionals, politicians and consumers). The above actors are engaged in the process of development because of different interests.

In fact, the land subdivision development process is complex, because it allows a number of agencies, public and private, large and small, to undertake development; and diverse, in that it involves the combination of actors or business and various inputs such as land, labour, materials and/or finance (capital) in order to achieve an output or product (Ratcliffe et al., 2004).

Furthermore, Williamson et al. (2010) argue that the land development process usually has three stages described in terms of land status. There is rural land (roughly stage one), and urban which includes urban servicing land and developed urban land. The land's price and its physical status are affected by the decisions and actions of the development initiation and its approval, and is then secondarily affected by the construction of amenities, utilities and buildings.

It is important to mention that the terms 'land development process' and 'land development', as well as 'development' or 'property development' are used interchangeably (Healey and Barrett, 1990; Gore and Nicholson, 1991; Guy and Henneberry, 2000; Williamson et al., 2010).

There are different models dealing with comprehensive insights of land development processes including:

(1) sequential or descriptive and event-sequence models; (2) behavioural or decision-making and agency models; (3) production-based and equilibrium models; and (4) provision structure and structure models. Gore and Nicholson (1991) and Healey (1991) have identified the models and arranged them into four groups according to the similarities in their approach to the development process (see Table 2.1). This research investigation does not deal with all land development models; rather it focuses on explaining relevant models, finally commending a model most applicable in a local scenario.

Table 2.1: Land development models and descriptions of the development process

Gore and Nicholson	Healey
Sequential or descriptive models depict the development process as a chronological sequence of stages; at each stage certain events occur.	**Event-sequence models** are derived from estate management, focus on the management of stages in the development process, and are preoccupied with managing the development process.
Behavioural or decision-making models emphasise the roles of different actors in the process and the importance of the decisions. The models often retain a sequential format, where events are generally presented as secondary to decisions.	**Agency models** are derived from behavioural or institutional explanations and are focused on the actors in the development process and their relationships. The model has been developed primarily by academics seeking to describe the development process.

Gore and Nicholson	Healey
Production-based models portray the development process as a specialised form of productive economic activity, and tend to view it from the perspective of the economy as a whole, in a macroeconomic manner.	**Equilibrium models** are derived from neo-classical economics, and assume that development activity is structured by economic signals about effective demand, as reflected in rents, yields, etc.
Structure of provision models contend that different types of development are characterised by different institutional, financial and legislative frameworks, and as such the search for a generally applicable model of the development process is futile.	**Structure models** focus on the forces organising relationships of the development process and which drive its dynamics. The models are grounded in urban political economics.

Source: Gore and Nicholson (1991) and Healey (1991) cited in Batbilg (2010:16)

The following section explains the main actors in the land subdivision development process.

2.2.3 Main Actors

Several authors discuss the main actors found within the subdivision land development process (e.g. Inam et al., 2002; Miles et al. 2007; Carmona et al., 2010; Peiser and Hamilton, 2012) and they tend to differentiate by far-ranging but distinct participant classes: (1) entrepreneurs (developers, sponsors and owners); (2) landowners (owners or land speculators); (3) consultants or project team members (designers, financial and legal experts); (4) public officials (mayors, city council members, county commissioners); (5) city staff (planners, members of the public works, and building services departments); (6) community members (as consumers, citizens, and political constituents); and (7) lenders (funders and investors). The actors' roles are discussed in the following sections.

2.2.3.1 Entrepreneurs

At the top of the main actor list are the entrepreneurs. Some refer to entrepreneurs as developer, subdivider, producer or owner. Carmona et al. define the developer in the following quote:

> *The term 'developer' embraces a wide range of agencies, from, for example, volume house builders to small local house builders and self-builders, and with levels of profit*

> *motivation ranging from the most profit-driven private sector developers, through central and local government, to non-profit organisations, such as housing associations. Some developers specialize in particular market sectors such as retail, office, industrial or residential, while others operate across a range of markets* (2010:275).

Carmona et al. highlight the diversity in skills and trade among the developers. Whatever characterisation they are given, the developer is essential to initiating and moving forward the development process. Miles et al., among others, see the developers as akin to a movie producer:

> *in that they assemble the needed talents to accomplish their objectives and then assume responsibility for managing individuals to make sure that development potential is realized. They are proactive; they make things happen […] Thus, the cost of making a mistake is extraordinarily high* (2007:8).

According to Segoe:

> *To the land developer the subdividing of land is primarily a matter of profit. He is chiefly interested in realizing as much money as he can from the sale of his land in the shortest possible time*) (1941:495).

In the above quote, Segoe highlights this developer's motivation as being one of 'profit': '*realizing as much money as he can from the sale of his land in the shortest possible time*'.

Developers influence peoples' lives. The developer has a considerable responsibility as the communities and buildings he/she creates become the fabric of our civilisation. For example, in the boundaries of a subdivision plan that a developer creates, he/she affects the lives of those living and working in the city, as well as in multitude of other ways (Peiser and Hamilton, 2012).

The land subdivider, or subdivision developer, has been seen as 'the practical city planner', as '*The actual working out of a city plan lies largely in the hands of the subdivider. He is creating the city of the future on the outskirts of the city of today*' as argued by the chairman of the California Real Estate Association (cited in Weiss, 2002:56).

This raises the question: if the developer is the 'practical planner' as Weiss suggests, what role does the planner play, if not planning?

In the United States, public officials and planners hold the power to stop development through the permitting of construction and in the approval and administration of land-use regulations. Nevertheless, it remains mostly developers who determine what actually gets built and when, what it looks like, and often where it is (Peiser, 1990:496). Developers go so far as to lay out subdivisions' street networks and the direct design of the public spaces between the housing units. Thus, it is developers working within the present political and economic institutions who plan America (Peiser, 1990). Coiacetto reiterates the same position, stating:

> *planners and other policy makers […] play but one role in the urban development process. Planners do not build cities and towns. Rather, they are built by private sector interests, developers in particular* (2000:353).

The role that planners play is in developing regulations in line with wider public aspirations, the approval of project applications, and in the administration of the regulations, not directly involving themselves in the built environment's designing and shaping activities.

2.2.3.2 Landowners

Landowners do not generally actively participate in the land subdivision development process. Developers purchase land from interim landowners – the 'notorious' land speculators (Schultz and Kelley, 1985:18). Owners simply release land for development when offered a sufficiently high price (Adams, 1994). Owners' objectives are usually short-term and financially motivated (Carmona et al., 2010). In some cases, landowners might be influence by the outcome of the development process in different ways, such as: (1) releasing or not releasing land; (2) through the size and pattern of the land parcels released, which have a major impact on the subsequent pattern of development; (3) through any conditions imposed on the subsequent nature of development; (4) through leasing rather than selling land; (5) or through joint ventures between a developer and a landowner (Miles et al., 2007; Carmona et al., 2010).

2.2.3.3 Consultants

The land development process is complex and dynamic, requiring many steps to complete. The majority of developers do not have the skills and knowledge required to complete each step on their own and typically outsource these steps to paid

professionals. Thus, most developers and their projects require input from a variety of consulting professionals in order to meet the application criteria of the planning authorities (e.g. Dewberry and Rauenzahn, 2008; Wilkinson et al., 2008; Johnson, 2008a, b; Carmona et al., 2010; Peiser and Hamilton, 2012). Peiser and Hamilton (2012) refer to the consulting professionals as actor within a team-based partnership. Others (e.g. Ratcliffe et al., 2004; Kone, 2006; Miles et al., 2007; Dewberry and Rauenzahn, 2008; Johnson, 2008a, b) refer to the consultants as the project team or development team, and yet others (Carmona et al., 2010) consider them development advisers. Among the professionals paid to consult in these groups are marketing agents, estate agents, solicitors, planners, architects, urban designers, engineers, facility managers, site agents, quantity surveyors, cost consultants, etc. Consultants' activities are significant proponents of a project, in that they bring in specialised expertise. Often a developer steers the project team during the development process (see Figure 2.1).

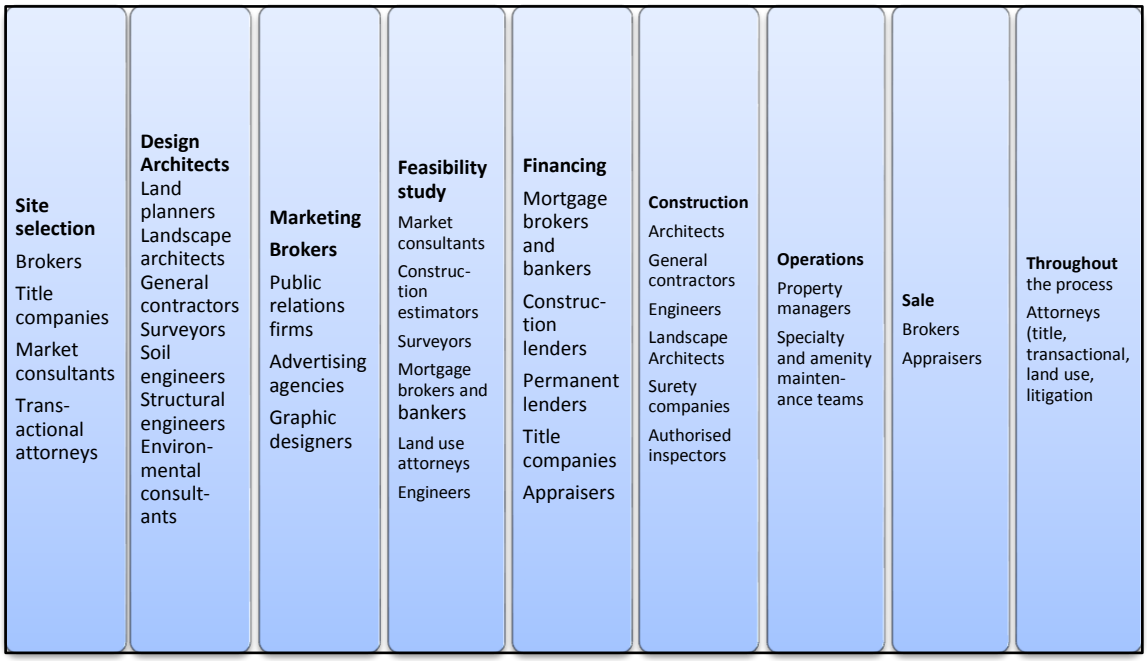

Figure 2.1: Subdivision land development processes and participants' roles
Source: Peiser and Hamilton (2012)

2.2.3.4 Public Officials and Planners

The public sector's public officials represent a number of local institutions such as government bodies, regulatory agencies and planning authorities. Public officials also include fire and safety officials, members of school boards, parks and open space boards, environmental health officials, air quality officials, and so forth. The officials seek to regulate land development and use of land through implementing the land-use

regulations, provision of infrastructure and services, and involvement in land assembly and development. For example, the municipality city staff – including planners – must review and evaluate subdivision proposals, making recommendations and conditional requirements concerning subdivision improvements, approve project applications, as well as manage and control the process of land development (Schultz and Kelley, 1985; Inam et al., 2002; Carmona et al., 2003; Ratcliffe et al., 2004; Miles et al., 2007). According to Garvin, public officials can play a main role in fostering desirable interactions between proposed real-estate development and their neighbours (1986:27).

Peiser views planners as the policing agents of contemporary urban America (1990:496). They enforce rules such as the SR, regulate the development process, and penalise offenders. Developers can find the planning and approvals process a needless meddling in their work, and a general waste of their time and money. However, planners work to ensure that developers do not ignore regulations, in order to spend less time and money on the project, and are held responsible for improving the quality of urban life, beyond the limits of an individual project. The developers' business model focuses only on the near future, and are value sometimes implicitly and sometimes explicitly only profit (Peiser, 1990:497). However, there are limits to what planners can reach through regulation. Dalton et al.'s study of local planning organizations in California demonstrates the weaknesses of regulation to implement plans (1989). They note that the responsive nature of the regulatory practice leaves the initiative for implementation in the hands of developers rather than planners.

2.2.3.5 Role of Citizens and Consumers

The land development process has a number of participants consisting of residents, businesses, and the general public. Each participant is a consumer of the development's products, in that they buy into the business model. If the development is either a residential or commercial project, the participants directly and indirectly play a role in the economic success of the scheme. The most explicit instance of which is the purchase or rental of space, for either commercial or residential purposes. The purchases, particularly in their size and frequency, are indicative of the market demand (Kone, 2006; Dewberry and Rauenzahn, 2008; Johnson, 2008b; Carmona et al., 2010). Ratcliffe et al. (2004) have identified three major participant groups in the development process. The most important is the 'land user' group. The land user includes future users as well as individual users who buy or rent the real-estate space to meet their housing

accommodation needs. The importance of final space users in the land development process is shown by Miles et al.; they identify the planning role of the developer in the following quote:

> *A description of participants in the development process would be incomplete without mentioning the final users of the space: the direct consumers of the finished product. Developers anticipate users' needs when articulating the original project concept. The market study further elaborates on the idea and guides developers in developing products that fit their intended market(s). Ultimately, the final users determine the success of the project by accepting or rejecting the finished product as it is delivered to the marketplace. Users often contract for space before construction begins (preleasing). By working with the developer's marketing representative, final users can make sure that the finished product meets their needs and, in doing so, become active participants in the development process* (2007:61).

It is the final user consumption of the new product which determines whether the development has been successful. The development's success is largely determined not by likely or other value-laden judgements but by the exchange of money to meet the profit-making goals of the development.

Lynch and Hack describe the space consumer and what must be considered in serving consumer demands:

> *Making places that fit human purposes is the task of site planning. Two things must then be understood: the nature of the site, on the one hand, and how its users will act in it and value it, on the other. By 'users' we mean all those who interact with the place in any way: live in it, work in it, pass through it, repair it control it, profit from it suffer from it, even dream about it* (1984:61).

The actions and values of the consumer are a key consideration in the planning of developments. Kone (2006) indicates that buyers today are more sophisticated about aspects involving and related to land development, in that they are often seeking high-quality development, not just housing. Given this growing awareness of the real-estate market in particular, developers are pushed to create communities that support consumers' needs and lifestyles in order to continue meeting market demands, and therefore profit-making goals.

Subdivisional land development is not merely aimed at fulfilling market demands because there are allies and opponents as well to development outright. There are

citizens who actively support or oppose land subdivision and development by political means, and represent public view. These two groups – supporters and opponents – are often the same because their roles are often conflated. The citizens' efforts may actively affect the development process; for instance, through protests over specific development projects, participation or consultation on particular projects, and/or involvement in interest groups and organisations. Through the democratic process, they – indirectly, and perhaps in principle only – control the public-sector side of the development process (Inam et al., 2002; Carmona et al., 2003).

2.2.3.6 Lenders

Unless developers use their own capital, they typically make financial arrangements on the most favourable terms available, with regard to cost and flexibility (Carmona et al., 2010). In North America, there are a number of institutions financing various phases of the development process. Insurance companies, commercial banks, and mortgage companies are among them. The institutions funding the initiatives tend to be much larger than the clients they serve. Typically, institutional lenders make loans at every stage of the process, for such purposes as land acquisition, land subdivision improvements, home construction, and the purchase of the finished product (Schultz and Kelley, 1985:24–25). The lenders at these institutions, investing resources in urban development, do so for their own profit-making purposes. If acceptable profits are not achieved, they will invest elsewhere (Kone, 2006; Carmona et al., 2010).

2.2.4 Stages of the Land Subdivision Development Process

The land subdivision development process includes a number of stages. Miles et al. (2007) and Dewberry and Rauenzahn (2008) mention eight stages of development, whereas other writers indicate only six stages (Peiser and Hamilton, 2012). Ratcliffe et al. (2004) refer to five stages, and authors such as Kone (2006) and Johnson (2008a, b) do not account for a specific number of stages, instead mentioning that the land development process's stages may change in response to external conditions. On the other hand, Kaplinsky (2006) illustrates simple stages for subdividing land and creating subdivision development. However, the stages and process of land subdivision development depend on the development size and type. (For instance, those that are in a better or a worse position to subdivide land to provide plots for sale, or to develop

complete developments. Stages in a better position include land subdivision, construction of housing plots, and services.) In general, the above authors agree that the development process stages (such as coming up with the idea, refining the idea, testing its feasibility, negotiating necessary contracts, making formal commitments, constructing the project, etc.) can be presented in linear progression, but that the land development process itself is non-linear. However determined, the development process can be summarised into the six main stages set out below.

At the first stage, the developer does not own land and may search for and purchase the land from, for instance, a farmer or land speculator. Kaplinsky (2006) shows that the farmer can subdivide the land himself, starting a new development, but he lacks the capital and experience to do this. Given that the landowner does not divide their land himself, the developer starts the process by purchasing the land. Usually the land is not purchased until the developer has an idea for the creation of a new community (Kone, 2006; Johnson, 2008a, b; Miles et al., 2007).

Stage two starts with the purchase of a land parcel. The developer asks their design team to prepare a number of studies, such as a preliminary site feasibility studies and project marketing studies. Marketing studies are an important assessment and prediction method that the developer can conduct at several stages of the development – before and after land purchasing, during the build-up-out and sales stages, and after project completion. The studies define the appropriate target groups and locations in which to develop. They also help in understanding more clearly the target group's buying power, their lifestyle characteristics and their needs. Correlating product demand allows developers to match development types and master plan concepts with those characteristics. The studies are capable of showing local economic factors and trends (e.g. social, stylistic, etc.) influencing the sales of plots or homes. The models then serve as a guide to match the potential project specifics with the projected customer profile. For instance, after development, marketers' end studies can be conducted to evaluate the effectiveness of the development design through buyer surveys (e.g. Kone, 2006; Miles et al., 2007; Dewberry and Rauenzahn, 2008; Carmona et al., 2010). Similarly, a preliminary feasibility investigation can indicate which site to develop, the projected costs of development and constraints of securing government approval for the project. Such studies can accurately indicate to the developer the sites to be subdivided and developed at a profit (e.g. Kone, 2006; Miles et al., 2007; Dewberry and Rauenzahn, 2008; Peiser and Hamilton, 2012).

Stage three is marked by the site's land purchase. Before preparing and adopting a tentative plan of the subdivision to be built and before beginning capital works, the developer and his project team must conduct multiple studies and surveys, including those on soil conditions, hydrology, and environmental concerns. The studies identify potential environmental hazards brought about through construction (e.g. protected species or potential sources of contamination) or potential future problems (e.g. flood zone, soil collapse, etc.). In addition, the developer must collect information related to adjoining lands and other data that may have a bearing on the viability or profitability of a residential development. Factors that may impact viability include potential externalities such as sewer capacity and other municipal services, the existence of or the need for easements, etc. The developer's decision to proceed with a subdivision development plan will be based on projected revenues from plot sales compared to the total estimated cost of designing, obtaining approval, and developing the subdivision. The developer will then formulate a clear business plan and work to raise the necessary capital with institutional investors.

Following the land's purchase, the project is at the design stage. Generally, project design should accurately reflect marketing studies. The site's survey and innate characteristics should also be taken into consideration during design. The result should be a plan with housing plots or types reflecting the projected buyers' preferences and therefore ensuring sales and the plan's profitability. Development contracts are then negotiated with the lender, using marketing studies to support convincing lenders or investors. When the developer receives a loan commitment, he seeks to obtain permits from the local government (see Section 2.2 about the subdivision approval process) (Kone, 2006; Miles et al., 2007; Dewberry and Rauenzahn, 2008; Peiser and Hamilton, 2012).

Stage five is the construction stage. This begins with site preparation such as clearing, draining or excavating, depending on the condition of the site and the plans for it. Preparation can be costly and must be included in the total cost of development. After the site has been prepared, the construction team installs infrastructure according to the requirements of the subdivision. This typically includes a storm water management system, drinking water supply, sewage disposal, and a road network. The storm water management system consists of kerbs, gutters, and storm sewers, and occasionally ditches, catch basins, and pumps. The supply of drinking water is supplied by on-site wells or by connection to the municipal water system. Sewage is disposed of through a

connection to the municipal piped sewage system or a private septic tank system. The internal road network provides access to every plot with residential streets and connector roads. Finally, allowances for electricity, gas and cable network connections are also made at this stage. In addition to the basic infrastructure, developers may opt to provide extra services and amenities depending on regulatory requirements and market demands. Occasionally, some of the features will be included in the plots sold to the developer if the subdivider pre-sells the plots and improvements are included in the purchase price. Often, required improvements include pavements, street lighting, street signs, lamp-posts, fencing, planted trees, pedestrian and cycle paths, etc. (e.g. Kaplinsky, 2006; Kone, 2006; Miles et al., 2007). After the infrastructure works are completed, the plots are ready for construction.

In stage six, the plots are built on. In some cases, the developer does not construct housing units and instead offers the prepared plots for sale to housing development companies. The developer remains involved, administration of the construction, and is considered in charge on-site for a maintenance period of two to three years, as stipulated by the authorities. In the case where the developers themselves construct the housing units or the final building product, the maintenance works may extend over a much longer period of time; this depends on the development's size and phases (Kone, 2006, Miles et al., 2007; Dewberry and Rauenzahn, 2008).

2.3 Subdivision Regulations

2.3.1 Definition of Subdivision Regulations

The dictionary defines a regulation as 'rule or directive made and maintained by an authority: planning regulations'. Given the word's close association with rules and authority, the word is often associated with the law. For instance, a regulatory infringement may lead to legal action. What constitutes infringement is determined by the regulations, which speak to the legal framework. The law is the stipulation of general rules, regulations are more task-oriented and less exorbitant, in that they are 'employed to define detailed goals and objectives for forms of intervention directed at the behaviour of individuals' (Hunt and Wickham, 1994:22). Thus, the concepts of 'law' and 'regulation' remain distinct from one another.

Rohan and Kelly (2013) define the meaning of SR according to an evolving sense of subdivision practices within American history.

> *The term 'regulation' is commonly applied to subdivision controls in part as a generic term, but in part as a reflection of the history of the controls. The Model City Planning Enabling Act provided a leading model for subdivision controls. It provided authority for the planning commission to 'adopt regulations governing the sub-division [sic] of land within its jurisdiction [...]' Although subdivision controls are almost universally adopted as local laws (meaning as ordinances for most jurisdictions), the term subdivision 'regulations' remains in wide use – and the enabling acts in some states still refer to the adoption of such 'regulations' by the planning commission* (2013:7).

Also, Freilich et al. (2008) stated SR was a tool adopted to guarantee community protection:

> *Subdivision control is aimed at protecting the community from an uneconomical development of land and assuring persons living in the area where the subdivision is sought that there will be adequate streets, sewers, water supply and other essential services* (p.24).

Its purpose is not merely a means of controlling development and profits, but a way of ensuring a certain standard of living for the city's inhabitants.

SR are used to control the conversion of raw land into streets, blocks and plots. Such regulations prescribe standards for street improvement, plot size and layout, procedures for dedicating land for public purposes, and other requirements (Mandelker and Cunningham, 1979). Such regulations are designed to allow the public authorities control over the platting and conversion of raw land into building plots (Yearwood, 1971; Fitzgerald, 1972). Others define SR by specifying the differences between SR and zoning in terms of its meaning and goals. Many scholars share the common point of view that zoning regulates the use, the intensity of use and the bulk of use of particular pieces of land and buildings that are situated on them, and that SR is the most significant and common form of land development regulation used (e.g. Nolon and Salkin, 2006; Kelly, 2009; Cullingworth and Caves, 2009; Barnett, 2011). 'Subdivision' refers to the division of a tract of land into two or more tracts for the purposes of sale or development. The concept of subdivision differs from zoning, in that zoning focuses on the use of land and buildings, whereas SR focus on the creation of useable building plots and various public improvements that can easily be integrated into the public infrastructure system. They generally specify many aspects such as the types and widths of streets and pavements that must be laid, the installation of sewer systems and utility and water connections, as well as the space that must be reserved for major street rights

of way, parks, schools, and recreation facilities such as playgrounds (e.g. Nolon and Salkin 2006; Freilich et al., 2008). The regulations are also set up to prohibit the development of subdivisions in locations where conditions would pose a health hazard created by poor drainage, or where flood conditions are possible, etc.

2.3.2 Purpose of Subdivision Regulation: Experience from US Model

Today subdivision is the most important way in which developable land is brought into residential use, but there are numerous questions left unanswered about its meaning and use. Kaplinsky questions: 'why does the subdivision require control?' (2006:1), taken up in this thesis. Additionally, a number of other questions are raised. What happens when a community has no SR? Are local street networks adequate and safe for local residents of the subdivision to use? Will we see subdivision patterns with adequate utility networks, adequate public services, or could we see residential lots arranged around a system of streets, often sharing open spaces or other amenities?

Academics have each illustrated the purpose of modern SR, but hold similar views (e.g. Yearwood, 1971; Seidel, 1978; Listokin and Walker, 1989; Ben-Joseph and Phelan, 2005; Rohan and Kelly, 2013). For these researchers, the primary purpose of modern SR is to prevent premature subdivision, and the integration of the new development into the existing community. Subdivision controls address such matters as street layout, the provision of water, sewage, drainage capacity, and other utilities, plot frontage, plot size, and amenity-based requirements such as pavements and street lights (e.g. Seidel, 1978; Kelly, 2009; Rohan and Kelly, 2013). Modern regulations often go a step further than basic requirements, additionally requiring land to be dedicated to public facilities such as schools, parks, playgrounds, etc. (e.g. Listokin and Walker, 1989; Kaplinsky, 2006). If land is not delegated to public use a fee is paid in lieu (e.g. Juergensmeyer et al., 2003; Nolon and Salkin, 2006). Finally, subdivision control laws, particularly improvement requirements, permit local government to shift the cost of providing public services to developers (e.g. Juergensmeyer et al., 2003; Kaplinsky 2006). This shift is not paid for by the developers themselves, but is rather bundled into the final cost of the home so that ultimately the homebuyers are paying for the costs of public services.

The shifting of responsibility from the government to the developer and ultimately the individual homeowner is not only a way for the government to save money. Ben-Joseph

(2005) sees the regulation of subdivision as protecting local government. When the local government adopts the regulations, this shields them from the responsibility of decision-making in the development process. Ohm discusses the Wisconsin state statutes to indicate the holistic purposes in SR. Ohm states that the regulations:

> *promote the public health, safety and general welfare of the community […] lessen congestion in the streets and highways; to further the orderly layout and use of land; to secure safety from fire, panic and other dangers; to provide adequate light and air, including access to sunlight for solar collectors and to wind for wind energy systems; to prevent the overcrowding of land; to avoid undue concentration of population; to facilitate adequate provision for transportation, water, sewerage, schools, parks, playground and other public requirements; to facilitate the further resubdivision of larger tracts into smaller parcels of land. The regulations […] shall be made with reasonable consideration […] of the character of the municipality, town or county with a view of conserving the value of the buildings placed upon land, providing the best possible environment for human habitation, and for encouraging the most appropriate use of land* (1999:150).

Ohm's broadly defined purpose of SR indicate that there is more to understanding the meaning and use of SR than has previously been accounted for earlier in this section; for example, the purpose of regulation development in recent decades.

2.3.2.1 Documentation and Recording of Plats

Prior to the 1920s, the primary purpose of SR was limited. Large parcels of land were the primary mechanism for supplying buildings lots for new community developments that rapidly urbanised North American cities. A local need for an efficient method of describing the process emerged, and eventually led to requiring that the subdivision plats be recorded at the local land records office. The new requirement was established in order to provide a more efficient method for selling and conveying subdivided land. SR was not yet developed as separate from development control. What we recognise today as SR was then a part of the conveyancing system. The system required the splitting of large parcels into small ones, and that an orderly system for locating and identifying the resulting lots was used. Once recorded, the land within the subdivision could be conveyed by reference to the lot number and subdivision name to the page and volume numbers of the plat record books in which the plat in question was recorded. The early system avoided expenses and possible confusions inherent in using a metes

and bounds or a government survey description of each individual lot every time it was conveyed (Freilich and Shultz, 1995; Juergensmeyer et al., 2003; Kaplinsky, 2006; Freilich et al., 2008; Kelly, 2009).

Quality of Subdivision Plan Practices

The next purposive stage of subdivision control's development was designed to provide protection to potential buyers, developers, and the government. During the 1920s, in many American cities land speculation led to the platting of thousands of subdivisions. Many of the subdivisions were poorly designed, with small plots, inadequate streets, and lacked basic services such as utilities, fire provision, and sanitary sewage disposal (Kaplinsky, 2006; Listokin and Walker, [1989] 2013). Subdivision plans were unresponsive to topography and road alignment, often making it financially difficult for local municipalities to provide necessary services. Uncontrolled subdivisions or speculative practices led to a second phase of SRs' purposive or sound land-use planning (Schultz and Kelley, 1985; Listokin and Walker, [1989] 2013). Excessive subdivision by land speculators artificially inflated the price of developed land and led to widespread taxation, delinquencies, and foreclosures when real-estate prices plunged in the late 1920s. Municipalities were left to deal with vacant, unusable platted land or neighbourhoods that had turned into slums. At the same time and in response to the problems created by both land speculation and premature development, general and comprehensive zoning and planning were rapidly becoming accepted in the United States (Listokin and Walker, 1989; Kaplinsky, 2006; Freilich et al., 2008). In 1928, the federal government published the Standard City Planning Enabling Act.[3] The Act provided a framework for state legislatures in the drafting of their own enabling acts. It was significant for SR, because it shifted their emphasis from selling and conveying land to community shaping. The Act contained specific suggestions for subdivision development, such as the provision of open space, proper arrangement of streets, utility installations, and access allowances for emergency equipment (e.g. Listokin and Walker, 1989; Freilich and Shultz, 1995; Freilich et al., 2008).

[3] In March 1927, a preliminary edition of the second model, a Standard City Planning Enabling Act (SCPEA) was released, and in 1928 the final version of the Act has published. The SCPEA covered six subjects; the fifth directly addressed private land subdivision. SCPEA served as the basis for much state enabling legislation, shifting the concept of subdivision regulation from its limited role as a device for recording plots to the means of shaping community growth (e.g. Platt, 2004; Ben-Joseph, 2005; Talen, 2012).

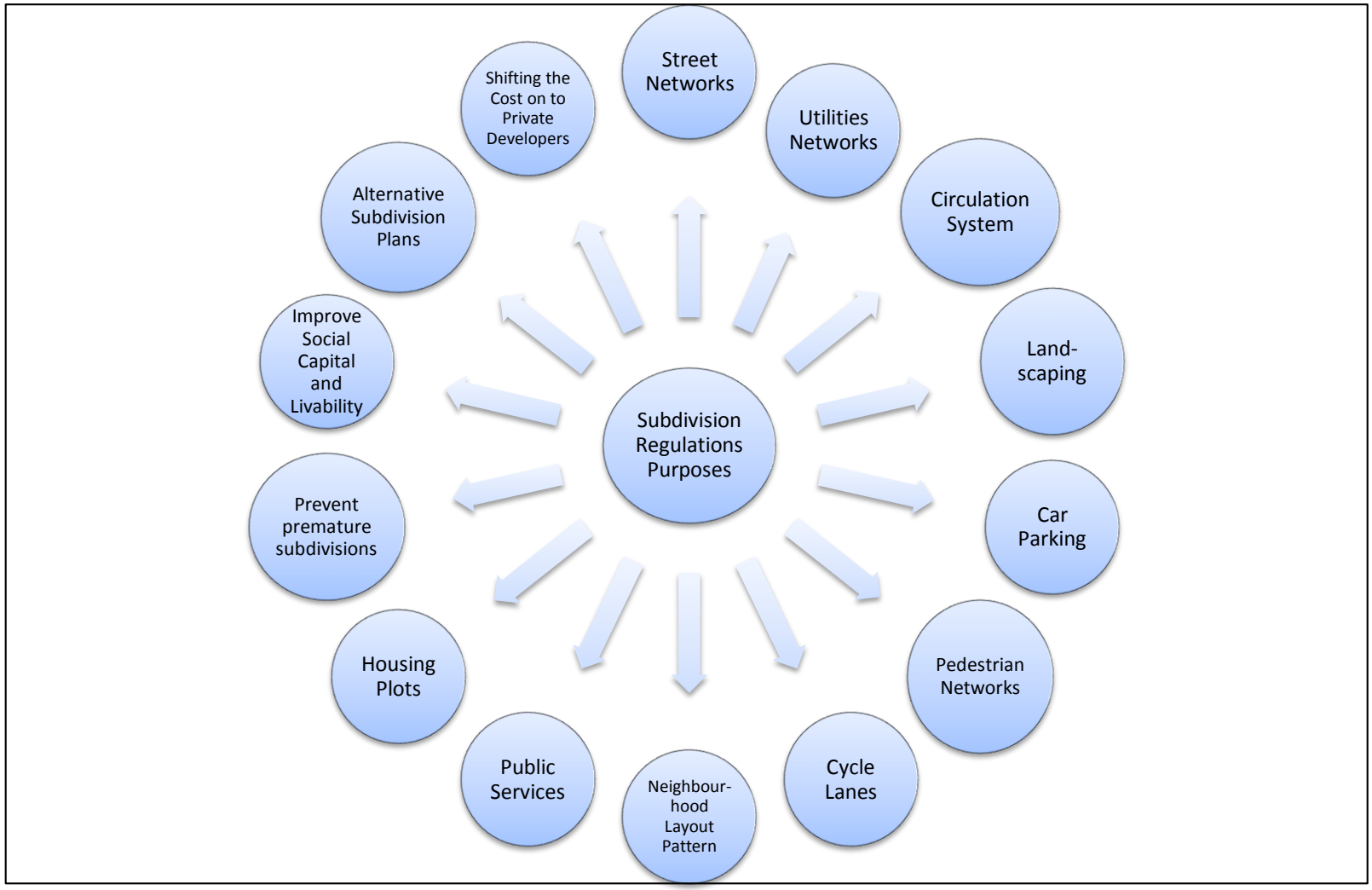

Figure 2.2: Contemporary subdivision regulations' purposes

Local authorities accomplished this by ensuring that subdivisions were well laid out and by requiring developers to provide essential amenities such as roads and utilities. The purpose of subdivision control laws is to regulate such things as street location and connections with existing streets, plot location, size and shape, plot numbers, size and number of dwelling units, setbacks, utility easement locations, health and safety concerns with traffic patterns, drainage, sewerage, and the provision of utilities within the subdivision plan (e.g. Kaplinsky, 2006; Freilich et al., 2008; Listokin and Walker, [1989] 2013).

2.3.2.2 Development Charges and Exactions

The third SR period began after World War II. In the late 1940s, the demand for new housing increased within most North American cities. Many couples and families moved to the outskirts of larger cities. However, the new suburban residents still expected adequate municipal services. The rapid development of the suburbs in the post-war period placed severe fiscal stress on many municipalities. Concern was focused on the demands of the new subdivision residents for parks, recreation facilities and adequate roads, which led to increasingly restrictive regulations at the local level (e.g. Nolon and Salkin, 2006; Dewberry and Rauenzahn, 2008).

SR were amended to include provisions requiring developers to dedicate park sites, school sites, on-site roads, as well as the widening of off-site streets. In some instances, developers were given the alternative of making a monetary payment in lieu of land dedication, which would provide the means for the municipality to build the facility. Local ordinances requiring the land dedication or fees, became increasingly common. Ordinances requiring that the developer contribute to the cost of off-site improvements for sewers, water, and drainage facilities also proliferated (e.g. Listokin and Walker, 1989; Kaplinsky, 2006).

2.3.2.3 Growth Management, Environment Concern and Street Connectivity

In the late 1960s, local governments began using subdivision controls for the purposes of implementing broad policies. Municipalities were able to maintain considerable control over the form and quality of new subdivisions, and were assured that most of the anticipated capital costs would be passed onto the subdivider. Homeowners and public officials had by then become preoccupied with new concerns, which made them less

supportive and interested in additional suburban development. The environmental movement gained popularity and many citizens were taken with conservation ideals. There was also a sense of dissatisfaction with the loss of visual amenities, increased traffic congestion, and generally with 'sprawl'. Emphasis was given to the individual subdivision's relationship with its external community environment through local government's comprehensive planning process (e.g. Listokin and Walker, 1989; Kaplinsky, 2006).

Some communities enacted growth control measures or laws meant to prevent environmental problems. Manifestations of these efforts are found in regulations designed to preserve agricultural land and open space, or requiring that the amount of rainwater runoff after development not exceed the amount occurring prior to development (e.g. Listokin and Walker, 1989; Arendt, 1996, 2004). Additionally, landscaping and screening practices were included to meet developing aesthetic sensibilities. The developments all show a growing interest in improving development designs in order to create projects improving community amenities (e.g. Schultz and Kelley, 1985; Listokin and Walker, 1989; Freilich et al., 2008).

Several North American cities were concerned within the subdivision review process and government's ability to require sustainable designs and site planning approach. The approach to be adopted is exemplified by the Conservative Subdivisions and Low Impact Development (LID), which was primarily created for the purpose of preserving open space, protecting significant natural features, and limiting the environmental impact of development on the local hydrological regime within the proposed subdivision (Kone, 2006; Singh, 2006; Johnson, 2008b; Kelly, 2009). LID is an engineering-based approach that uses topography, rain gardens, natural features and pervious infrastructure to control water runoff and reduce the need for storm sewer installations (Coffman, 2002; Singh, 2006). Conservation subdivisions, or cluster subdivisions, are residential or mixed-use developments in which a significant portion of the subdivided tract is designated as undivided and permanently preserved open space. The plots to be built on are clustered on the remainder of the tract (Arendt, 1996, 2004; Kaplan et al., 2004; Pejchar et al., 2007). The advocates of the two techniques see them as not only friendly to the environment – through protection of open space, environmentally sensitive land, and preservation of historic structures or agricultural operations – but as meaningful growth management and planning tools to promote such principles as those of New Urbanism. The techniques also serve as a provision of on-

site passive and active recreation so as to promote health through discouraging obesity and sedimentary life styles (Frumkin et al., 2004). Some studies have also suggested that the implementation of alternative designs with reduced infrastructure (e.g. fewer roads, smaller lots, fewer storm sewer installations) and a smaller size of total developed areas can have lower development costs (Coffman, 2002; Dietz, 2007).

The impact review study is required by many states, particularly after the US federal government passed the National Environmental Policy Agency (NEPA) in 1969 (Kone, 2006; Dewberry and Rauenzahn, 2008; Salkin, 2009). In California, the state government passed the California Environmental Quality Act (CEQA) in 1970. CEQA does not directly regulate land uses, but instead requires local agencies within California to follow an analysis and public disclosure of environmental impacts of proposed projects protocol. The subdivision review approval process became restrictive in order to force the developers to prepare complete environmental impact studies. These reviews questioned whether the subdivision plat would result in a physical change to the project site or surrounding sites, and what its effect would be on any existing waterways, natural wildlife and air quality (Cullingworth and Caves, 2009).

Today, SR's purpose has evolved to reflect new issues not previously considered. Such issues include connectivity, or the concern to ensure logical and continuous street patterns in a community (Johnson, 2008b; Kelly, 2009; Canada Mortgage And Housing Corporation, 2008a), increased mobility for pedestrians (Kelly, 2009; Handy and Clifton, 2007), environmental sustainability and longevity (Salkin, 2009) and natural disasters (Geis, 2000). The purpose of some subdivision ordinances is also to encourage developers to implement alternative designs. These differ dramatically from conventional subdivision plans (see Section 3.6), sometimes called the 'cookie cutter' approach to subdivision. Alternative models include the Planned Unit Development (PUD), Transit Oriented Development (TOD), Neotraditional or Traditional Neighborhood Development (TNDs), Common Interest Developments (CIDs) and others (Johnson, 2008a; Ben-Joseph, 2004a, Salkin, 2009). Yet, a study conducted in southern California found little evidence of alternative subdivision development implementation such as TOD (Boarnet and Crane, 1998).

Ben-Joseph (2003) measures the influence of SR on the design of residential developments at the US national level. Through a nationwide survey of towns' and cities' public officials, he evaluates attitudes and perceptions identifying issues within

SR that their regulatory agencies perceive as affecting housing development. Ben-Joseph found that nearly all of the jurisdictions surveyed (86% or 137 jurisdictions) have an ordinance for alternative development approval in place. In 2005, Ben-Joseph and Phelan replicated similar research to that done in 2003, but this time in Massachusetts. They found developments such as TNDs and new types of communities are increasingly possible within Massachusetts' subdivision development regulations. Conservation subdivision ordinances exist in almost 50% of America's jurisdictions, and a third allow PUDs. However, only half of the jurisdictions allowing alternative developments have actually developed and constructed one.

In recent years, however, the purpose of regulation has taken on new roles. Juergensmeyer et al. (2003) and Freilich et al. (2008) show that some states' SR have become newly revitalised and their role greatly enhanced. The traditional approach and its principles are rapidly being replaced by a new term called '(land) development codes'. The new formulation combines zoning, construction, design codes, PUDs, and SR. The codes provide a holistic approach to controlling the land development process, as they are designed to incorporate a number of objectives that are missing in many conventional model codes, including comprehensiveness, consistency, clarity, usability, enforceability, and adaptability.

In brief, the list of modern SR purposes (Cullingworth and Caves, 2009) cited in Cochise County, Arizona, Subdivision Regulation Ordinance (2008) includes:

- Protect the health, safety, convenience and general welfare of the citizens of the country;
- Provide for the orderly growth and harmonious development of the country;
- Require that land be conveyed with an accurate legal description;
- Establish procedures and standards for all subdivisions;
- Provide adequate traffic circulation, streets, utilities, waste water treatment, drainage, fire and flood protection, schools, recreation areas and other facilities and services needed or desired by the community in in the most cost-effective manner, with the cost being borne by those benefited;
- Result in individual lots of reasonable utility and liveability and to promote neighbourhood stability and protection of property values;
- Promote conservation of those areas with unique natural features and scenic qualities and provide residents with access to those areas;

- Promote water recharge and clean air;
- Provide greater design flexibility and efficiency for services and infrastructure including design methods that reduce the length of streets, thus reducing the amount of improved surface and length of utility runs;
- Encourage well-planned subdivisions by establishing environmentally adequate standards for design and improvement; and
- Provide viable, innovative, cost-effective, voluntary development alternatives (2009:121).

2.3.3 Positive Impact of Modern Subdivision Regulations

SR have both positive and negative impacts; this section shows the positive ones. According to Ohm (1999), the impacts of SR are defined as:

> *Subdivision control ordinances often give a community its only opportunity to ensure that new neighborhoods are properly designed. Failure to plan for the subdivision of land is felt in many areas such as tax burdens, the high cost of extending utilities, street and traffic problems, overcrowded schools, health hazards caused by waste water treatment systems unsuited to a particular area, and a loss of a sense of community* (p.139).

The regulations are effective in ensuring a certain build quality which can prevent other problems arising in the future.

Many academics mention that subdivision controls perform several specific positive impacts. First, the adoption of design, construction, and material standards for facilities, utility networks, street design, pavements, trail design, cycle paths, parking and landscaping that serve and support the project and continued development of the larger community (e.g. Listokin and Walker, 1989; Luger and Temkin, 2000; Miles et al., 2007; Kelly, 2009). Second, the protection of consumers who wish to live in a project that has been completed or is planned for development on the ground (e.g. Listokin and Walker, 1989; Nolon and Salkin, 2006). SR provide assurances that systems will be adequate to meet demand and be operating at the time of purchase, and that the investment is sound relative to public infrastructure. For instance, the subdivision standards provide for a safe and proper design of transport and other critical public facilities, such as an adequate and safe water supply and sewer capacity (e.g. Listokin and Walker, 1989; Dewberry and Rauenzahn, 2008). Lastly, the protection of the local

authority is another positive effect of the regulations. The local authority needs protection as an owner, operator and maintenance provider of many facilities provided by the developer. By explicitly stating the minimum standards required of the developer and the project, the authority can better predict the building's life-cycle and maintenance costs in order to avoid a costly reconstruction of otherwise less-durable and poorly managed facilities (e.g. Juergensmeyer et al., 2003; Kaplinsky, 2006).

2.3.4 Source of Decentralised Authority

In North America, SR are simply one part of a much larger system of local land-use controls. The regulations thus fall under the function of the state, who regulate private activity for the protection of the health, safety and welfare of the state's citizens (e.g. Nolen, 2001; Juergensmeyer et al., 2003; Nolon and Salkin, 2006) (see Figure 2.3). Nation states typically delegate this power to local government, enabling them to enact zoning ordinances tailored to their particular needs. States may delegate the regulatory power in a variety of other ways, such as through the passage of a general zoning enabling Act, the granting of a 'home-rule' power by legislation or constitutional provision, or by specific authorisation to zone for certain purposes (Luger and Temkin, 2000). All states have some sort of subdivision control legislation. In their enabling legislation, most states either give the power to regulate land subdivision directly to the local planning commission or otherwise authorise the local governing body to delegate that responsibility to the commission. Other states may assign the planning commission to serve in an advisory capacity to the local legislative body; i.e. the commission may make recommendations as to what controls or regulations should be enacted, and give input as to the administration of the SR in specific situations (e.g. Listokin and Walker, [1989] 2013; Nolon and Salkin, 2006; Miles et al., 2007).

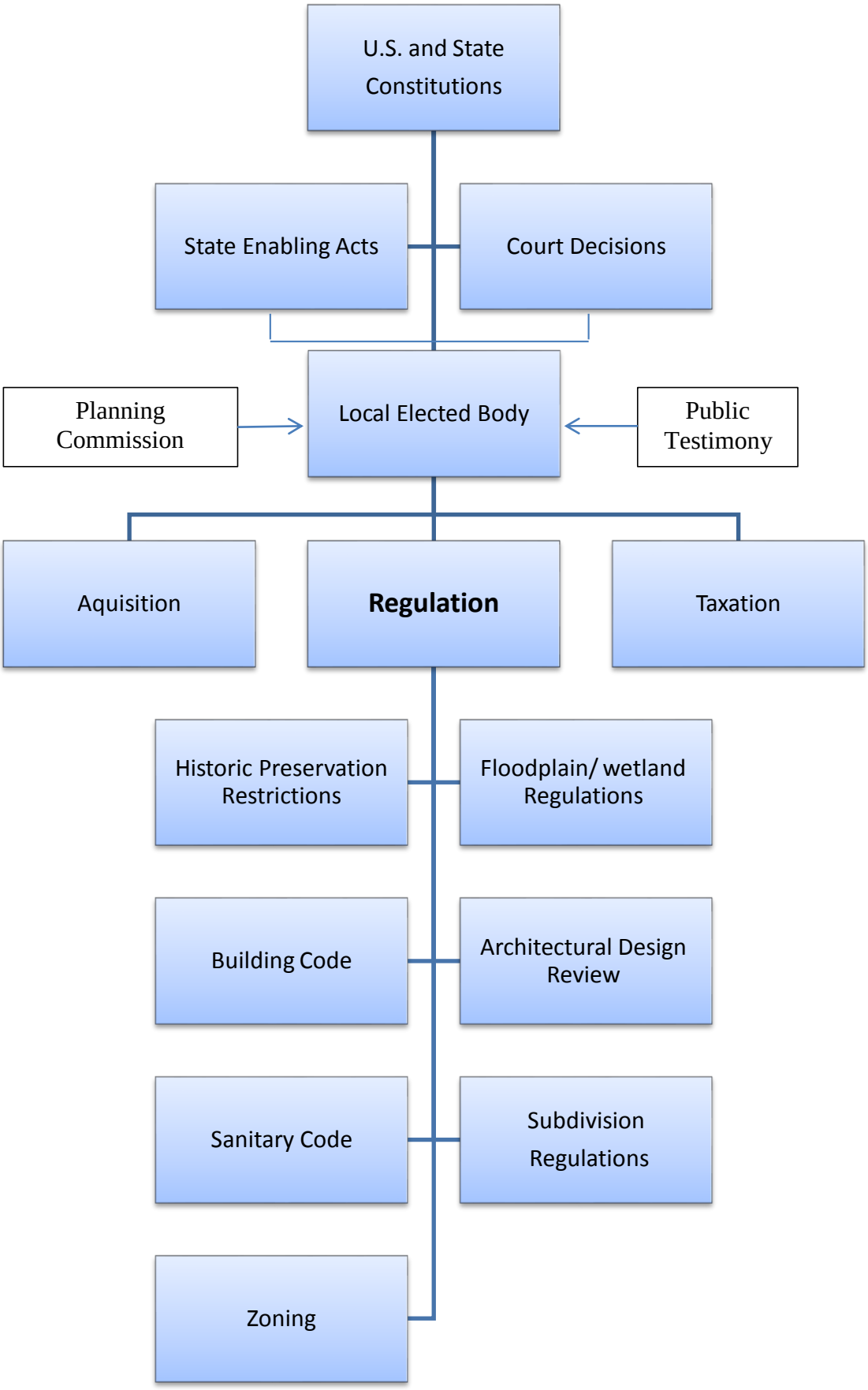

Figure 2.3: Land-use control measures typically available to municipal or county governments, and subdivision regulations
Source: adapted from Platt (2004)

Effective planning requires the revision of land development regulations in response to a number of conditions. The conditions include changes in types of land use, planning practice, consumer preferences, statutory requirements, and development forms. Amending the SR is often in the hands of the local authority. The planning board must hold a public hearing before implementing or amending any of them. Notice of the public hearing must include the date, time, place and subject matter, and must also be published in local newspaper once in each of two successive weeks, with the first publication being not less than two weeks before the day of the hearing (e.g. Nolon, 2001; Nolon and Salkin, 2006).

One study analysed land-use regulations in 32 of the 44 counties within the Central Indiana region. It found that many counties have adopted or amended zoning ordinances and SR since 1996 (66% and 48% respectively) (Owen et al., 2001). In contrast, Ben-Joseph (2003), in his national study (160 public officials), found that between 1997 and 2002 the overall number of jurisdictions reducing and amending standards was relatively low. The majority of jurisdictions maintain their existing standards, while others have even chosen to increase them.

2.3.5 Relationship to Zoning and Planning

In North America, several scholars such as (e.g.) Nolon (2001), Juergensmeyer et al., (2003), Salsich and Tryniechi (2003), Cullingworth and Caves (2009), Barnett (2011), have shown the relationship between SR, zoning, and planning. Land development and its land use are regulated by a portfolio of local codes that usually includes building, zoning, and subdivision codes (Nolon, 2001; Juergensmeyer et al., 2003; Barnett, 2011). Building codes are concerned with the safety and habitability of individual structures, whereas zoning codes are the primary form of land-use regulation; they include the mapping of separate districts allowing different land uses or land-use mixes. They can also regulate a number of aspects such as development intensity, building and site density, height and placement in relation to neighbouring properties.

Local zoning ordinances contain two parts: the text, which defines each zone, and the map, which shows where each zone is located. The text also contains 'bulk provisions' for each zone, which directly shape buildings by setting limits to floor area, height, and such placement issues as setbacks. Most zoning codes contain three basic land-use categories: residential, commercial, and industrial/manufacturing. The three categories

are generally considered hierarchically, with residential being the most protected. Uses can be moved lower in the hierarchy by a single layer, but generally not higher. For example, sometimes residences are permitted in a commercial zone and offices in an industrial zone (Salsich and Tryniechi, 2003). Zoning codes arrange each of the three uses in a gradient, shifting from light to heavy uses or small- to large-scale uses. Residential zones are usually written as a continuum based on density, or the number of families per plot, plot size and building type. At one end of the spectrum are single-family houses on large plots, and at the other end are high-density apartment buildings (Salsich and Tryniechi, 2003; Cullingworth and Caves, 2009).

Subdivision codes regulate how a property is subdivided into streets and plots in order to meet the zoning requirements. Regulation is especially important when farm or forest areas are urbanised for the first time. The codes set the standards for many aspects for street widths and gradients, pavement provision and streetscaping. The regulations also set grading requirements for the whole property, require storm water retention, and mandate public open space to be set aside (e.g. Cullingworth and Caves, 2009; Rohan and Kelly, 2013).

Zoning and subdivision codes are administered by the local planning department, with any amendments to the code made by the appropriate planning or planning and zoning commission. If approved by the commission, amendments must also be approved by the local legislature, either the city or county council. There is also a quasi-judicial board for appeals that can administer exceptions to all three codes (Nolon, 2001; Juergensmeyer et al., 2003; Salsich and Tryniechi, 2003; Barnett, 2011).

A land developer's application for construction, for instance, would require compliance with both zoning and subdivision controls, specifically during the approval process. According to Juergensmeyer et al.:

> *It is usually necessary for a developer to comply with both zoning and subdivision regulations. Although the two types of controls are intended to complement each other within the development process, they are often administered by different agencies. They are also often subject to separate enabling statutes each with its own particular requirements. As a consequence, subdivision regulations and zoning are often administered so as to appear to be working at cross-purposes. Some jurisdictions have integrated the two types of controls into a local development code which provides a*

> *consolidated procedure for considering both the zoning change and the subdivision proposal* (2003:259).

Although there is a clear distinction between zoning and SR, their use and administration is closely interrelated.

2.3.5.1 Relationship to Planning

Historically, the relationship between SR and planning has been viewed as closer than that with zoning. However, planning represents the policy foundation for both zoning and SR. So, to see planning as closer to either zoning or SR is a misperception (Juergensmeyer et al., 2003).

One of the early model acts of SR was included in the Standard City Planning Enabling Act (Juergensmeyer et al., 2003; Rohan and Kelly, 2013). In the zoning process, the legislative body and the Zoning Board of Adjustment or Board of Zoning Appeals often hold significant roles while the planning commission acts only in an advisory capacity. In the subdivision control process, the planning commission has a significant role in the formulation and implementation of SR. The planning commission also plays a significant role in the drafting and implementation of comprehensive plans (Nolon, 2001; Juergensmeyer et al., 2003; Rohan and Kelly, 2013).

In states without comprehensive plans or a consistency requirement for all land-use regulations, there is no legal requirement for a relationship between either zoning or subdivision controls and comprehensive plans. The statutes of some states without a comprehensive plan in combination with the consistency requirement instead require a comprehensive plan or a plan with major street elements to be put in place before local authorities can step in to regulate subdivisions. Other states require an official map before embarking on SR. In some areas, statutes require the subdivision review process to include findings on the subdivision plat's compatibility with the plan or map. These planning requirements, in some cases, allow the planning board to rely solely on the comprehensive plan to reject a subdivision plat (Juergensmeyer et al., 2003).

Consistency between planning and subdivision control has been better than that between planning and zoning, although the problem does not end there. SR still takes place without the use of a comprehensive plan, which may lead to difficulties. In many areas, a comprehensive plan is merely a general guide because it has not been legally adopted.

If, for instance, a proposal is rejected and the comprehensive plan is not legally binding, the property owners may not be able to appeal the decision. The refusal, based on non-compliance with the plan, may be beyond the authority of the plat reviewing agency. The required zoning and subdivision regulations ought to be consistent with the comprehensive plan (Juergensmeyer et al., 2003; Rohan and Kelly, 2013).

2.3.6 Subdivision Regulation Contents

Several scholars (e.g. Listokin and Walker, [1989] 2013; Ben-Joseph and Phelan, 2005; Dewberry and Rauenzahn, 2008; Rohan and Kelly, 2013) indicated that the contents of subdivision ordinances vary among states, and among local governments within each state. This result matches the researcher's random review of a number of subdivision control ordinances: Morgan County (Georgia), Butler County (Pennsylvania), Hendricks County (Indiana), Gering (Scotts Bluff County, Nebraska), Oak Harbor (located on Whidbey Island, Washington) and Town of East Hartford (Hartford County, Connecticut) (see Appendix A which shows the table of contents of one SR ordinance. For more detail about Appendix A, see Hendricks County Department of Planning & Building, 2008). In general, however, most subdivision control ordinances contain the following elements:

- General provisions;
- Review procedures;
- Required improvements;
- Performance guarantees;
- Vested right provisions;
- Exactions and impact fees; and
- Development standards.

2.3.6.1 General Provisions

Most subdivision control ordinances include a text section under the general provision title. This section of general provision contains some basic information on the legal framework of SR ordinances and a guide on how to use it.

2.3.6.2 Review Procedures

Types of Subdivisions to be Approved

The types of development that are approved by the local authority are minor and major subdivisions, and many subdivision ordinances distinguish between these. For example, minor subdivisions require no infrastructure improvements and are limited to less than five plots – although municipalities differ with respect to what may be considered a minor subdivision. According to state law, applications for minor subdivisions have a simpler review process that involve a more basic plan and require staff review only. The application takes 45 days for the municipality to decide after submission. Usually, approval for minor subdivisions is granted after only one meeting with the planning board. Developers of minor subdivisions must still secure any required county and state permits for wetlands conservation, soil erosion control and so on. The approval process for major subdivisions is much longer and time-consuming (Seidel, 1978; Luger and Temkin, 2000). For instance, the application process for major subdivisions stipulates that all property owners within 200 feet of the subject property must be notified of the proposal. Before making a decision, the planning board must hold a public hearing at which views for or against the major subdivision are presented. The major subdivision application process takes at least 95 days from submission to reach potential approval (Brough, 1985; Listokin and Walker, [1989] 2013; Luger and Temkin, 2000).

Approval Process

Apart from the planning and physical preparation of the site, the subdivider/developer must obtain the approval of the designated authority. The subdivision review procedures specify the procedures to be followed in seeking approval for subdivision development (Listokin and Walker, [1989] 2013). Kushner and Ziegler explained the purposes of the subdivision review:

> *Modern subdivision development review has several purposes. The five central components of subdivision review are: (1) discretionary review to allow disclosure and mitigation of environmental harm; (2) assurance of the adequacy of infrastructure; (3) opportunity to shift the cost of development and infrastructure to the developer through the imposition of conditions on subdivision and permit approval; (4) review to ensure compliance with planning and subdivision standards; and (5) assurance that the site is well planned, attractive, safe, and compatible with adjacent development* (2004:106).

Each procedural step is included to assure the interests of each stakeholder, including the end-user.

Broadly speaking, the subdivision approval process is similar across North America, although the precise details vary between individual jurisdictions. In most cases, review procedures typically consist of at least two formal steps – preliminary and final plat – and are subject to conditions. The subdivider must fulfil the conditions before the local authority will agree to approve or to deny their application. Many local governments include an additional preliminary step referred to as a 'pre-application conference' (see Figure 2.4). When a developer proposes to subdivide land, local governments may require the developer to give the local planning commission notice to conduct a pre-application conference. At the conference, the planning commission familiarises the development applicant with their SR, and the developer provides the commission with a basic idea of the proposed development project. The planning commission and developer have the opportunity to work out obvious problems at this informal stage in the approval process, prior to formally submitting an application. Thus, a pre-application conference can help the developer determine the chances and of obtaining approval, and time to revise their development proposal. Also, if the developer and the commission can reach an understanding before submitting the application, the developer increases their chances of being accepted and thereby save considerable time and expense (e.g. Listokin and Walker, [1989] 2013; Ohm, 1999; Kaplinsky, 2006; Dewberry and Rauenzahn, 2008).

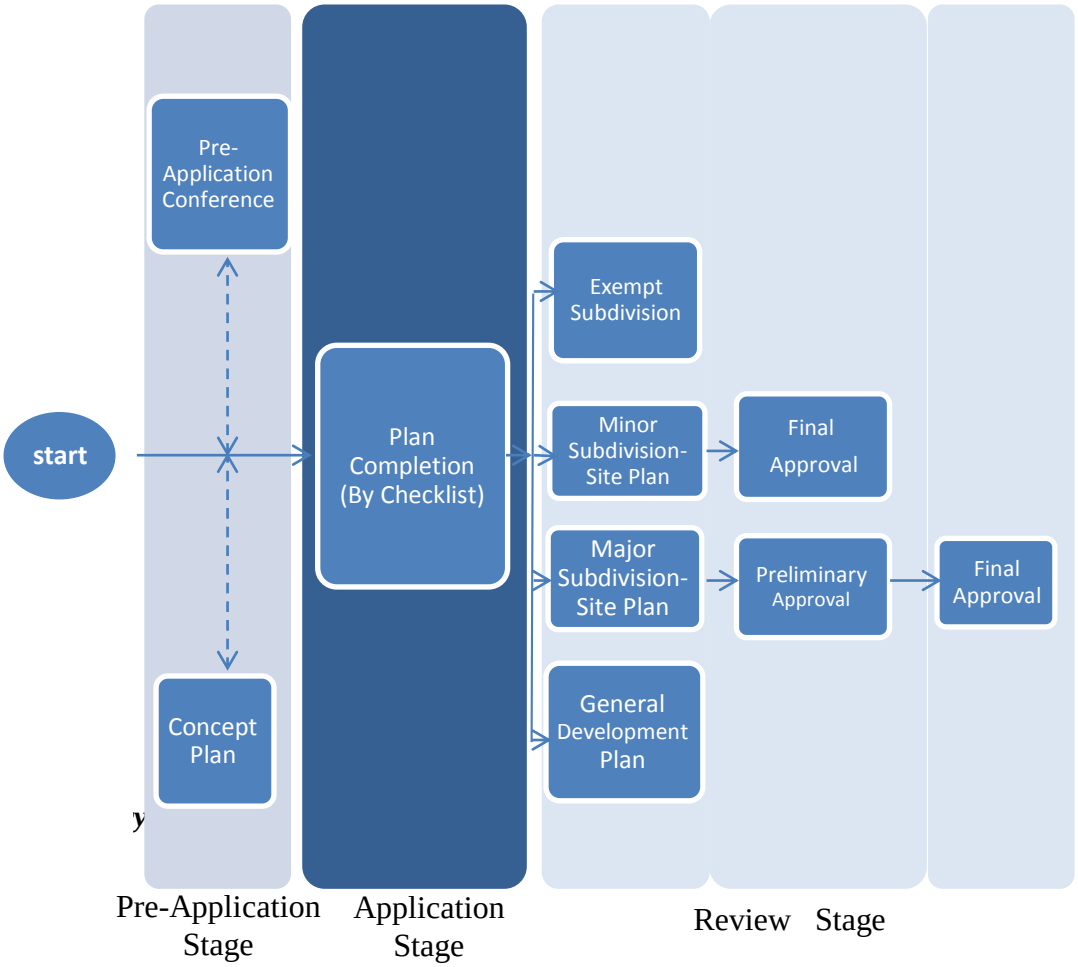

Figure 2.4: Subdivision plan approval process in the US
Source: adapted from Listokin and Walker ([1989] 2013:21)

The first formal stage in subdivision approval is the submission of a preliminary plat. Local ordinances require that the developer submit an application, which consists of a number of items beyond the application form itself. A preliminary scaled plan of the subdivision showing prescribed information must be included. Every application must include necessary improvements on the plat and must indicate which improvements are dedicated to public use. In addition, it must show other information such as the boundaries of the subdivision and its relationship to surrounding lands, subdivision plans, proposed plots and their intended uses, site topography and its natural and artificial features (e.g. watercourses and railways), proposed streets and highways, and existing and planned services and infrastructure. The plan submitted must be approved by a land surveyor and some municipalities may require a graphic representation of the information in a standard digital format (e.g. AutoCAD) (Kaplinsky, 2006).

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The application may also include any other information deemed necessary to assist the approval authorities in making their decision (e.g. Schultz and Kelley, 1985; Ben-Joseph, 2003; Kaplinsky, 2006). Such additional items may include studies and reports on the hydrology, environmental impact, soil conditions, noise and traffic (Kaplinsky, 2006; Dewberry and Rauenzahn, 2008; Johnson, 2008a; Peiser and Hamilton, 2012). Several municipalities require applicants to submit detailed urban design plans, including circulation systems, landscaping, streetscaping, traffic-calming measures, park planning, and other drawings (e.g. Kaplinsky, 2006; Dewberry and Rauenzahn, 2008).

The next stage in the approval process is the plan review. The planning commission and its staff review the plat and refer it to several state and local agencies. The proposal is circulated among other relevant agencies for their reference, review, and comments (e.g. Kaplinsky, 2006; Peiser and Hamilton, 2012). Public agencies consulted typically include provincial ministries and planning departments, local school boards, conservation authorities, public utilities, the board of fire commissioners, health department, county planning, state transportation, park authority and others. The proposal's circulation may be the responsibility of the applicant, but the task may also be assigned to the approval authority. This authority can determine which agencies should be brought in to discuss the application, depending on the information provided by the applicant (Ben-Joseph and Phelan, 2005; Kaplinsky, 2006; Dewberry and Rauenzahn, 2008).

The plan review begins by evaluating its compliance with the official plan and applicable zoning regulations. The land use must be allowed, and the proposed layout must not violate any density restrictions or prescribed minimum or maximum plot dimensions. The proposed subdivision streets must be properly oriented and compatible with the existing street pattern. The road grades, lines of sight, and kerb radii are examined by transportation engineers to ensure that all roads and intersections are safe for vehicles and pedestrians. Public streets are municipal property once the subdivision is complete, so any aspects affecting access and maintenance must be thoroughly checked. Appropriate easements must be made for underground utilities. In some cases, road widening may be required. The approval authority inspects for adequate services provision and sites are dedication for parks, schools, and other public facilities. Finally, the approval authority estimates the cost of all public works necessary to bring the site into use, as well as operational and long-term maintenance costs. The approval authority may reject an application for a subdivision that will pose an undue economic burden on local taxpayers (e.g. Kaplinsky, 2006; Miles et al., 2007).

Based on the review of the proposed plan and the comments it receives from interested agencies, an approval authority may require a subdivider to modify the proposed layout, to make on-site or off-site capital improvements, to pay for municipal services, or to delay construction of all or part of the subdivision. Approval authorities usually require the subdivider to enter into a subdivision agreement with the municipality (often the approval authority *is* the municipality), which specifies the conditions under which final approval will be given, and the obligations to which the subdivider must adhere during the construction stage (for example, to fence the site and post warning signs, or to minimise interruption to neighbouring lands), and following completion (for example, it is standard practice to require subdividers to post a bond or other security for the completion of capital works and their maintenance for a period of at least one year after completion and before the municipality assumes any public works). The subdivision agreement may require the subdivider to include various warning clauses in the purchase and sale agreements between the subdivider and the purchasers, or to attach specific easements or restrictive covenants for the benefit of the municipality, utilities or the buyers. The subdivision agreement can be registered against the land to which it applies, and may be enforced against all subsequent owners of the land (e.g. Juergensmeyer et al., 2003; Kaplinsky, 2006).

Final Plat

A final plat is a surveyor's precise drawing that fixes the locations and boundaries of plots and streets and, when recorded in the county land records, serves as the means by which public improvements are dedicated and plots are sold (Listokin and Walker, 1989; Steiner and Butler, 2007). The questions for the approval of a final plat usually include the following:

- Whether the final plat is consistent with the approved preliminary plat and any conditions imposed on it;
- Whether the proposed engineering details of the project meet the technical standards included in the regulations;
- Whether the proposed design and construction of streets and other public facilities (paving thickness, size and composition of lines) meet standards included in regulations;
- Whether the proposed locations of street lights, street signs, and other items conform to the regulations; and
- Whether the community can be assured that the developer will complete the required facilities (Kelly, 2009:194–195).

Drawings submitted at the final plat stage should show exactly what will be built and how. It may be submitted for the whole subdivision or for individual phases. If the ordinance does not provide prior approval of construction plans for public improvements, a final plat will be accompanied by such plans. Final plats may be approved by the staff, or by the planning commission, or by the governing body (particularly where only the governing body can accept public improvements) (Lindamood and Hanna, 1979; Steiner and Butler, 2007; Kelly, 2009). With the widespread use of GIS, digital submission of plats in a form compatible with a municipality's own system is increasingly common. It improves both efficiency of processing by staff and accuracy of the submissions themselves (Steiner and Butler, 2007).

2.3.6.3 Required Improvements

As a condition of approving the preliminary or final plat, the town, city, or village's local government body may require the subdivision developer to install a number of public improvements, or execute a surety bond, or provide other security to ensure that

the subdivider will make those improvements within a specific time. Several authors, such as Listokin and Walker (1989), Ohm (1999), Juergensmeyer et al. (2003), Steiner and Butler (2007), and Kelly (2009), indicate that the subdivision control ordinances (guideline manual) contain two sections on such issues: design standards and physical improvements. Both sections require developers to provide these in the subdivision plan. The two sections have had a great impact on the future physical pattern of the city, and can help maintain the existing character of a community and help develop a sense of place (Ohm, 1999; Kelly, 2009). For instance, in the US, SR ordinances differ as to the type of improvement required and the design standard that must be followed. The requirements depend on a number of factors, such as the size of the community, the degree of urbanisation generated in the community, and the development policies adopted by the local community (Ohm, 1999).

2.3.6.4 Performance Guarantees

SR ordinances provide several ways to guarantee performance or to ensure that the developer will provide all the improvements after the proposed subdivision has been approved. They also make sure that the local community will not be required to provide the improvements themselves at a later date. Performance guarantees function like a security deposit and generally take the form of surety bonds, letters of credit, cash or property escrow, and the subdivision improvement agreement (Nolon and Salkin, 2006; Rohan and Kelly, 2013). Such guarantees must be posted before construction of the improvements is approved or the final plat is recorded. When the improvements have been completed, and responsibility for the development has been transferred to the local government or other public entity, the performance guarantee is released back to the developer (e.g. Juergensmeyer et al., 2003; Nolon and Salkin, 2006).

2.3.6.5 Subdivision Exactions and Impact Fees

Residential subdivisions often generate costs exceeding the tax revenue produced by the development for the host municipality. In the past, American local authorities were responsible for providing and improving many public facilities, but this is frequently no longer the case. Due to increased growth costs, significant reductions in federal funding have been made, leading many local authorities to find alternative, even innovative, ways to pay for the growth and demand of the facilities (Schultz and Kelley, 1985; Smith, 1987). Additionally, new demands have been are placed on the community's

schools, water and sewage treatment facilities, parks and recreation areas, and police and fire departments that increase costs to meet capacity. Because local governments can no longer afford to provide the standard of services required, SR have added new requirements, managing to shift part of the capital cost burden of development to the development itself, rather than the entire community (e.g. Ohm, 1999; Nolon and Salkin, 2006; Dewberry and Rauenzahn, 2008).

Exaction is the term applied to the provision stating that the land developer must establish the public, communal, and consumer benefits in exchange for and as a condition of development authorisation. According to Smith (1987), Dresch and Sheffrin (1997), and Nolon and Salkin (2006), most subdivision control ordinances include sections about exaction. The exaction sections include the following: a fee, the dedication of public land, a combination of both fee and dedication, the construction of public infrastructure and some public services, as well as the maintenance of public infrastructure. Bauman and Ethier (1987) studied 220 communities in 46 US states and found that 65.9% of the respondents had some sort of formal policy regarding on-site development exactions and which is normally part of the subdivision process, and have conditions developers must meet in order to obtain approval of their plats.

Development Impact Fees

Development impact fees became commonly used in the late 1980s and early 1990s as a means of generating the needed revenue to pay for a range of community amenities (Nolon and Salkin, 2006). Impact fees are associated with a development subdivision, are enforced by local governments and collected in order to cover capital expenditures by the government for the infrastructure required to serve the new project. They are a mechanism for financing off-site improvements where the dedication and fees in lieu may not be adequate; they are defined as ‘cash contributions, contributions of land or interests in land or any other items of value that are imposed on a developer by a political body (Ohm, 1999:161). The fee requirement can be applied at different levels, such as cities, villages, towns or counties. It can also be used to finance the capital costs of structures such as transportation facilities, utility networks, parks and other recreational facilities, fire and police facilities, emergency facilities and libraries (e.g. Delafons, 1990; Ohm, 1999; Platt, 2004).

2.3.6.6 Vested Right Provisions

The vested rights in land development involve the right to proceed with a development as planned, even in the face of changes in the local regulatory environment. The vested right provisions are found in subdivision ordinances, because of the multi-step review process and the amount of time involved in the phased development of subdivisions. The ordinances vest a subdivider with preliminary plat approval with the right to complete subdivision review, and to subdivision development, in accordance with the approved preliminary plat. The rights granted stand irrespective of subsequent changes to SR, provided the subdivider applies for final plat approval, usually within two years of the change (Steiner and Butler, 2007; Rohan and Kelly, 2013).

2.3.6.7 Development Standards

Development standards in SR provide specific standards for a subdivision design. The standards deal with the arrangement and engineering of site details, such as buildings, roads, utilities and planting. It protects public health and safety. It preserves natural resources, and creates a more desirable environment within which to live (Ohm, 1999; Steiner and Butler, 2007; Kelly, 2009; Rohan and Kelly, 2013). It addresses the layout and design of plots, streets, access and other public improvements. Subdivision ordinances include design standards for many aspects such as integration of the natural, roads and streets or circulation system design, site design standards, open space recreation, traffic control signs, street lighting, off-street parking, the water supply system, sanitary sewers, storm water management, trees and other vegetation, etc. (Listokin and Walker, [1989] 2013). Several cities and counties, such as Oak Harbor City (Whidbey Island, Washington), and Hendricks County (Indiana State) have amended their subdivision ordinances based on the views, impressions and preferences of stakeholders. Among the lessons learned from these experiences is the creation of a new subdivision plan design manual. Each ordinance includes visual and graphic diagrams to clearly illustrate the standards and applicable context of the code. The new ordinances become easier for the officials, subdivision designers, and communities to collectively understand and they help the public to contribute meaningfully to the definition of future output standards. Ben-Joseph has shown the importance of visualising codes and standards in local ordinances, stating: ‘codes and standards must be accompanied by illustrations and other visual aids, particularly photographs and three-dimensional illustrations’ (2005:176). The visualisations do not just serve those

professionally involved in the subdivision but also the public. They are invaluable in accessibly articulating the quality types of components of residential areas that will be developed and executed within their cities.

2.4 Conclusion

This chapter discussed the conceptual framework of SR, the approval process, and land subdivision development process. In addition, it showed the main actors in the process and identified the positive and negative impacts of SR on the residential built environment.

In the North American experience, SRs' purpose has been improved over the past decades, and is no longer linked only to the process of regulating land to be subdivided for the creation of blocks and sales plots. There are several reasons behind the evolution of their purpose: on the one hand, the rapid growth and increasing demand for the development of residential areas, and changes in social, economic and urban variables of the cities has propelled developmental change. On the other, premature subdivision plan patterns developed by conventional developers on the cities' outskirts have created a great impetus for the improvement and enhancement of the regulations' purpose.

In North America, SR have become an essential development tool. The regulations are enforced by localities to achieve a number of broad purposes, such as: creating complete residential areas with services and facilities; adopting residential areas with a variety of design concepts; increasing users' sense of belonging; increasing social capital between the residents; providing walkable areas; enhancing users' health and safety levels; implementing unconventional developments such as TOD, TNT and private communities; reducing municipalities' costs such as the maintenance and extension the facilities and services; and demanding that developers carry out the costs of providing public services and facilities within their subdivision plans. However, it was discovered that the decentralised role in the process of applying SR, and giving municipalities and planners full authority to modify and develop their own regulations, has played a big role in the evolution of SRs' purpose. In terms of the approval process, it has been discovered that several positive aspects are not considered at the local level. It is clear that it is a multi-step and lengthy process, but at the same time it is comprehensive. Its interests are to observe and take care of the smallest details and aspects of the plat to be provided by the developer, the urban design aspects and the cooperation process. It

allows several actors, such as school boards, departments of parks and recreation, and other interested parties, to get involved in the review, study, and evaluation of the plat. In addition, several analytical studies are considered by the local authority during the process of subdivision plat approval. Studies include those on traffic, environment, public services and facilities, etc. In terms of land subdivision development and its main actors in North America, this process has developed also. It has changed from a conventional process focusing on the subdivision of the land to providing plots for sale and creating complete residential areas. In order to make these focuses a reality, the process now includes complex and diverse development procedures to create the subdivision development. Many actors with different interests participate in this process. There are several studies included and prepared by the developers and their team's partners to achieve success and a high level of revenue. For instance, studies such as marketing feasibility are a cornerstone for the development process.

CHAPTER THREE: SUBDIVISION CONTROL AND LAND SUBDIVISION DEVELOPMENT PROCESS IN THE SAUDI ARABIAN CONTEXT

Chapter 3: Subdivision Control and Land Subdivision Development Process in the Saudi Arabian Context

3.1 Introduction

This chapter discuses an overall overview of subdivision control with special reference to KSA; the chapter consists of narrations about the KSA planning system, urbanisation trends, planning hierarchies, planning and subdivision rules and regulations and the shortcomings of planning rules. Most of the literature review in this chapter looks at local literature in English and Arabic. Some part of literature also relied upon institutional memories. Therefore, this chapter is divided into eight main sections. Section 3.2 traces the planning system and subdivision regulations (SR) in KSA. Section 3.3 explains brief overview of SR approval process. This section also defines the historical evolution of approval procedures in Jeddah. Section 3.4 describes the subdivision approval process and the requirements of regulation. Section 3.5 explains the general view of the land subdivision development process and identifies the main actors of its operation in the Saudi context. Section 3.6 illustrates studies showing the negative impacts of subdivision controls at international and local level, and highlights a research gap. Section 3.7 shows the problems associated with policy transfer between different socio-economic-political-cultural contexts. The last section, 3.8, clarifies the main conclusions and lessons learned from this chapter.

3.2 Planning System in KSA

3.2.1 Background about KSA

3.2.1.1 Location

KSA is located in the Middle East and is the largest of the Gulf Cooperation Council (GCC) countries. It occupies 80% of the Arabian peninsula (Federal Research Division, 2006), and according to US government statistics, its area is 1,960,582 square kilometres (Federal Research Division, 2006:5).

3.2.1.2 Economy in KSA

Prior to the 1930s, the KSA economy was poor and largely based on international pilgrimages to the two holy cities (Alkhedeiri, 1998). In 1938 oil was discovered, which

gave a new impetus to the economy (Abdulaal, 1987; Alkhedeiri, 1998). Oil then dominated the country's foreign exchange, government revenue, and national incomes. Nowadays, KSA is considered a rich country for two main reasons. First, due to high oil production, it holds approximately one-fifth of the world's petroleum reserves (McGinley, 2011; MOF, 2011), and second, because it has a large stock of natural gas and mineral deposits (Shawly, 2007). Recent reports indicate that the petroleum sector in KSA constitutes 45% of the GDP and 80% of the national budget's revenue (Mahard, 2010; McGinley, 2011).

3.2.1.3 From the Ancient Islamic Civilisation to the Modern Era

While medieval cities were developing in Europe, Islamic civilisation was established. During the years 622–750 CE the geographic area of Islamic civilisation extended from Spain to India (e.g. Reither, 1973; Benevolo, 1980; Morris, 1994; Hakim, 2008), having emerged from the heartland of Arabia.

Arabia had strong pre-Islamic Arab traditions in various spheres of life, including city construction. Many of these traditions were incompatible with Islamic values and were prohibited, but others were modified and became part of Islamic civilisation. According to Benevolo (1980), Morris (1994) and Hakim (2008), several aspects of pre-Islamic building development practices were absorbed by Islam, modified, and re-emerged with a distinctly Islamic character. Some of those influences could be traced back to earlier Semitic and Arab civilisations, particularly in the Mesopotamian region.

During the first three centuries of Islam (600–900 CE), the foundations and principles of the social, economic and legislative frameworks were established. Building and urban activity occurred at an accelerated pace. Building activity – with its unavoidable problems – created demand for guidelines and legislative framework to regulate and adjudicate on these problems. The majority of urban policies were set by *Shariah* law, based on the Qur'an's verses, as well as *Sunna Hadith* and other Islamic law sources that form the basic principles of a city shaping system. These were often applied to the regulation of land use and the control of building heights. *Shariah*'s influence extends beyond the law. It encompasses the practices associated with religious, political, social, domestic and private life. Its social and domestic core encompasses the injunction to avoid harm to others and the regulation of public interest.

A remarkable body of information was created in various regions of the Islamic world, which was actively exchanged by learned men on their travels, students seeking knowledge and the acquisition of manuscripts. The uniform legislative guidelines based on *Shariah* law, the almost identical socio-cultural framework created by Islam, in addition to the similarity of climatic conditions and construction techniques within most of the Islamic world, helped to produce remarkable similarities in the approach to the city building process throughout the Islamic world. The homogeneity that resulted is the familiar beehive urban pattern (e.g. Benevolo, 1980; Al-Hathloul, 1981; Morris, 1994; Kaki, 2000; Ben-Joseph, 2005; Hakim, 2008).

Urban guidelines have had the effect of standardising the appearance of Islamic cities. Many cities such as Madina, Makkah, Baghdad, Samarra, Jeddah Old Town, Kalaa Sghira in Tunisia and others were founded or transformed by Islamic Arabs (Figure 3.1). Today they share composition similarities. According to (e.g.) Benevolo (1980), Moustapha et al. (1985), Al-Hathloul (1981), Morris (1994) and Hakim (2008), the Islamic settlement includes a number of recurring physical elements.

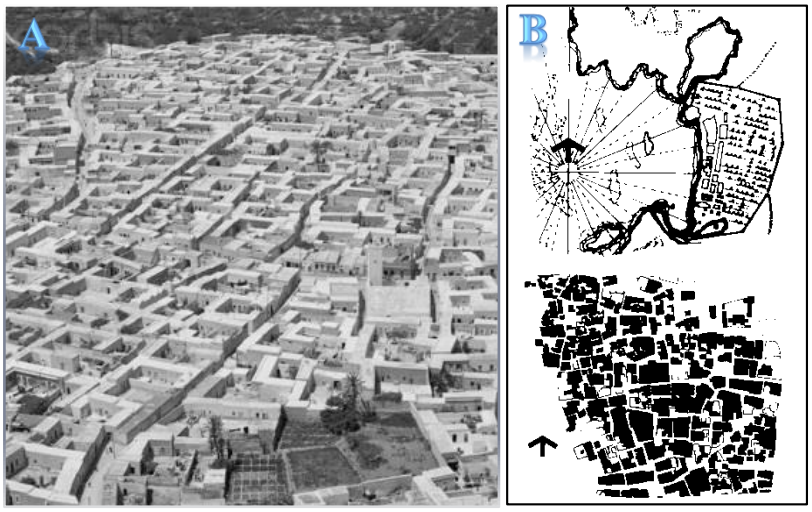


Figure 3.1: (a) Kalaa Sghira in Tunisia and (b) Jeddah Old Town are examples of the traditional Islamic urban form
Both cities have regulations based on the Islamic urban guidelines and through the principles of use. For instance, the *khittah* system approach has been used to subdivide and develop areas in both cities.
Source: (a) Ben-Joseph (2005), (b) Morris (1994)

The first is the mosque or *Mesjid al-Jami,* which is the Friday mosque. It is a religious and teaching building, where the Friday sermon is given, and which should serve the residents of the city and its dependents living outside it. The mosque is not exclusively a

place of prayer but also a meeting place where the city's news is exchanged. Residential districts or quarters are ubiquitous. Houses and their access systems comprise the greater part of the city. A street system provides access to individual houses grouped around cul-de-sac lanes, accessed by the city main public thoroughfares. The *suq* and related trading buildings within the city provide marketplace. The *kasbah* or defensive wall with gateways encompasses the city. A water supply system is incorporated. The Prophet prescribed the sharing of water, that one should give to others any surplus they have for drinking or irrigation. Local *mesjeds*, or small mosques, are simple prayer facilities to provide an easily accessible place for the five daily prayers. It is often for a small group of people. There are the *madrasa*, or institutions of higher learning, where Islamic science and law are studied. The *zawiya* is literally translated as 'corner', and in this case is a corner of a building. It is a room for prayer, for the recitation of the Qur'an, within a larger building. The *maqbara* is the public cemetery, and the *hammam* is a public place for cleansing oneself.

There is a specific approach used to subdivide and develop areas within most Islamic cities. The approach is based on a method called the *khittah* system, used to plan and regulate the above mentions Islamic spaces. According to Al-Hathloul (1981) the *khittah* system was started by the Prophet in Madina where he granted *khitat* for different tribes and *dur* for individuals. Following Umar's instruction, army generals initiated the system in Amsar town, which seems from evidence to have been continued in Baghdad and Samarra during the 8th and 9th centuries CE.

Al-Hathloul (1981) further explained that the distribution of land was a means of organising its use as well as a means of regulating its use. As a unit of planning each tribe in the aforesaid towns was assigned its own *khittah*, which was flexible enough for the standard size of tribe. People were assigned to a particular *khittah* and routes were allocated, though not distinctly marked; thus, later pressure for land development, coupled with certain conceptions in regard to land ownership in particular, resulted in the tortuous street pattern which characterises this mode. Moreover, the law of Islamic inheritance played an influential role in shaping the subdivision of land and property in the Arab Muslim city; this law confirms the subdivision of any property among the inheritors according to their preferences into non-regular land subdivisions in these cities.

The built-in flexibility allowed this regulation process to maintain order and control over extended periods of time, as it has adapted to new and changing social and cultural conditions.

Later, many Islamic cities lost their identity in foregoing the traditional process of built environment regulations. The influence of the colonial powers, who imported and applied their foreign models, were the most significant reason for departing from the traditional practices. The modern LSPs and regulations is one such case in point. According to Ben-Joseph:

> *Few performance norms have survived the impact of Western styles and fashions, and of Western conceptions of city planning and architecture. In Islamic society, as well as in other traditional cultures, changes have been forcibly and rapidly brought about by colonial powers, and local rulers wishing to modernize have had to do so according to foreign models. The primary victims of those changes have been the traditional norms for the built environment* (2005:19).

The change has been rapid, often without choice or proper reflection on the consequences involved in making the shift from traditional methods to new foreign ones.

As shown in Chapter 2, the advent of SR is one of the most important developments in the history of the American planning system. The regulations' effectiveness has resonated throughout the world. Muslim countries imported and adopted many planning practices initially developed in the West. During the Industrial Age, Muslim cities imported western concepts and theories of town planning when democratic capitalist countries sought to increase their profits through cheap labour and natural resources in Third World countries. The impacts of western technology, economic growth and political ambitions were seen in Muslim cities up to the 1960s, when most governments gained their political independence. The resulting nationalism increased these influences, which caused ill-controlled development (Bianca, 2000). The urban planning systems, structures, processes and techniques such as zoning and SR were mostly imported from the colonising capitalist countries, such as the US. The planning system reacted to immediate local needs, and was implemented without revision or adjustment, mostly between the 1950s and 1960s. Nonetheless, western teachers, professionals and consultants were welcomed in order to guide development within Muslim cities.

In the early 20th century, KSA's cities, such as Riyadh and Jeddah, were small and primarily residential. They were built slowly according to Islamic norms. The streets are narrow with an irregular pattern, and all were walled to enhance the protection. As explained in Section 1.3, the concept of land subdivision planning was imported and adopted by American consultants. Gradually, subdivision plan practices spread across the Kingdom, being effectively translated into SR guidelines, particularly after the creation of MOMRA. The use of the western-derived SR transformed the pattern of Saudi residential developments into areas closely resembling a contemporary American suburb.

3.2.1.4 Saudi Arabian Urbanisation in Modern Phase

Urbanisation in KSA is a contemporary phenomenon. According to Mandeli (2008), KSA is considered one of the world's fastest urbanising countries. For example, in the 1990s, the level of urbanisation in KSA was higher than that in many developed societies, even exceeding the average level in the Arab countries at 56.4% (see Table 3.1) (Alkhedeiri, 1998). Urbanisation in KSA is strongly and positively associated with economic growth (Abdulaal, 1987). In 1932 the urban population was less than 10%, and only the city of Makkah had a population of over 50,000 (Makki, 1982). In 1950, 20% of the total population was made up of urbanites in the old cities of Makkah, Madina, Riyadh, Jeddah, Taif, Abha, Buraydah, Unayzah, Hail and Hufuf, and the other 80% were villagers and nomads, half of them living in rural areas and the remaining living in tents in the desert (Alkhedeiri, 1998). In the 1970s, due to the country's second oil boom, economic growth accelerated rapidly, along with the influx of rural nationals and foreigners into the country's main cities such as Riyadh, Makkah, Madina and Jeddah. The result was increased urbanisation levels, jumping from 48.7% in 1970s to 54% in 1980 (Alkhedeiri, 1998; Al-Hathloul and Aslam Mughal, 1999), reaching 77% in 1992. Urbanisation figures have not declined since 1992, with record levels of 80% in 2000 (Ur Rahmaan, 2011b) and 82% in 2010 (CIA, 2011).

Table 3.1: Urbanisation metric of KSA in 1990s in comparison to other nations

Country	Percentage of Urbanites
Egypt	48.8
Syria	51.8
Saudi Arabia	77.2
Arab countries (average)	56.4
World (average)	42.7
Industrialised countries	72.7
Developing countries	33.9

Source: Sly and Serrow (1993) cited in Edrees (2001:100).

3.2.2 Political Context in KSA

Since the establishment of KSA in 1932, the previous political structure has been preserved. The structure consists of the King, who is the custodian of the two holy mosques and head of state, the Crown Prince, and the head of the Council of Ministers, which was created in 1954 as the highest authority in the state. The King is the supreme authority in the Kingdom (Abdulaal, 1987; Alkhedeiri, 1998; Federal Research Division, 2006). Therefore, the Saudi government is characterised as a centralised government (top-down), where circulars, instructions, laws and decisions are issued for the state (Abdulaal and Aziz-Alrahman, 1998). Mashabi (1995) and Aazam (2004) argue that there are clear differences between the KSA political system and other government systems, particularly those of western societies, as KSA does not have a form of democracy or public participation.

3.2.3 Nature of Legislation in KSA

The two holy cities (Makkah and Madina) are located in KSA, and make the holy Qur'an as its constitution. KSA, in its entirety, is governed according to Islamic legislation. This consists of two main sources; on the one hand, there is Islamic law (*Shariah*), the primary source of Islamic law coming from the holy Qur'an and *Sunnah.*[4] On the other hand, there is Islamic jurisprudence (*Fiqh*), which is the secondary or supplementary source.[5] Planning law and regulation also follows Islamic law in some

[4] *Sunnah* refers to the Prophet Muhammad's deeds, words and approvals. An example of the Prophet's deeds is when he lays down the idea of urban zoning in Madina, which became the first prototype for a Muslim city (Al-Hathloul, 1981; Mortada, 2003; Neyazi, 2007).

[5] *Fiqh* is the science of Islamic law (*Shariah*). It is the Muslim scholars' interpretation of *Shariah*, based on their knowledge and understanding of Islamic laws (Mortada, 2003).

states, and thus should be adequate to and parallel with *Shariah* (Aziz-Alrahman, 1985; Aba-Namay, 1993).

3.2.4 Planning System in KSA

Mandeli (2011) indicates that the planning system is a direct product of the KSA political structure. Several local scholars (e.g. Neyazi, 2007; Mahard, 2010; Mandeli, 2011) depicted the administrative structure, its various levels and agencies, responsible for planning and development in KSA (see Figure 3.2).

3.2.4.1 National Level

At the national level there are two bodies of regulators (primary and secondary), each having the power to enact planning regulations and to control the process of spatial planning. The primary regulator is the King. The King approves all laws, treaties and concessions, as well as the national budget, all of which are promulgated through royal decrees. These laws and decrees then form the basis of planning legislation in the Kingdom (e.g. Alkhedeiri, 1998; Aazam, 2004; Neyazi, 2007; Mahard, 2010).

The King acts as the ultimate source of judicial, regulatory and executive authority (Aba-Namay, 1999; Raphaeli, 2003).[6] The King's authority can extend to the local level. For example, he has the authority to change zoning regulations, SR and even building codes in any part of the Kingdom.

[6] The King retains the right to hire as well as dismiss the Crown Prince, COM members, CC members, governors of the regions, ministers and mayors (Alkhedeiri, 1998).

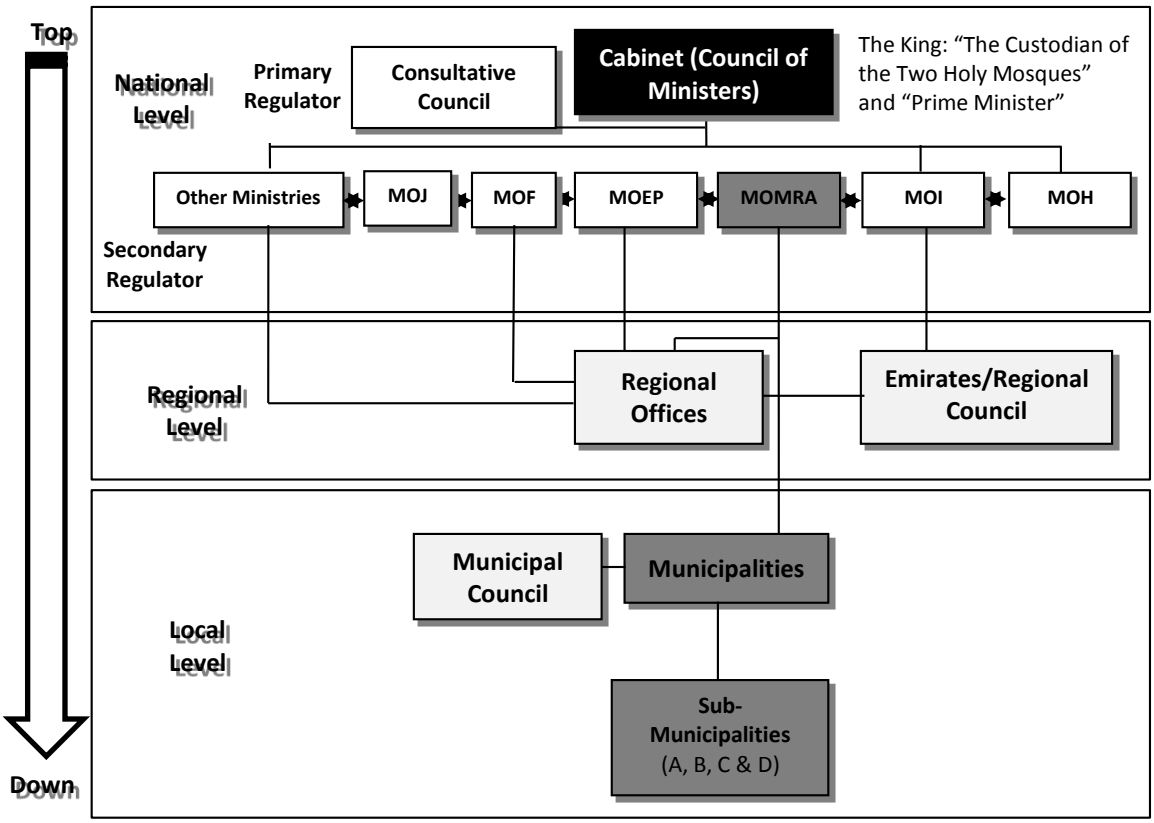


Figure 3.2: Administrative structure and hierarchy of the planning system in KSA. Source: Adapted from Abdulaal and Aziz Rahman (1998).

The Council of Ministers, chaired by the King, is responsible for the formulation of policies for internal matters as well as the national budget. The council is comprised of the King as the prime minister, the Crown Prince as the deputy prime minister, three royal advisers who hold official positions as ministers of the state, and the heads of 23 ministries and provincial governments (Federal Research Division, 2006).

The *Majlis Ash-Shura*, or Consultative Council, was established in 1992. It is considered the indirect primary regulatory body. The primary function of the *Majlis Ash-Shura* is to provide the King with advice on issues of importance in the Kingdom (Alkhedeiri, 1998; Aazam, 2004). It was created to represent the needs and problems of Saudi society, including issues related to spatial planning they may have passed their initial consideration. The council presently consists of 150 members appointed by the King for a four-year renewable term (Aazam, 2004).

As shown in Figure 3.2, under the Cabinet, there are three levels of government structure. The levels each regulate the planning system, and influence KSA spatial planning (Daghistani, 1991; Mandeli, 2011). First, the ministry level, or powerful

administrative bodies, at central government level. They are authorised to interpret laws formulated by higher institutions, and issue directives, resolutions and ordinances to implement them. These are enforced through circulars, even though these may not have direct legal force. The second level is the administrative level, which includes provinces and regional branches of the ministry. The lowest level in the planning is the municipalities (e.g. Alkhedeiri, 1998; Neyazi, 2007; Mahard, 2010).

The second regulatory body consists of two parties. The higher regulatory sub-party was established in the 1970s as the Ministry of Economy and Planning (MOEP). MOEP is in charge of national development planning and the national economy. During the last 30 years, MOEP has adopted nine National Five-Year Development Plans (NFYDP). The objectives of the NFYDP are to ensure equitable and fair distribution of development and welfare of the citizenry (Alkhedeiri, 1998; Neyazi, 2007; Mahard, 2010).

The second sub-party for the regulation of the built environment in KSA was established in 1975 as the Ministry of Municipal and Rural Affairs (MOMRA). Before MOMRA was established, particularly in 1953, KSA cities were organised by the Directorate of Municipalities. The directorate was created in the Ministry of the Interior, elevated to the Department of Municipal Affairs in 1962, and to the Deputy Ministry of Interior for Municipal Affairs in 1965. Later, the Deputy Ministry of the Interior for Municipal Affairs was upgraded to an independent ministry under name MOMRA (Mashabi, 1995; Mandeli, 2008). The ministry is concerned with spatial planning (urban and rural issues) at the national, regional and local levels. It determines all the administrative duties and roles of the municipalities and municipal councils at the local level (Alkhedeiri, 1998; Mandeli, 2008; Mahard, 2010). The MOMRA consists of six deputy ministries, the most important of which is the Deputy Ministry of Town Planning. This deputy ministry is mainly responsible for spatial planning activities in the country (Mashabi, 1995). MOMRA has five major planning responsibilities, according to Abdulaal and Aziz-Alrahman (1998), who describe them as follows:

1. Planning and development of all cities, towns, and villages, including the formation of a higher planning law. The planning and development process includes the approval of master plans and zoning regulations for cities, revisions or amendments to the master plan or regulations, preparation of SR guidelines, adoption of guidelines by all KSA cities, and review and approval of subdivision plans in KSA cities.

2. Management of municipal services, such as providing environmental health and protection services to all people.
3. Land administration in both internal and external urban areas.
4. Coordination development in rural areas, to ensure that many projects and programmes are planned to raise the overall standard of rural life.
5. Specifying the administrative duties of municipalities.

3.2.4.2 Regional Level

The regional level consists of two secondary executive authorities: the provinces and the ministries' branches (Alkhedeiri, 1998; Mandeli, 2011). In 1992 the King instituted a royal decree dividing KSA into 13 provinces. Each province is under the authority of the Ministry of the Interior (MOI), and is headed by a member of the Royal Family (*Amear*) (Federal Research Division, 2006; Mandeli, 2011).

Regional offices have been created under each ministry at the national level (Alkhedeiri, 1998). The main idea for the regional agencies was to create a means of decentralising function within their region, improve the ministry's works, and response to the needs of towns and villages (Mashabi, 1995). In terms of the subdivision approval process, the MOMRA regional offices have not been involved in the process since 1970. Instead, the plat or plan is normally sent from the municipality, after review, to the Deputy Ministry of Town Planning in Riyadh for final review and approval. In 2007, this process was again amended by the MOMRA. The amendment delegated that Class A municipalities (see next paragraph) would review and approve the plat within their individual planning departments, without sending the plat to the MOMRA. This is discussed further in Section 3.3.1.5.

At the local level (see Figure 3.2) there are two authorities: the municipality and the municipal council (MC). Both authorities were created under the control of MOMRA. In terms of spatial planning, code enforcement, and review of subdivision plans, city municipalities play those roles at both the national and local levels. According to Abdulaal and Aziz-Alrahman (1998) and Aazam (2004), the main task of the municipality at the local level includes organising and planning their cities, establishing and managing parks and public open spaces, monitoring urban development and urban beautification, adopting SR, and reviewing plans. These roles are stipulated by the Planning Laws of 1941 and 1977. Municipalities in KSA are categorised into four ranks

– A, B, C, and D – according to their functions, responsibilities and independence (Mashabi, 1995; Aazam 2004). Class A municipalities are large cities (such as Jeddah) with a population over 300,000 people. These municipalities have a direct link with the ministry; the municipal mayors have complete authority to manage and control their own affairs and services, except for those matters which must be approved by the minister.

3.2.5 Planning Law in KSA

According to Abdulaal and Aziz-Alrahman (1998), Alkhedeiri (1998), and Ur Rahmaan (2011b), in KSA there are three relevant laws issued by royal decree. The first law was issued in 1937, under the title 'Statute of Makkah Municipality and other Municipalities'. The second law was created in 1941, under the name of 'Roads and Buildings Statute'. In 1972, the 'Roads and Buildings Statute' was subject to minor alterations regarding land SR (see next section). The last law was issued in 1977 and was called the 'Statute of Municipalities and Villages'. These laws became the bases of planning laws for KSA. Nevertheless, the first law was repealed as soon as the second law was issued. The last two laws are still in operation, and neither has been updated.

3.2.6 Subdivision Regulations in KSA

The lack of studies about SR has created some limitations in writing this section. Despite the lack of research in this area, there are a large number of subdivision schemes that have been approved and adopted at the Saudi cities. Yet, SR as a subject has still not been dealt with in academic literature. The lack of available literature encouraged engagement with general data from local studies about SR, such as its definition, purposes and content.

3.2.6.1 Source of Subdivision Regulations

According to Abdulaal and Aziz-Alrahman (1993), the source of SR came from two main sources. The primary sources are:

- Royal orders
- High commands
- Royal protocols

- Cabinet decisions
- Letters from the Deputy Prime Minister

Secondary sources from MOMRA include:

- Decisions and circulars
- Circulars from deputies of the ministry
- Circulars from heads of departments in the ministry

While there are strong ties between the two sources, the first source is considered the basis for any instruction issued by the second source. In 1988, 25% of subdivision conditions were issued from the first source, while 75% were issued by MOMRA (Abdulaal and Aziz-Alrahman, 1993). Generally, the two sources issue conditions to regulate aspects relating to the process of preparing subdivision plans. The conditions are summarised in the following points:

- Process for applying for subdivision of land
- Process of preparing subdivision plan
- Locations of permitted subdivision plan
- Technical conditions
- Plots for public facilities
- Administration process and coordination with other parties

The conditions shaped the publication of the SR guidelines for Saudi cities. As shown in Section 1.3, three sets of SR guidelines have been published and adopted by Saudi cities. The MOMRA issued the first SR guidelines in 1976, including a detailed process description for the preparation and approval of the plan (Abdulaal, 1987; Abdulaal and Aziz-Alrahman, 1993). The second set of guidelines were issued in 1984, and the most recent in 2003. The 2003 guidelines have been criticised (see Section 3.6.2), although current SR guidelines remain intact (Alskait, 2003a).

These form a uniform code for all KSA cities, independent of size or location. Ben-Joseph argues that in adopting a uniform code, there are issues of application, as evidenced in American cities. This was particularly true following World War II. Ben-Joseph (2005) concluded that the spread of uniform model codes repeatedly failed with previous models because of the lack of success in responding to local needs and

aspirations. Furthermore, the application of model street and infrastructure standards has resulted in land wastage and unnecessary expenses.

The uniform code, by its very structure and formation, cannot take into consideration the specific characteristics of individual cities, thereby causing the application to be at times ineffective and at others the generator of urban problems.

3.2.6.2 Definition of Subdivision Regulations

Current SR guidelines do not include a clear definition of what SR are, and neither did the codes preceding it. However, Al-Oleat (2004) introduced a definition of the guidelines in which he showed that the process of land subdivision is considered the only way to transform large untouched land parcels into smaller plots, ready for construction. He sees this process as needing a clear regulating process that is supported by planning and design standards, which are there to prevent any chance of poor development.

3.2.6.3 Purpose of Subdivision Regulations

The 2003 SR guidelines define four main purposes: (1) creating an appropriate physical environment; (2) providing comfort and safety for residents; (3) reducing construction and maintenance costs; and (4) regulate the government's preparation process of private residential schemes. Alskait (2003a) sees the purpose of local SR as protecting public interests and ensuring the fair handling of private lands. Alskait highlights that SR needs improvement to meet today's ever increasing and sophisticated residential requirements. Abdulaal (2012) indicates that the purpose of local SR is to control land subdivision activity by securing approval from the municipality. He describes the approval process and conventional requirements contained in it:

> *Municipalities are entrusted to grant approval if the subdivision plan meets technical requirements, and conforms to city plans. Owners are requested to allocate up to 33% of the subdivided area to municipal services, which can include roads, open spaces and car parking. Land for other facilities is required to be allocated according to planning standards. However, the actual provision of infrastructure is not required: owners use asphalt roads to attract buyers while other utilities are left to concerned public bodies to take care of after plots are sold and construction begins* (2012:38).

Abdulaal describes what the developer should do to get approval, and the main conventional requirements the developer must install in the project.

3.2.6.4 Content of SR Code

Several authors writing about the local level have highlighted the content of the SR code. For instance, Abdulaal (1987) has provided general information about the content of SR guidelines issued in 1976, and he illustrates some brief data about the plat approval process. Edrees (2001) clarifies the general view of the 1984 SR code. He demonstrates several issues related to the process of implementation of SR conditions by the developers in Makkah city. Alskait (2003a) highlights the content of the current 2003 SR code, focusing on the presentation of design standards. Neyazi (2007) clarifies the content of the current SR code in a general manner. Al-Freadi (2008) reviews the previous SR code publications, and defines differences between the codes in terms planning standards. However, none of the researchers mentioned above have discussed and analysed the content of the SR guidelines themselves, presented the evolution of the plat approval process, shown the plat approval process stages based on real plat applications, or presented the main actors in the process or the studies prepared or technology used by the officials. The officials' views responsible for the plat approval have also not been examined.

3.3 Brief Overview of SR Approval Process

In KSA, the SR guidelines for residential LSPs are comprised in a short document. The document's purpose is to define the land subdivision approval procedures and requirements, for developers or their designers, and also the government's officials. The document was created based on the views of MOMRA officials rather than on the community's needs.

Subdivision regulations and their related procedures in Jeddah are further illustrated in following paragraphs.

3.3.1 Approval Procedures for Residential Subdivision Plans in Jeddah

The historical development of the approval procedures for residential subdivision plans has not been covered in detail by any previous study except Al-Oleat (2004) who reviewed the development of approval procedures in Riyadh.

The information contained in this section has been derived from informal discussions held by the researcher with Jeddah Municipality officials (who have worked there for a long time and have a sound institutional memory), as well as the archives of municipality reports and some local studies conducted in Jeddah.

The historical evolution of approval procedures in Jeddah can be divided into five eras; 1) prior to the emergence of modern residential subdivision planning in 1970; 2) 1970 to 1981; 3) late 1981 up to 1987; 4) spanning over 20 years from 1987 to 2007; and finally 5) from late 2007 to date.

3.3.1.1 Era Before 1970

Jeddah Municipality was established in 1926 (Aazam, 2004). However, it lacked the authority to review or approve subdivision plans due to an insufficient number of staff and expertise to manage such responsibilities properly. Therefore, all matters related to planning and organisation of the city were directed to a department called the Agency of Municipal and Rural Affairs in Riyadh (Alharbi, 1989; Abu-Sulaiman, 1996).

In 1942, the Roads and Buildings Act was promulgated, with some aspects related to the developmental planning of roads and building systems. Among the most important components of the Act was the definition of approval procedures for subdivision plans consisting of an application with the proposed design of the plan to the approving authority. Prior to that, there were no guidelines, regulations or procedures followed for the subdivision of land (Aziz-Alrahman, 1985; MOMRA, 1999).

Prior to 1970, the MOI in Riyadh was responsible for planning works in Saudi cities through the Agency of Municipalities and Rural Affairs. Obviously, the function of this agency was to approve subdivision plans; however, the approval requirements were very limited and the final outcome depended on the personal evaluation of the official in charge of the process (Abdulaal, 1987; Al-Oleat, 2004; Al-Freadi, 2008).

In 1965, three branch offices were established in the western, eastern and central regions to oversee the developmental plans of the cities and villages located within the geographical boundaries of each region (Al-Freadi, 2008). Accordingly, the western region office was assigned the approval of the subdivision plans from various municipalities, including Jeddah. Such developments resulted in the fast approval of plans because of the lack of an SR manual and a systematic approval process (Salagoor, 1990).

3.3.1.2 Economic Boom of 1970–1980

The decade from 1970 to 1980 represented the development stage in terms of regulations and circulars relating to land subdivision plans (LSPs), due to the emergence of master plans in Saudi cities. A key development in this regard was the formation of the Ministry of Municipal and Rural Affairs of KSA (MOMRA) (Harefsha, 2008; Mahard, 2010; Mandeli, 2011). The same decade witnessed rapid economic expansion and increase in the population of major Saudi cities, including Jeddah, with exponential growth in the demand for housing in the city of Jeddah (Qurnfulah, 2005; Al-Otabi 2006). This era is known in Saudi history as the economic boom (Mandeli, 2011).

During this period, a number of circulars relating to LSPs were issued by MOMRA; the most significant was issued in 1972 when the Council of Ministers published Resolution No. 1270 containing amendments to Articles 21 and 23 of the Roads and Buildings Act 1942. The primary purpose of these amendments was to keep pace with the developmental and residential changes in Saudi cities (Abdulaal and Aziz-al-Rahman, 1991; Al-Oleat, 2004; Harefsha, 2008).

Within next four years, MOMRA issued several manuals related to LSPs. Many foreign companies, including Doxiades, West International and Abdul Rahman Makhlouf, were also contracted to help develop master plans for Riyadh, Jeddah and other Saudi cities. These companies also helped the ministry in formulating regulations relating to LSPs. Based on the expert recommendations of these companies, a set of unified standard manuals containing the approval procedures for LSPs were framed by MOMRA (Al-Oleat, 2004).

During the same period, the former branch offices of the MOI were redesignated as city planning offices, situated in all regions of the Kingdom. As such, LSPs from Jeddah

Municipality continued to be referred to the office of the western region; however, the time taken for the approval of plans increased somewhat as a result of the new regulations and procedures, the remoteness of the approval offices from Jeddah and the increased number of applications submitted (Salagoor, 1990).

In 1976, Engineer Mohammed Said Farsi was appointed as the head of Jeddah Municipality, resulting in considerable development in the city's planning affairs (Abu-Sulaiman, 1996). The key development was the establishment of a department responsible for initial review and approval of the subdivision plans before the final approval by the mayor of Jeddah.[7] Such developments laid the foundations for the next developmental stage, shaping the procedures in the 1980s, as explained below.

3.3.1.3 *Amanat* Status for Jeddah Municipality: 1981–1987

In 1981, Jeddah Municipality was promoted to *amanat* status, the highest-ranking type of municipality in KSA (Aazam, 2004), which meant that it was given full power from MOMRA to approve subdivision plans without referring to the branch offices of the ministry. However, such power did not include permission to formulate new regulations and procedures which were different from other Saudi municipalities. However, MOMRA itself issued an updated manual of regulations and procedures for the approval of LSPs in mid-1984. Application of this manual helped Jeddah Municipality to apply clearer regulations and procedures at great speed, due to the decentralisation of the approval procedures and employment of specialised staff.[8]

3.3.1.4 Enabling Legal Environment: 1988–2007

After the departure of Al-Farsi, Jeddah Municipality continued to take part in the process of developing LSPs by applying the regulations and standard procedures, as well as sending the files to Riyadh for review and approval based on the circulars issued by MOMRA (Abu-Sulaiman, 1996). (In 1984, Circular No. 73/B was issued, but Jeddah Municipality continued to approve LSPs without referring to the ministry during this period; this was followed by Circular No. 747/S dated 20 January 1992 and Circular No. 45/S dated 12 July 1992). However, after the closure of the branch regional offices, the ministry in Riyadh had become a central point and there appeared to be a

[7] Information obtained by the author in interview with the general director of PLSPD.
[8] Information obtained by the author in interview with the general director of PLSPD.

duplication of efforts through repetition of procedures adopted by Jeddah Municipality and MOMRA, due to the system of central decision-making (Harefsha, 2008).

The manual of regulation and procedures for the approval of LSPs was reissued through Circular No. 32524 dated 20 July 2003. Another manual, entitled *Manual of Technical Specifications and Creation of Land Subdivision Plans*, was also released for application through Circular No. 32526 dated 20 July 2003.

Accordingly, this stage witnessed the development of complex procedures related to the approval of LSPs. In 1995, the City Planning Department of Jeddah Municipality became the General Directorate of Developmental Planning, with several sub-departments – such as Land Ownership, Study and Supervision, Survey and Sketches – and sub-municipalities working side by side within MOMRA. The number of applications being submitted by developers kept on increasing due to the developmental and residential expansion in Jeddah. However, as multiple authorities were involved in granting approval, there was no time limit laid down to do so. This eventually led to considerable delays but also improved the quality of LSPs in the longer term.[9]

3.3.1.5 Devolution Phase: 2007 to Date

The minister of Municipal and Rural Affairs issued Circular No. 35737 on 10 July 2007, granting class A (*amanat* status) municipalities full powers to approve LSPs without referring to the ministry in Riyadh, thereby restricting the use of the *Manual of Regulations and Procedures of Land Subdivision Plans* and of *Technical Specifications and Creation of Land Subdivision Plans*.

In 2008, the mayor of Jeddah ordered the formation of the HAC, made up of municipality consultants, to review and study the past procedures for residential subdivision plans used by the PLSPD.[10] Although the report of the consultant group was not available to the researcher, it can be inferred from the interviews conducted with the HAC in Jeddah Municipality that the new procedures formulated afterwards were a copy of the process applied in Riyadh.

[9] Information obtained by the author in interview with the general director of PLSPD.
[10] Information obtained by the author in interview with the general director of PLSPD.

3.4 Example of the Approval of a Residential Subdivision Plan

An approval of a residential subdivision plan has been used in order to explain the current situation. This plan was approved by Jeddah Municipality in 2007 (see Figure 3.3). This example has been used to show the participating authorities, the course of the final approval of the procedure, the procedures that are followed to approve the plans, the studies prepared and submitted for the approval of the plans, the technology used in the approval, and the manner in which this plan was approved and executed. In addition, some disadvantages observed in this process have been recorded.

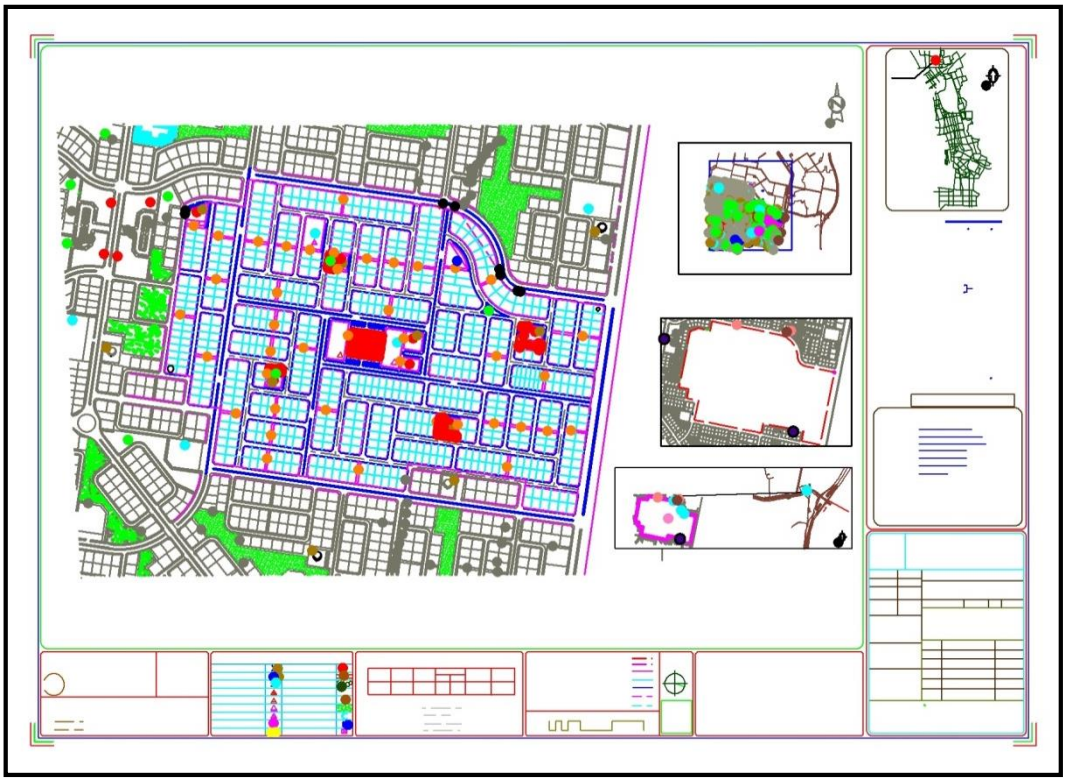


Figure 3.3: One residential subdivision plan approved by Jeddah Municipality in 2007
Source: Fieldwork, Jeddah, December 2009–February 2010.

This residential subdivision plan was approved during the fourth stage. The researcher did not manage to obtain an example to show the new administrative procedures followed in the approval of LSPs. According to Employee 5, there are no big differences in the procedures and requirements submitted by the developers to the authorities, nor are there any differences in the requirements of the regulations applied to LSPs. The only difference is in the mechanism or course of the approval procedure. In the past, the procedure was to send the documentation to MOMRA in Riyadh. Nowadays, it is to send it directly to the HAC in Jeddah. The employee added that the

role of the committee was to expedite the approval of the plan, reduce mistakes, improve the quality of the work as a whole and hence improve the overall quality level of approved and executed residential LSPs in Jeddah. Employee 5 commented on this aspect as follows:

> Following the issue of a decision to form a department to study and approve land subdivision plans as well as the HAC, nothing changed in the regulations and procedures of the approval of the land subdivision plans that had been applied earlier. The same procedures and regulations are applied now in addition to the procedures submitted by the developers. Besides, the same tasks are entrusted to the same employees. The only change is in the mechanism of the administrative and technical work in the department. The formation of an independent department, in my opinion, may expedite the execution of the work done. The Advisory Committee, which is made up of several consultants, may contribute to improving the quality level, and hence may improve the quality level of the approved and executed residential land subdivision plans in Jeddah, and reduce mistakes and the approval time.

3.4.1 Role of Multiple Stakeholders in the Approval of Subdivision Plans

Due to the evolving legal framework and administrative restructuring, many stakeholders work side by side to develop, plan, review and approve subdivision plans; the presence of these stakeholders and respective roles at various stages is illustrated in Table 3.2.

Table 3.2: The participating authorities in the approval process of subdivision plans in Jeddah Municipality

	Participating Authorities	
	Description/Explanation	**Comments**
Developer	• In most cases the project developer is the landowner or represents a real-estate company. Most developers delegate their authority to engineering survey offices when applying for approval of subdivision plans. Therefore, a power of attorney is usually submitted as part of the application submitted for approval.	• Developers are evaluated neither for technical and managerial skills nor financial circumstances by any authority. In fact, no licence is required to practice this profession. • Due to such lax legal environment, most developers are real-estate speculators whose intentions regarding the land and abilities to execute the development plan remain unevaluated.
Planning of Land Subdivision Plans Department	• All procedures relating to approval of LSPs begin and end in this department. • Starting from receipt of application from developer, all subsequent tasks are coordinated by this department, such as: o conducting technical feasibility studies o discussing problems and observations with developers o reviewing application file and applying regulations and procedures relating to LSPs.	• This department is the most important subdivision of the General Directorate of Developmental Planning due to its central position in coordinating various procedures. • However, number of staff allocated to this department is very small compared to workload. • Staff members either lack educational background or have very limited expertise specific to urban design, GIS and traffic engineering, etc.
Land Ownership Department	• This department cross-checks validity of the land ownership deeds submitted along with LSPs. • In order to achieve this, land registry records are consulted to verify accuracy of land ownership deeds. If there is no information about the deed in the official record, the department notifies the Jeddah Notary Public. • In the past two decades, there have been many cases where legal challenges had to be made after falsifications were discovered during approval of LSPs.	• Claims of land ownership used to be checked by planning department directly in coordination with Jeddah Notary Public. • However, due to increase in workload related to validity of land ownership claims, this department was formed within Jeddah Municipality in 1984, and since then it has become an important contributor to overall procedures related to approval of subdivision plans.

	Participating Authorities	
	Description/Explanation	**Comments**
Survey Department	• This department reviews land survey carried out by developer to form opinion on its appropriateness in line with existing legislation. • It also has the responsibility to examine demarcation of subdivision on the ground. • Finally, this department also carries out some survey work for developers. Work carried out by this department contributes to overall assessment PLSPD.	• Formerly, sketches submitted by engineering office on behalf of developers were considered sufficient; however, since 1992, to respond to issues related to organisational lines of LSPs, this department has been set up to rectify any misinformation in this regard.
Studies and Supervision Department	• This department was set up to follow up execution works from developers and report them to PLSPD and Approval Department. • Besides status of execution, report also includes assessment about conformity of development in relation to previously approved proposed design.	• Before 2000, various branches of Jeddah Municipality played role now carried out by this department. • However, with increased appearance of problems in execution, this department, along with PLSPD and Approval Departments of Jeddah Municipality, was given responsibility to rectify such issues.

Technical Archive Department	• All records related to approval of LSPs are kept by this department. This includes:
	  ○ Information sent to ministry in Riyadh
	  ○ Records of coordination with:
	  • PLSPD
	  • Planning and Approval Departments
	  • Notary Public
	  • Electricity Authority
	  • Relevant branch of the Water Ministry
	  • Saudi Telecommunications Company
		• Approval procedures for residential subdivision plans were not organised properly before 1980.
		• Despite a massive overhaul, even now there is no database to keep records of approved residential subdivision plans.
		• Department keeps collection of files in cabinets and drawers based on serial numbers and dates and nothing more.

Notary Public Office	• This office checks validity of land ownership and deed by reviewing records.
	• Other tasks of this office include:
	  ○ Taking measurement decisions about each land plot prepared within boundaries of the LSP following execution on the ground
	  ○ Issuing final deeds of land ownership to be passed on to customers after sales.
		• Before the 1980s, this office had no role in approval process. Developers used to submit ownership deeds and after review, residential subdivision plans would be approved.
		• However, due to an increasing number of legal issues about the validity of deeds, Notary Public was involved in approval process.

	Participating Authorities	
	Description/Explanation	**Comments**
Electricity Authority	• PLSPD and Approval Department coordinate with this authority to indicate locations of electrical network lines and transformers. This step is carried out before execution of subdivision plan on the ground.	• The electricity service is among the most important services that have to be provided in approved residential subdivision plans. • However, it is the only authority involved in approval processes; there are other authorities that should be involved as well.
Municipality branches	• 14 branches of Jeddah Municipality have multiple roles in relation to approval of LSPs, i.e.: o Receipt of plan submitted by project developer o Referral of procedure to General Directorate of Developmental Planning in Jeddah Municipality o Supervision of the work on residential plans within branch administrative boundary o Issuing of building permits and supervision of management of land plots after sales to customers.	• Since 2003, the municipality branches have had their roles curtailed through removal of permission for submission of subdivision plans, as well as of supervisory role related to development of subdivision plans on the ground. • These changes came about because of poor technical capabilities of the staff, incorrect supervision of works and the limited availability of a qualified workforce in branch offices.
Ministry of Municipal and Rural Affairs (MOMRA)	• Following study and approval of subdivision plan, Jeddah Municipality sends all the papers to ministry for final approval. • Ministry reviews technical and administrative aspects of residential subdivision plan approved by Jeddah Municipality, with powers to reject approval. • However, in most cases, instead of rejection, paperwork is sent back for reconsideration.	• MOMRA has a pivotal role in final approval of proposed subdivision plans. • Although Jeddah Municipality has been empowered to approve plans, MOMRA still has jurisdiction to call for a review of initial approval, thereby having final say in all matters pertaining to development of subdivision plans.

(Source: Informal interviews with employees of the PLSPD – pilot study (summer 2008).

3.4.2 Residential Subdivision Plans: Procedures for Approval

This process is complex and multipartite. It starts with the developer submitting an application for land subdivision. In the past, the branch of the municipality concerned was the place where the process of approval began and ended. In 2003, the municipality branches were stripped of some of their powers, among which was the approval procedure of LSPs, which were referred to Jeddah Municipality, along with

coordination with the developers. The aim behind this was to expedite the contact between the project developer and the engineering advisory office on the one hand, and the PLSPD employees on the other. (Usually, some technical and administrative observations were made about the submitted plan, in which case direct contact was made between the approving authority and the developer.)

Table 3.3 shows a brief illustration about the course of the approval of residential LSPs, the participating authorities, a brief list of the requirements, and a brief explanation of the approval procedures.

Table 3.3: The course of approval of LSPs in Jeddah Municipality before 2008

Procedure	**Transactions of LSPs**
Participating authorities	Developer – General Directorate of Developmental Planning (Planning of Land Subdivision Plans Dept.) – Survey Dept. – Ownership Check Dept. – Archive Dept. – Studies and Supervision Dept. – Ministry of Municipal and Rural Affairs
Course of the transaction	1. The developer 2. The General Directorate of Developmental Planning (Planning of Land Subdivision Plans Dept.) 3. Survey Dept. 4. Ownership Check Dept. 5. The Notary Public 6. Archive Dept. 7. Ministry of Municipal and Rural Affairs 8. The Mayor's Office 9. The General Directorate of Developmental Planning 10. The developer 11. The Survey Dept. 12. Studies and Supervision Dept. 13. The Notary Public
List of requirements	1. Letter from the owner (showing his desire to have his land planned and subdivided) 2. Copy of a legal power of attorney (such as the engineering office if not the owner 3. Copy of identity card 4. Copy of land ownership deed 5. Sketch of the site approved by the engineering office
Procedure	1. The transaction is submitted to the Planning Dept. Director who refers it to the LSP approval engineer

Procedure	**Transactions of LSPs**
	2. The transaction is received by the engineer to study it and require the following: a. Ensure the presence of the approved sketch of the site. b. Ensure that the ownership is free of any problems or defects. c. Coordinate with the Ownership Check Dept. in order to address the Notary Public. d. Prepare a letter to the Notary Public to ensure validity of the ownership deed. e. The Notary Public then issues a copy of the letter and a copy of the ownership deed to constitute a part of the transaction and then returned to the approval employee to be kept with him till required. f. In the case of any problems with the ownership deed, the transaction is returned to the developer, who will be shown the defects, and if they are corrected, other procedures will be completed. g. In the event of validity of the deed, the engineer studies the transaction and the subdivision plan, as well as study the planning ratios. Then asks for the ownership check report and soil check report. 3. The engineer prepares a letter to be signed by the department director and the mayor and then submitted to the ministry to approve the plan after studying it. 4. The transaction is sent to the technical archive to keep a copy of the plan and a copy of the letter and is given a number. 5. The letter is issued to the Ministry of Municipal and Rural Affairs, with all the papers and plans enclosed and the soil test report for approval. 6. The subdivision plan is approved by the ministry. 7. The transaction is returned to the Planning Dept. again in order to complete the following procedures: a. Five copies of the plan are approved by the approving engineer, the department director and the mayor. b. The transaction is sent to the archive to open a file for the approved plan. c. The developer is given a copy of the plan in order to subdivide the land, pave streets, light and perform the infrastructure (he embarks on the execution works on the ground). d. A copy of the transaction is sent to the Survey Dept. and the Studies and Supervision Dept. to receive the works of excision,

Procedure	**Transactions of LSPs**
	asphalting, paving and lighting on the ground. 8. After finishing these works, a copy of the approved plan is sent to the Survey Dept. to report the receipt of the excision works. 9. The owner applies to the Studies and Supervision Dept. with a copy of the plan to receive the works of asphalting, paving and lighting on the ground and report the receipt. 10. The reports issued by the Survey Dept. and the Studies and Supervision Dept., are sent to the Planning of Land Subdivision Plans Dept. 11. The Planning of Land Subdivision Plans Dept. addresses the Archive Dept. to update the procedure file. 12. The full procedure is retrieved from the Technical Archive Dept. and the Planning Dept. prepares a letter to the Notary Public with copies of the deed and the approved plan enclosed. 13. A letter is sent to the Notary Public accompanied by the measuring decisions so as to be used when the residential land is ready to be sold.

Sources:

- Development and planning project of Jeddah city (2006).
- Informal interviews with the employees of the PLSPD – pilot study (summer 2008).

3.4.3 Approval Procedures of Residential Land Subdivision Plans

For the approval of residential LSPs, Jeddah Municipality relies on the seven procedures defined in the *Manual of Procedures and Regulations of Approval of Land Subdivision Plans*. These procedures cover the study of the site and the documents, initial preparation of the residential plan, coordination with the Electricity Authority, application of the detailed residential plan on the ground, completion of the required technical and regulatory information, the study and approval of the residential plan on the part of the ministry, and execution of the residential plan on the ground (see Table 3.4 below).

Table 3.4: Technical and administration procedures of LSPs' approval

	Procedure of Approval of LSPs (Technical & Administration Process)	
	Description/Explanation	**Comments**
Step 1: Study of the site and location	• Location of the land to be subdivided indicated on structural plan of the city, plus stage of urban development. • Legal ownership deed checked and endorsed after matching the deed with structural plan. In the event of a mismatch between documents, legal deed is modified to reflect the reality on the ground. • Owner must give undertaking not to carry out any alterations to his land till plan is approved and executed.	• Extent to which the procedures are followed cannot be ascertained without monitoring and evaluation mechanism in place. Due to lack of such mechanism, time taken to correct any mismatches is not fixed, although delays are costly to both the owner and the municipality. • Procedure considers: o location of land within city master plan o land-use type o building regulation o population density allowed.
Step 2: Preparation of the site initial location	• **Survey of the site**: o If land in question is owned by the government, municipality surveys site. o In case of private ownership, the owner asks an engineering firm to survey his land. o On survey map, topography of the site, occurrences of torrential rain, positions of landmarks such as buildings, farms, walls, cemeteries and wells are also indicated. o Final survey of the land also includes report prepared by a specialised technical office commenting on suitability of land for intended use. • **Relationships of neighbouring areas**, whether existing or just approved, with proposed development are also studied at this stage, such as: o effects of public services, facilities and street networks on design of site; o relationship of site with neighbouring natural features, e.g. hills, valleys, green landscape, farms and bodies of water; o effects of/on existing levels of traffic. • **Preparation of site detailed plan**: carried out with dual objectives of o developing site to suit residents' needs of comfort and security; o reducing the setting up and maintenance costs of infrastructure.	• Since city master plan is not drawn on the scale of 1:1000, new surveys are always required whenever a subdivision plan is to be submitted. Such a repetitive process wastes time and resources and can be eliminated through better coordination among the authorities. • Relationships of the proposed site with its neighbouring areas are not studied in sufficient depth because of limited number of available staff members in the department. Consequently, the study is mostly based on secondary data found in official documents, and a primary survey of site is rarely carried out. • Preparation of the detailed plan focuses simultaneously on three elements: the development goals, design policies and planning standards. However, the interactions among these factors have not been studied and could lead to possible omissions from the detailed plan.

	Procedure of Approval of LSPs (Technical & Administration Process)	
	Description/Explanation	**Comments**
Step 2 (continued): Preparation of the site initial location	• **Design policies**: observing the following design policies in all proposed plans is mandatory for the developers: o Subdivision design should cultivate a feeling of belonging in the residents. o Residential area should be split into small pockets. o Land use and building pattern should reflect an adequate level of privacy. o Pedestrian movement should be encouraged in a secure and pleasant environment. o Vehicular traffic should not cross the internal streets. o Architectural heritage should be reflected in the design of the residential district. • **Planning standards**: besides the above-mentioned design policies, the approval engineer is usually keen to coordinate with the developer to follow a set of standards concerning the allocation of public land and provision of public services. • Accordingly, public lands, i.e. those allocated for streets, car parks, pedestrian pavements, children's playgrounds and parks, should not exceed 33% of the plan's total area. • More specifically: o Streets should not exceed 20% of the total area of the plan. o A 400m^2 children's playground should be provided for every 20 residential units and 5000m^2 of public parks should be allocated at 6.5m^2 per resident; both facilities should be accessible without crossing a main road. o In the cases of mosques and schools, the standards recommend the distance from the farthest residential unit: • a mosque should be available within 200m; • an elementary school within 550m; • an intermediate school within 880m; • a compound school within 1000m. o The area allocated for the local services centre, comprising a police station, a post office branch, a municipality branch and a civil defence station, must be at least 10,000m^2 for the first 2000 residents + 150m^2 for every additional 1000 residents. o The social centre should be accessible by each resident within the district. o The centre open area should be 200m^2 + 0.13m^2 for every additional 1000 residents.	• **Design policies**: there is inadequate evaluation of subdivision plans with reference to the fulfilment of design policies. It might be useful to extend the list of design policies in the light of a survey of potential residents. Another possible improvement can be made through use of technology, i.e. use of three-dimensional maps to describe the proposed designs. • **Planning standards:** The area reserved for the streets generally exceeds the 20% limit at the expense of the playgrounds, parks and pedestrian pavements as an indication of the locations for the parks and playgrounds has not been made mandatory in a residential subdivision plan. Also, there is no standard for the walking distance to the playgrounds or the parks in a subdivision plan, which reflects a discrepancy as a walking distance indicator has been provided for schools and mosques. Similarly, in the case of services, proposed locations are not mapped in the plan. Lack of uniformity of standards can also be seen through the use of the number of residents as an indicator in selected cases only. Arguably, such discrepancies or lack of concrete information regarding various standards causes delays in the approval procedures and sticking to few standards discourages any innovative planning.

Procedure of Approval of LSPs (Technical & Administration Process)		
	Description/Explanation	**Comments**
Step 3: Coordination with the Electricity Authority	• Municipality cooperates with Electricity Authority to decide layout of electrical network lines and locations of transformers in relation to various public buildings such as water closets, mosques, schools and land plots.	• There is no coordination with any authority except Electricity Authority, despite the fact that planning standards related to public facilities such as mosques, schools, clinics, playgrounds and parks should necessitate the involvement of the concerned authorities. • Due to this lack of coordination, departments responsible for provision of such facilities and services have no role in the approval process as a whole.
Step 4: Implementation of the detailed plan	• After preparation of detailed plan, municipality implements it, ensuring that there are no impediments (such as hills, valleys, water channels, lax soil, existing facilities) precluding its execution. • It must also verify that street network is in line with approved plans and neighbouring facilities. • Two copies of detailed plan, as implemented on the ground, are signed by the surveyor and head of technical section, and endorsed by authorised employee of municipality.	• There is no time limit imposed for this procedure in any guideline so it is mostly delayed beyond a reasonable time. • Unfortunately, plan is usually finalised without checking implementation on the ground.
Step 5: Completion of information	• After finalisation of proposed plan by municipality, all papers are submitted to ministry for approval. • Ministry revises plan approval procedures including all technical information: o Ownership deed o Two copies of approved plan o Two copies of survey o Copy of city structural plan showing location of proposed plan.	**Steps 5 and 6:** • Ministry studies and approves plan. All papers, documents and enclosures related to approval process of the subdivision plan are sent to ministry in Riyadh. Though this procedure is always done, the authority that will carry it out is not always the same, as the minister may grant the power to one authority and cancel the power of another. For instance, absolute power of approval was once granted to Jeddah Municipality without reference to the ministry in Riyadh. • Higher Planning Committee that has been formed within Jeddah Municipality has now replaced ministry's role. All the documents relating to approval of a subdivision plan are submitted to committee, which has become the authority concerned with reviewing and approving plan. • There is no timeframe for this procedure. Developers complain of length of time procedure takes, while organisers complain of developers' failure to comply with technical and administrative conditions that are included in procedures.
Step 6: Study and approval of the plan by the ministry	• Relevant authority within ministry studies application and checks plan in order to ensure that it is in line with all the planning basics and standards, and revises checking form of residential plan and signs it. If adequate, the following is done: • Approval decision of the plan on the ground is issued; two copies are made. • City planning agency keeps a copy of each of the following documents: o Endorsed approval o Survey of site o Plan checking form o Approval decision issued by the employee who had the authority to do so. • All the papers sent by the municipality are approved, along with a copy of the approval decision and a copy of the plan that has been approved which is signed and sealed.	

	Procedure of Approval of LSPs (Technical & Administration Process)	
	Description/Explanation	**Comments**
Step 7: Plan execution procedures by the municipality	• Following the issue of final approval by ministry, municipality completes plan approval procedures. Municipality carries out several procedures including placement of excision marks on ground, and an executive planner is designated to execute approved plan. • Following approval, a copy of approved plan is sent to each authority both within and outside municipality including: o Notary Public o Electricity Authority o Saudi Telecommunication Company o Water Ministry branch o Owner o Municipality branch o Survey Department o Urban Planning Department o Technical Archive Department.	• In the past municipality used to wait for the approval of ministry in order to embark on the execution of the subdivision plan on the ground. Municipality now embarks on this procedure immediately. • There is no time limit within which developer is obliged to finish the execution of subdivision plan on the ground, as he has full discretion to execute it within a timeframe that suits him, and there is no date of expiry of validity of subdivision plan approval. • Many authorities are not provided with a copy of subdivision plan after approval and execution on the ground, such as the Education Department, Health Department and Endowments, etc.

(Source: *Manual of Procedures and Regulations of Approval of Land Subdivision Plans*, 2003)

3.4.4 Critical Views about the Local Planning System

The current planning system has been criticised by several authors (e.g. Al-Freadi, 2008; Harefsha, 2008; Mandeli, 2008, 2011). There are six main issues related to the current system: centralisation (Daghistani, 1991; Alkhedeiri, 1998; Mubarak, 2004), bureaucracy (Dahlan, 1990; Aazam, 2004; Mandeli, 2011), coordination and cooperation (Abu-Sulaiman, 1996; Abdulaal and Aziz-Alrahman, 1998), lack of a participatory planning system (Garba, 2004; Mandeli, 2011) and lack of adequate resources such as staff capabilities (Aazam, 2004; Al-Freadi, 2008; Harefsha, 2008).This chapter will show the first four issues only in more detail.

3.4.4.1 Centralised Approach

Daghistani (1991), Mubarak (2004) and Mandeli (2011) observe that the main cause of weakness in the current planning system in KSA is the centralised approach; the central government has been implementing planning regulations according to this method for many years. The government believes that by doing so, resources will be allocated more fairly. Yet, the centralised approach in the decision-making process (such as creating development codes) has hindered the local municipalities from implementing their own regulations necessary for ensuring quality development, and it prevents them from

developing their own planning capacity (Daghistani, 1991; Mubarak 2004; Mandeli, 2008). The centralised approach has impacted not only on the process of regulating the new developments, but it has also influenced citizens' lives in their residential built environments (Dahlan, 1990). It has resulted in a single conventional style of developing subdivision plans that lacks sensitivity to local differences. Healey (2006) argues that concentrating political power at the apex of a national system encourages forms of unresponsive governance to people's needs at local level.

3.4.4.2 Lack of Participation

Mashabi (1995), Garba (2004) and Mandeli (2008) argue that in KSA there is a lack of public participation at any stage of the plan preparation, the planning decisions and the planning process. In recent years, the MOMRA have created three SR guidelines for all Saudi cities without allowing the public to participate in the decision-making process that determined the new guidelines. In North America, the situation is different (as explained in Section 2.3.4); local municipalities encourage public participation in the process of amending their SR ordinances. The City of Oak Harbor is an example of understanding how public participation in the process of amending subdivision code can be included for the improvement of the resulting ordinance and public satisfaction (City of Oak Harbor Planning Department, 2008). Abu-Sulaiman (1996), Al-Oleat (2004) and Al-Freadi (2008) see communication between municipality officers and residents at the local level as providing opportunities to avoid implementation problems. But achieving public participation is difficult to implement in KSA due to the centralised approach. Ben-Joseph (2005) recommends that the localities define new modes of professional-government-citizen participation in planning. He states:

> *if the localities are to realize the best possibilities out of the trend to devolution, they must simplify their regulatory and approval process, they must redirect their attention toward master plans and vision plans for their communities, and they must explore new modes of professional-government-citizen in planning* (2005:182).

Public participation is believed to improve efficiency and effectiveness of the planning process (Al-Oleat 2004; Mandeli, 2011).

3.4.4.3 Bureaucratic Issues

National, regional and local planning agencies are plagued with red tape in KSA (Abo-Suliman, 1996; Harefsha, 2008; Mandeli, 2008). In terms of regulation and approval of plans, few studies have gauged the issue and defined its consequences at the local level. One local survey study in Riyadh took a sample of consultants' offices, which asked about the problems the consultants faced when practising subdivision planning. Most mentioned issues like vagueness, length of time, efficiency, and lack of clear and non-subjective procedures in approving a subdivision plan (Alskait, 2003a). Chapters 6 and 10 show the views of some stakeholders of the subdivision approval process in relation to Jeddah. However, red tape issues in western planning systems have led to the appearance of several problems such as increased housing costs raising development costs, delays in the supply of subdivision plans to the market, and delays in the ability of planning authorities to cope with the changes in big cities (e.g. Seidel, 1978; Atash, 1990; Luger and Temkin, 2000; Ben-Joseph, 2005; Ben-Joseph and Phelan, 2005; Kone, 2006). For example, in his study of the US national level, Ben-Joseph discovered that more than 50% of public officials recognised delays in subdivision approval were caused by inefficient management and lengthy approval processes by other agencies and commissions (2005). Ben-Joseph concludes by comparing his results with Seidel's 1978 study, stating:

> *Regardless of the numerous calls for regulatory reform, changes to subdivision controls have been slow. Indeed as Seidel's and our study indicate, for the last 25 years the subdivision approval process has increased in its complexity, in the number of agencies involved, the number of delays, and the addition of new requirements* (2005:181).

A significant challenge for those involved in this process is improved management to streamline the process. In doing so, costs would be brought down and potentially overall satisfaction would increase.

3.4.4.4 Coordination and Cooperation

Saudi academics have also indicated that every planning locality works independently, disconnected from one another (Mashabi, 1995; Garba, 2004; Mandeli, 2008). To be more specific, it has been discovered that there is a lack of both horizontal coordination, or cooperation among different local agencies responsible for planning and development, and vertical coordination, or cooperation between the planning agencies at

the national level and those responsible for implementation at the local level. For example, local municipalities used to approve subdivision plans, and allocate service plots without coordination with service providers (Harefsha, 2008; Mandeli, 2011) (see Chapters 6 and 7). Abdulaal and Aziz-Alrahman (1998) explored whether there was difficulty coordinating between municipalities and other government agencies such as service providers, not only during plan preparation but also throughout implementation. For example, in Jeddah Municipality, it was found that there was poor coordination between the GIS department and the department responsible for regulating and approving subdivision plans. The lack of coordination leads to negative reflections on public service distribution within the residential areas (see Section 7.5). GIS and other visualisation technology tools can show what the subdivision plan might look like under different design and development scenarios. Several authors in the literature, including Ben-Joseph (2005), Steiner and Butler (2007), and Cullingworth and Caves (2009), identify the importance of using visualisation tools and techniques. These can be used at different stages of community development to evaluate the development's impact. For example, they can be utilised during the subdivision review and reviews of SR and other codes.

3.5 Land Subdivision Development Process and Main Actors in KSA

The lack of studies investigating and reporting on the subdivision development process in KSA is not a new deficiency. According to Abdulaal (1987) and Abdulaal and Aziz-Alrahman (1998), research on the land development process is very scant, and little known of the ways by which land enters the local market. The scarcity may be attributable to two reasons. On the one hand, the ambiguity of the real-estate development market, and on the other, the lack of developers' interest in participating in research studies and giving researchers access to the information necessary.

Chapters 6 (see Section 6.3) and 10 consider an example of understanding the subdivision development process in KSA from the perspective of two different developers: one conventional and unconventional. Both Chapters 6 and 10 show detailed aspects, such as the way the development process is carried out, characteristics of subdivision developers, the process of planning and design of the plat, and even each developer's view towards the current SR and approval process in Jeddah.

3.5.1 Land Acquisition

The next section illustrates basic information about the Saudi subdivision development stages process. Before that, however, this section clarifies the process of land acquisition in KSA. According to Abdulaal (1987), and Abdulaal and Aziz-Alrahman (1998), in KSA there are four major schemes controlling the process of land acquisitions: grant, inheritance, reclamation, and purchase.

3.5.1.1 Grants

Grants are given in the form of land grants. The grants hand over land ownership from the state to the individual. In KSA land grants are conducted in two ways: through a direct or an indirect process (Al-Shareef, 1988; Abdulaal and Aziz-Alrahman, 1998).

Direct Process

The direct land grant process is carried out by the King's hand only. The King makes a land grant to an individual, a group of people, or even to an institution. The land could be a large area or small plot, given over for the purpose of building residential, commercial or administrative developments. This process can work in two ways (Aziz-Alrahman, 1985). The first is a land grant for housing construction. This process allows Saudi citizens to ask for a land grant to build a private home. The applicant has to fill out an application and submit it to the local municipalities, which in turn ask permission to prepare a subdivision plan according to the goals and objectives of the National Five-Year Development Plans. The second is a land grant for commercial or industrial purposes, for public and semi-public institutions. This grant might be given for positive purposes or to meet the public need. Normally, the King grants large areas of land for building a particular project that is useful to the community (Abdulaal and Aziz-Alrahman, 1998; Edrees, 2001).

Indirect Process

The indirect process is a common practice in KSA. Most urban areas have been generated in local cities through the indirect process. Edrees (2001) describes the process as conducted in three distinct stages:

1. Royal grant, whereby a large estate, which is not devoted to the public, is given to officials, dignitaries and members of the Royal Family;
2. Sale of undeveloped land to the public by a real-estate agent or a joint-stock company; and
3. Land subdivision and subsequent sale to the public.

Inheritance

Inheritance is method of passing private land ownership from a deceased landowner to his inheritors (Abdulaal and Aziz-Alrahman, 1998; Edrees, 2001).

Reclamation

Reclamation is an approach allowing the individual to acquisition of dead land (*mawat* land) by reclamation. It is similar to the use of brownfield sites in western countries (Abdulaal and Aziz-Alrahman, 1998; Edrees, 2001).

Purchase

Purchasing land is the most common and normalised process of obtaining land ownership, which is secured through written agreement. Usually, an agreement is signed between the buyer and seller, after a mutual agreement is reached between the two (Abdulaal and Aziz-Alrahman, 1998; Edrees, 2001).

The indirect process is the most effective way of subdividing privately-owned land into plots and then selling it to end-users. Therefore, the acquisition of land by purchase is the normal process in all Saudi cities (Abdulaal, 1987; Edrees, 2001).

3.5.2 Subdivision Development Stages Process (SDSP) in KSA

Abdulaal and Aziz-Alrahman (1998) show a basic knowledge of SDSP in Saudi cities. These authors' research was based on work of three consultants: GACDAR, Sert Jackson, and SpearPlan and Koshak. These consultants have worked on updating the master plans of Madina, Jeddah, and Taif. They describe the land development process in the three cities by using event-sequence models. Despite the criticism associated with such models in the literature, their description of the land development process offers a

useful vocabulary for development activity, although not a comprehensive analysis of the process (Abdulaal and Aziz-Alrahman, 1998). The consultants' studies gave a similar account of the SDSP, which includes three stages: land provision, land improvement, and building construction.

3.5.2.1 Land Provision

The process through which undeveloped land is brought into the land market was described in Section 3.5.1.

3.5.2.2 Land Improvement

Land improvement includes two important successive stages, instigated by land subdivision, followed by construction of infrastructure and ultimately housing units.

3.5.2.3 Land Subdivision

As mentioned in Chapter 1, the practice of land subdivision in KSA started in 1930 when the Arabian-American Oil Company (ARAMCO) developed a number of plans in the eastern region cities. Soon after, the same conventional concept of the plan was applied in other Saudi cities. Large areas of land have been subdivided into blocks and small plots in preparation for urbanisation. Land subdivision has become the main process by which raw land is brought into urban land and enters into the land market (Abdulaal, 1990). According to Abdulaal (1987), land subdivision in KSA is practised by both the public and private sector. The public sector's land subdivision results from the land grants policy. Public land is subdivided and granted to individuals with limited income who have applied for land grants. The private sector is the most dominant sector for land subdivision practices in KSA, and often subdivision results from landowner interest in the growing land market. To subdivide land, the developer should have a permit from the municipality. According to Edrees:

> *Land subdivision for private-owned land requires a written statement to the head of the secretariat or the Municipality, indicating the location and the type of subdivision required (residential, commercial or industrial), with ownership document attached. If the ownership document is approved, the land is suitable for subdivision and the land is*

> *within the urban growth boundary, the go-ahead is then given to the owner to prepare a schematic subdivision plan* (2001:120).

To prepare a schematic subdivision plan, the developer should follow the SR requirements to secure approval and then to move forward with the land subdivision. Two important steps in the process of a land subdivision scheme must be followed by the developer. The first is to connect the proposed plan with the surrounding residential areas and with the major road network. The next is to provide 33% of the land area for public services and community facilities (there is no rule to control this percentage, but it is left to the landowner and usually it is covered only by the road area) (Abdulaal, 1987; Edrees, 2001; Alskait, 2003a). Once the municipality approves the subdivision plan, the sale of plots may begin, and land development activity begins (Abdulaal, 1990). The developer does not have any role after the plot sales process ends, so there are no after-sales services such as housing units, implementation of open space lots, or maintenance services.

3.5.2.4 Provision of Infrastructure

The provision of infrastructure is a public responsibility,[11] so owners of land subdivisions are usually not involved. The provision of services starts soon after subdivision, but this is a theoretical assumption rather than a description of reality. Usually the supply of services takes place after development has occurred, especially in suburban locations. The process takes years to connect the main infrastructure services such as electricity, water, and telephones (Abdulaal, 1997; Abdulaal and Aziz-Alrahman, 1998).

3.5.2.5 Building Construction

The building construction stage begins when the land is subdivided into blocks and plots, and is considered the final stage in the process. For construction to take place, it is safe to assume that all the plots have been sold to individual owners. All sold plots will be developed regardless of the owner's wishes, motivations for acquisition, and financial ability to start development (Abdulaal, 1987; Abdulaal and Aziz-Alrahman, 1998).

[11] Most service providers are public, although some utility networks such as water, telephone, and electricity are private sector; in the last ten years those services have been privatised by the government.

In practice, the housing construction may not be the final stage because services such as mosques, schools, parks and other amenities are perhaps provided after the buildings have been completely constructed. Housing construction itself may take years to finish, particularly when carried out by the individual plots' owners. Alskait discovered in Riyadh that:

> *almost every prospective home owner develops his own house acting as an owner, contractor, and consultant at the same time. This results in fragmented houses developed by different owners at different intervals of time. It takes, in many cases, up to thirty years for a whole subdivision to fully develop. […] Due to the length of development the subdivision becomes a factory for building houses. The final outcome is a residential area which lacks the true sense of a community* (2003a:44).

The fragmentation in construction appears to create divisions among neighbours and neighbourhoods, who do not always act collectively.

3.5.3 The Major Participants in the Development Process

Abdulaal and Aziz-Alrahman (1998) have criticised the work of the consultants (GACDAR, Sert Jackson, and SpearPlan and Koshak) in terms of the major actors in the development process to which they referred. The consultants mentioned the following actors:

- Original landowners, who subdivide their land;
- Real-estate agents who mediate between buyers and sellers;
- Businessmen, who initiate large development operations and become active as developers constructing apartment or office buildings; and
- Government.

This classification, in view of Abdulaal and Aziz-Alrahman (1998), does not provide a clear typology, as the businessmen may act as landowners and developers may participate in initiating a subdivision. Therefore, Abdulaal and Aziz-Alrahman (1998) have shown alternative classifications for actors in the land development process, but ones that still does not show all the participants in this process. They are as follows.

3.5.3.1 Landowners

Those who own tracts of land capable of subdivision; their role in the process centres on their motives of ownership and the investment strategy they adopt.

3.5.3.2 Developers

Those who develop land for sale or lease. Their activity depends on their decision to purchase and develop land. Most LSP developers are speculators; they subdivide the land into blocks and small plots and then put them up for sale to consumers. Most of them do not build the housing units on the plots that they sell to end-users; also, they do not manage the process of selling the lots for self-builders (as in the US example).

3.5.3.3 Plot Owners: Developers

Individuals who purchase subdivided plots for development. Individuals are distinct from developers because they will occupy the development, and their role depends on their decision to buy and develop plots.

3.5.3.4 Plot Owners: Speculators

Those who buy subdivided plots for speculation. Their role depends on their decision to buy and sell land.

3.5.3.5 Government

The government is a supplier of land through land grants, and is the controller of land through land policy measures such as SR and building codes. The government's role is defined through such measures. MOMRA, as shown in Section 3.2.4.1, is concerned with spatial planning at all planning levels. Most development regulations emanate from MOMRA and are based on their local and foreign advice. Local government's role is to adopt all the duties and regulations that come from the central government.

3.5.3.6 The Public

The public do not have very much input to the process, due to the planning system being based on the centralised approach, which allows the government not to implement

the concept of public participation or even allow the local government to do this task. For instance, the SR code and its contents have been created without any input from the public and even without informing them about it.

3.6 Impact of Subdivision Regulations

3.6.1 International Studies on the Impact of Subdivision Regulations

Some studies demonstrate SRs' weaknesses which inhibit a more effective and efficient planning and development process. Ben-Joseph (2012), for example, indicates three areas of negative impact on urban development:

- Deficient urban patterns appearing in forms of sprawl;
- Global dispersion of uniform formulas and standards; and
- Limited reaction by regulatory agencies despite numerous calls for reforms.

Given the pervasiveness of these negative factors, there is considerable need and desire for modification of the regulations.

Several commentators (Beatley and Manning, 1997; Arendt, 1996, 1999; Burchell and Mukherji, 2003; Kelly, 2009) have highlighted the deficient urban patterns that subdivision may produce, identifying the most generic/uniform and least place-specific as 'conventional patterned' (Ben-Joseph, 2004b, 2005; Kaplinsky, 2006; Friedman, 2007) or 'cookie cutter' (Harrison, 2009; Hostetler, 2012) development, referring to the conventional sprawling developments in North America. This pattern of subdivision developments is central to the planning process, directly affects liveability, property values, public services costs, transportation means, environment health, and many other aspects of the urban environment (Carruthers and Ulfarsson, 2003; Dewberry and Rauenzahn, 2008; Kelly, 2009; Rangwala, 2010).

3.6.1.1 Pattern of Conventional Subdivision Plans

During the last three decades, North America has witnessed an increase in the suburban development pattern based on conventional subdivision. It has been created by conventional developers, and is based on a 'cookbook' called the subdivision code or the ordinance. According to Harrison (2009):

> *Communities have a cookbook that tells the developer and the design consultant the ingredients that must be used; this is called 'The Ordinance'. Just as one might bake cookies using clearly defined amounts of flour and sugar, the cook looks to the ordinance to see that he will need exactly 10 feet between homes, at precisely a 20 foot setback from the curb, served up on a lot no greater than 5,600 square feet. Thus, 100 cookies baked from the same recipe have about as much in common as the 100 lots built on 'Pleasant Acres'. The developer presents the plan to the council. The scrumptious, pastel-colored rendering promises a tasteful development. But the council and planning members remember the aftertaste of the promises of past submittals* (2009:1).

Subdivision codes, not yet updated in the cities, towns, and counties, specifically tell the developer and the design consultant the ingredients or the requirements that must be followed for the division of a larger land tract or parcel into smaller plots for both dwelling units and non-residential spaces (Dewberry and Rauenzahn, 2008; Harrison, 2009; Rangwala, 2010; Hostetler, 2012). Normally during the process of planning and design stage of conventional subdivision, 'developers do not design land subdivision developments. They appoint consultants who design them. The consultants are likely to be engineers and land surveyors, who also act as land planners' (Harrison, 2009:1). Several authors such as e.g. Arendt (1996, 1999), Burchell and Mukherji (2003), Pal (2005), Kaplinsky (2006), Friedman (2007), Harrison (2009), Rangwala (2010) and Hostetler (2012) have called the process of creating the conventional subdivision itself a conventional process. Friedman described this process in detail in the following quote:

> *... in a conventional design process, planners are asked to predict the types of dwellings that will be in demand in the future. Municipalities require the submission of a master plan with any application for residential developments that claim new, previously uninhabited land. The master plan must be approved through a political process and includes primary and secondary roads, with accompanying utilities and infrastructure, and land subdivision. Everything from the location of lamp posts to the dimensions of sidewalks, building setbacks, and parking arrangements is determined early on. In other words, the entire development is designed in detail years before these dwellings will be inhabited.*
>
> *Once approved, the master plan becomes an absolute point of reference for the duration of the development's construction, however long it lasts. If a project is not built in its entirety, the construction of one of its phases may occur several years after the actual design but will still be limited to that design long after it has outlasted its usefulness. Issues and concerns that were considered to be important at the time of*

> *design might well be obsolete and contradictory to the issues and concerns at the time of construction* (2007:70).

As mentioned previously, the final result is a conventional development plan, which is known as sprawl, defined as 'development that expands in an unlimited and noncontiguous (leapfrog) way outward from the solidly built-up core of a metropolitan area' (Transportation Research Board, 1998, cited in Hendricks and Goodwill, 2002:4). The most defining characteristic of conventional development is low-density development spread out over large areas of land, and with the least expensive land for development (McCann, 2000). Ewing et al.'s report (2002) identified sprawl as the:

> *process in which the spread of development across the landscape far outpaces population growth. The landscape sprawl creates has four dimensions: a population that is widely dispersed in low-density development; rigidly separated homes, shops, and workplaces; a network of roads marked by huge blocks and poor access; and a lack of well-defined, thriving activity centers, such as downtowns and town centers. Most of the other features usually associated with sprawl – the lack of transportation choices, relative uniformity of housing options or the difficulty of walking are a result of these conditions.* (2002, cited in Walters and Brown, 2004:40).

Deal and Schunk summarise why conventional sprawl is preferred by communities, stating that:

> *... current low density sprawl development patterns are preferred because they are relatively cheaper for the developer and individual purchaser at the expense of the broader community and society as a whole* (2004:81).

Other authors such as Burchell and Mukherji elaborate a number of other factors that behind the increasing this pattern in the US, including:

> *... market, policy and personal choices support conventional development or sprawl because resources are relatively plentiful and no one is advocating for society's needs* (2003:1535).

The conventional development pattern had positive and negative effects in US cities. In terms of the positive aspects, Burchell and Mukherji explain that the conventional urban pattern has allowed people to gain access to less expensive, single-family homes on large plots, situated away from city centres rife with high level rate of crime and poverty, while still allowing inhabitants great freedom and choice of movement, as the

vast highway systems have been built to accommodate their automobiles. It also has positive qualities that make it attractive to homebuyers or newcomers. These include a sense of open space and fresh air, privacy, safety and security – these qualities are attributes especially important to families with young children (Hendricks and Goodwill 2002). Cities in North America dominated by urban conventional developments have enabled the fulfilment of many keys goals both at individual and societal levels, such as

> *... the freedom to hold land, to live and travel wherever one pleases, to accumulate wealth, and to participate in a democratic government at both the local and national level. In many ways, suburbanization is a celebration of individual freedom and wealth* (Gillham, 2002, cited in Arbury 2005:27).

3.6.1.2 Negative Impacts of Conventional Developments

As shown in the above paragraph, conventional thinking about how development occurs is shaped by economics, non-innovative or non-amended SR codes, conventional developers' practices, and their consultants, politics, societal values and past successes (Burchell and Mukherji, 2003; Morrow-Jones et al., 2004; Harrison, 2009; Rangwala, 2010). This conventional thinking was behind the growth of cookie cutter developments or sprawl in the US, and it became the nation's favoured suburban development style during the last 50 years. However, conventional developments created several negative aspects in the face of America urban pattern; for example, issues such as fostering automobile dependence by development residents. These subdivision patterns have been labelled as car-oriented communities. Suburban residents are usually totally dependent on the automobile for travel, since they lack sufficient bus services and must travel greater distances between dispersed destinations. The lack of cycle lanes and continuous pavements often prevents walking and cycling by inhabitants inside the neighbourhoods and between them, which might otherwise allow access to transit services (Hendricks and Goodwill, 2002). For instance, Kaplinsky (2006) has indicated:

> *... subdivision controls established minimal standards that have proved instrumental in improving the overall health of new neighbourhoods, but have probably failed in every other respect. These standards ensconced conventional suburban development, which is blamed for fostering automobile-dependence and for inhibiting street life and human interaction – although factors weakly linked to internal neighbourhood design, such as job distribution, economic forces, governmental policies and cultural values, may have*

> *played a greater role, There is, however, a general consensus today, that the official adoption of conventional street patterns was a mistake* (2006:158).

On the other hand, conventional residential communities that depend on heavily upon automobile use show an accompanying decline in the amount of neighbourhood social ties (Freeman, 2001). Another negative issue by conventional development is a feeling of cultural isolation and lack of social capital (Katz and Bradley, 2000, cited in Hendricks and Goodwill, 2002:5). For instance, lack of common places for people to congregate with one another and delay in implementing those places with services within the conventional suburbs discouraged a sense of community (Hendricks and Goodwill, 2002). Rangwala has indicated more detail about the character of conventional developments and how SR are shaped them:

> *Contemporary subdivision regulations produce sprawl by default. Products of conventional subdivisions are residential subdivisions with curved roads and cul-de-sacs, commercial strip center, malls, and office parks. For instance, suburban sprawl is created by subdivision standards that limit access, disallow alleys and on-street parking, and mandate street designs that are vehicle dominant. Such standards enable greenfield sprawl and inhibit urban infill or redevelopment* (2010:2).

In terms of the environment issues this pattern created many problems. For instance, conventional large plot subdivisions result in the loss of precious agricultural land and consume the landscape, causing increased dependence on the automobile, longer commute times, and reduced opportunities for residents to live near natural surroundings and with close-knit communities (Beatley and Manning, 1997). Conventional developments led to negative effects that are cited and experienced by suburban residents including s traffic congestion, long commutes, air pollution, greenhouse gas emissions (Belzer et al., 2002). Some studies have shown that lower density patterns of residential developments are associated with higher household levels of impervious cover and energy use, two important drivers of heat island formation (Alberti, 1999a, b; Stone, 2004). Stone indicated that conventional development patterns 'have often degraded regional air, and water quality and displaced ecologically valuable wetlands, forests, and wilderness ecologically areas' (2004:101).

In addition, conventional development impacts can be seen in the management of street networks such as the layout pattern and widths of thoroughfares, as well as in grading and drainage implementation. One of the most difficult stages in the site development

process involves the clearing of vegetative cover and mechanical grading. The use and attributes of the heavy equipment, and the desire to decrease or cut the costs by executing massive grading, often result in complete alteration of the landscape and low-down the environmental conditions. Also, conventional subdivision design is characterised by excessive impervious surfaces such as large plots, wide paved driveways, streets, excessive parking requirements, increase size of pavements around setbacks, and piped drainage systems. Some studies show that this type of development increases runoff while decreasing the supply of groundwater and contribute to loss of potential infiltration (Ben-Joseph, 2004c, d; Stone, 2004; Pal, 2005).

Regarding economic issues, several studies show that the sprawl pattern is highly inefficient especially in the provision of public services (schools, parks, playgrounds, etc.) and infrastructure. It is argued by some authors that conventional land development pattern has significant financial costs to both individuals and communities (Pollard, 2001; Burchell and Mukherji, 2003). The conventional development pattern is also economically inefficient with regard to the cost of local public services. As a development does not usually pay for itself, it requires new schools, hospitals, road infrastructure, water mains and sewer connections to serve undeveloped land on the edges of urban areas. Therefore, there is a significant cost to the public sector for urban development (Carruthers and Ulfarsson, 2003; Burchell and Mukherji, 2003; Walters and Brown, 2004). Under conventional development one study such as Burchell and Mukherji (2003) estimate that the US is expected to spend $143.2 billion yearly on the provision of public services, of which only $99.4 billion would be recouped through the revenues from developments. This leaves a fiscal impact deficit of $43.8 billion annually in the provision of public services. In the same study and in terms of the road networks and their infrastructure it projected the spend as follows:

> *Under conventional development, the US is projected to spend more than $927 billion during the period 2000–2025 to provide necessary road infrastructure, amounting to an additional two million lane-miles of local roads* (Burchell and Mukherji, 2003:1537).

Even with water and sewerage infrastructure, the same study showed that between 2000 and 2025 there is a projected expenditure of about $190 billion in providing infrastructure expansion to primarily single-family detached subdivision plans in the US. At the local level, Salt Lake City, Utah, demonstrated that low-density sprawl would cost as much as $15 billion in infrastructure and public services – approximately

$30,000 per household (Calthorpe and Fulton, 2001, cited in Walters and Brown 2004:46). In North America, a new trend has appeared in the SR that pass these costs of growth on to the real-estate industry. Impact fees are a form which has been created to generate extra fees per new dwelling charged by the municipality to developers. These fees vary from a few hundred dollars to thousands, and developers often pass these fees directly onto new homebuyers in the form of increased house prices. The final result is that this system makes new housing more expensive and less affordable, especially to low- or moderate-income people (Walters and Brown, 2004). In North America the desirable goals of local land use regulations, such as SR, were sometimes in conflict with the objective of providing affordable housing for low- and middle-income families. This was because some of the contents of local land-use regulations had inflationary effects on the cost of housing unit, and thus limited the supply of affordable housing available to those families (low- and middle-income) (Atash, 1990). Anthony Downs has been writing for long time (for over 40 years) about the impact of state and local policies upon housing affordability. He believes that, through reduced and reformed standards/regulations, underlying housing development costs can be substantially reduced:

> *... the problem of housing affordability has been arising because millions of American households cannot afford to buy or rent shelter that meets prevailing middle class standards of decent quality without spending more than 30 percent of their incomes for housing. This situation arises because many households have low incomes and because decent homes especially new units cost too much due mainly to the high quality building standards we require. […] there are two ways to solve this problem. One is to raise the incomes of poor households or to provide them with subsidies. The other is to reduce the cost of decent units in various ways. They include reducing the minimum quality standards we demand, improving the terms of ownership, and reducing various regulatory barriers* (Downs, 2005:105).

Several studies such as Seidel (1978), Burchell and Listokin (1980), Atash (1990), Luger and Temkin (2000), Ben-Joseph (2003), Ben-Joseph and Phelan (2005) and NAHB Research Center Upper Marlboro (2007) have gauged and assessed the SR and their impact in increasing costs of conventional development and subsequently of the housing units. They have determined that by identifying the attitudes and perceptions of members of the housing industry such as the developers and the regulatory agencies who are affecting housing development in the American real-estate market. For

instance, in the US after 1976, SR had become more complex and their requirements had begun to include many detailed stipulations such as on-site and off-site improvements that subdivision developers had to provide. These improvement standards or regulations required many conventional developers to provide amenities that were often, in their view, costly and unnecessary, and in doing so reduced the supply of affordable housing in newly built land subdivision plans. These studies demonstrated that unnecessary delays occur in the review and approval process; and time is money when it comes to such delays. The time spent on local review and approval of residential developments depends on such factors as design difficulty, the number and quality of reviewing personnel, the number and types of reviews made, and the quality of the developer's engineering work. For instance, most developers in the US estimate that for every additional month added to the completion date there is a 1%–2% increase in the housing unit (final selling) price (Seidel, 1978). Burchell and Listokin (1980) estimated that the total costs of excessive conditions relating exclusively to SR were nearly 6% of the final purchase price of a $50,000 single-family home in 1978. Moreover, Dowall (1984) found in his study that lowering housing subdivision standards/regulations could reduce housing costs by as much as 10%. Ben-Joseph (2003) (in his national US survey) found that developers stated their frustration with the excessive and often unwarranted nature of physical improvements and standards associated with conventional subdivision development. For example, 80% of developers pointed to conditions associated with site design. In terms of which requirements are excessive to developers, 52% of them mentioned those relating to street design and construction, 45% mentioned land dedication and 43% indicated storm sewer systems. To be more specific, Ben-Joseph asked developers about which physical standards within each category of subdivision requirements they saw as excessive. Seventy-five per cent of respondents pointed to street widths, while 73% referred to thoroughfares and 73% mentioned open spaces. A high percentage of developers (85%–90%) mentioned water and sewer connection fees and 79% of developers said that the payments in lieu of land dedication were also excessive requirements.

In the same study, Ben-Joseph discovered that public officials surveyed agreed that the SR and their approval process have become more demanding and complex. He found that in America over the previous five years, for example, 70% of the jurisdictions where these public officials work have introduced new standards/regulations, and 57% have increased specifications, such as those for setbacks and plot sizes. Only 16% of

these jurisdictions have reduced their specifications, mostly by decreasing street widths. In general, all the above studies believed that, through reduced and reformed standards of SR, and reducing the time to approve subdivision plans, the underlying housing development costs could be substantially reduced within conventional developments.

In terms of health and safety issues there is a big debate in conjunction with that over the development type and its planning and design. From the literature, there are opponents who contend that conventional suburban designs include specific characteristics such as: discouraging walking and promoting reliance on the automobile, neighbourhoods characterised by non-continuous streets, lack of pedestrian pavements or disconnected ones, lack of cyclist and pedestrian lanes, and absence of meaningful pedestrian destinations – are behind the rising incidence of obesity (Ewing et al., 2003; Catlin et al., 2003; Saelens, Sallis and Frank, 2003). Several studies have also linked health problems such as obesity and diabetes to the conventional subdivision that is badly-designed and includes unwalkable environments (Killingsworth et al., 2003). It is claimed that the physical structure of conventional development as described earlier, through its greater reliance on the car, discourages walking, cycling and other physical activities, therefore increasing the possibility of many physical diseases among the residents such as heart disease, hypertension and diabetes (e.g. Kelly-Schwartz et al., 2004; Badland and Schofield, 2005).

3.6.2 Local Studies and Knowledge Gaps

3.6.2.1 Local Studies about Subdivision Regulations

There are a few studies examining SR at the local level in KSA; these can be categorised into two types. The first type analyse the planning and design standards of current SR, whereas the second type show issues at the macro or micro level related to SR code and to the land subdivision development practices in Saudi cities. The next two sections examine the two study types, in order to then isolate and define present knowledge gaps.

Study Type One

Makki (1986) describes the process of land subdivision and subsequent development as based on planning standards. Makki suggests that street widths should be compatible

with the city master plan, and in cases where there are no street network standards for subdivision plan at the local level, the width should be 24m for main roads, 18m for secondary roads, and not less than 12m for cul-de-sacs. Another study in Riyadh by Al-Nowaiser (2001), with aspirations of creating a holistic framework, proposed to fuse the old traditional planning standards with the modern ones, to get a better balance between the two planning approaches. The hope in mixing the two standards was to create new visions of healthy and safe residential areas in KSA cities. A key factor in working towards this goal is to identify what features to keep and what to discard in the new hybrids. Alskait (2003a) usefully defines the negative aspects of current planning and development subdivision plans in Riyadh. He illustrates three main aspects. The first is a set of criticisms of the conventional developers' approach in the subdivision plans' development process. Alskait indicates that all the current residential areas in Riyadh are conventional subdivision plans implemented by developers. He explains:

> *Residential development in Riyadh is individualistic in nature. That is, every plot owner develops his house on his own. Most of the city residential areas were planned as subdivisions. Many of these subdivisions are owned by major land developers and real-estate brokers who sell them to individual owners per plot. These individual parcel owners start the subdivision development process. Almost every prospective homeowner develops his own house acting as an owner, contractor, and consultant at the same time. This results in fragmented houses developed by different owners at different intervals of time. It takes, in many cases, up to thirty years for a whole subdivision to fully develop. Indeed, even after thirty years, most subdivisions have vacant land* (2003a:44).

The fragmentation in development puts a burden on to residents in the subdivision and in neighbouring areas, who must live among vacant properties for years and in many cases must wait just as long for the implementation of adequate public services.

The second critique brought forward by Alskait is that conventional developers have produced incomplete residential areas because they are without public services and facilities. In western countries, the municipal requirements place their emphasis on services and amenities requiring developers to dedicate more land for public usage, whereas the Saudi Land Subdivision Ordinance requires all land subdivisions plans to dedicate 33% of their total area to public usage (e.g. road networks, gardens and mosques). Alskait has seen that this land dedication is often left open so planners can design the community with the utmost flexibility. However, in many cases the

allocation of this 33% is subject to the discretion of municipal officers who are in charge of subdivision planning. Alskait selected eight items (planning standards) from the SR code about which to obtain the consultants' views. He discovered that the consultants see the current SR code as inadequate.

The third of Alskait's points examines suitable community development criteria. He suggests a framework of criteria for residential communities based on the author's experiment. He describes two unconventional master-planned communities – Telal Arriyadh (TA) and Riyadh Al-Khuzama (RK) – which were both planned by the author. Both projects introduced new concepts in subdivision planning and development, based on the liveability theme, or an element missing in most existing conventional residential areas. Both projects are not only places to reside but they are also places to fully live (e.g. learn, work, exercise, and enjoy life). Alskait believes that the quality of both projects is linked to the process of planning and the contents of each project; that projects depend on the configuration of an integrated neighbourhood. The result is a pair of private communities that include several components such as residential neighbourhoods, schools, pathways, central park, commercial corner plazas, etc. The author-proposed framework is not a set of technical criteria. He prepares a guide on which subdivision planning criteria can be based in an attempt to provide practical alternatives to conventional development and, potentially, a model to rectify the existing common code.

Harefsha's study (2008) shows different plots for public services within private subdivision plans. The plans include schools, health centres, gardens and playgrounds, and other amenities, but most of them are left for the time being without being implemented, either by the governmental or the private sector. Harefsha discovered three main reasons behind the unsustainability of service sites: no involvement on the part of relevant services providers during the subdivision plan approval process; lack of information (e.g. maps) at the macro and micro levels about the sites of government services after the plats' implementation process; and lack of SR code to customise sites within the subdivision plans for the private sector. Customisation would benefit site preparation for schools, clinics and many other private services.

Al-Freadi's study (2008) examines the evolution of planning standards in Riyadh, namely that of LSPs. The study looked specifically at the views of a sample of residents in a number of residential neighbourhoods in Riyadh. Al-Freadi defines residents' views

towards a selection of planning standards from the current SR code, and accounts for residents' wishes for physical, economic and social parameters of future developments. Al-Freadi concludes that a large percentage of respondents desire the provision of services and facilities on sites near their housing units, with good pedestrian access. Residents also want reduced reliance on automobiles for access to and navigation within their neighbourhoods. Finally, they desire multiple work opportunities within residential neighbourhoods or close to their residences.

Moustapha et al. (1985) shows the rapid growth in population and urban land use in KSA has been greater than the capacity of the Saudi government to plan for, cope with, or absorb the population in a systematic manner. They believe that such cultural transformations or changes can create social as well as physical stress – for instance, primary and kinship relations characterise traditional society, while secondary and instrumental relationships are a feature of a developed society. Adjustments to these changes are difficult and often unsuccessful, resulting in alienation and other significant social problems. They suggest that the government create policies to guide urban development by creating a modern building and subdivision regulation. The new code should be a combination of a selection of modern and traditional conditions, based on the site- and city-specific environmental and cultural conditions in KSA.

Hence, the above critiques have helped to shape the research appraisal more informatively and to structure the case study locality services survey as well as the household survey.

Study Type Two

Alghamdi (1984) studies the LSPs' activity. He calculates the number of implemented plats and describes the directions of city growth. More than 60% of subdivision plans' activity was found in northern Jeddah, and he concludes that the growth will continue in the north into the future. Al-Nowaiser (1993) has analysed the effects of the modern grid pattern of subdivisions on the behaviours and activities of its inhabitants. He discovered that new LSPs imported from western countries influenced the lifestyle of the Saudi population. Another study by Tashkandi (2004) has shown a historical evolution of land subdivision patterns and their development both worldwide and specifically in KSA. Al-Oleat (2004) illustrates the land subdivision approval process development in Riyadh since the approval and implementation of the first master plan in

1973. He gauges the influence of the process on the quality of LSPs' design and implementation practices, finding that there are two stages in the process. The second stage is better in terms of the plats' output quality, giving several reasons for this evaluation. These are that the formation of a planning committee and the decision of approving the plat is now based on collective decision-making rather than an individual's decision, and the process has become a participant-based process including a planning committee, plat designer, and representatives of the land subdivision developers.

Edrees' (2004) conceptual model can be applied to improve the current LSP practices in Makkah. The model is based on urban design elements, specifically open spaces. The goal is to enhance the residential built environment, and raise the quality of residential housing in the neighbourhood boundary. Edrees integrates one traditional Islamic built environment element called a *barha* into his model. A *barha* is an open space inside a neighbourhood, with housing units grouped around it. Edrees' model is capable of creating a number of housing clusters connected by pedestrian networks, incorporating the traditional practice with modern practices. The new model is motivated by the critique of the exiting one. In a further study, Edrees (2006) criticises modern subdivision plans' failing to accommodate and sustain the values and needs of community. In order to begin to address these shortcomings of the modern model, he embraces the traditional *barha,* which permits the residents space to carry out different outdoor activities, thereby enhancing social interaction between the residents, improving microclimate conditions by providing shade for and air circulation among the tightly placed building clusters, and providing a natural security system as the space is frequently occupied and always visible to residents. He understood the importance of the *barha* to creating socially successful neighbourhoods, by examining and listening to residents' perceptions of their built environments. He found that residents in modern developments lacked opportunities for social interaction and recreational activities, because their units are widely distributed, and at times unevenly so, as many plots remain vacant for extended periods of time. He argues for creating design guidance for residential *barha,* and making it an SR requirement. Beyond this uniquely innovative fusion of traditional practices with contemporary ones, the lasting message of Edrees' research is to examine and listen to residents' preferences.

Alskait (2004) examines issues of neighbourhood security and safety, of which most are related to traffic and the social behaviour of teenagers and young adults. Alskait defines sources of security and safety breaches within subdivision plans. He sampled inhabitants in two Riyadh neighbourhoods. The planning pattern of the first sampling's neighbourhood is based on a new grid street network, while the second is based on the cu-de-sac system. The study found that new grid subdivision plans, with multiple access points that are also not fully developed, are more conducive to the occurrence of traffic problems and delinquent behaviour in comparison to the cul-de-sac patterned communities. The study's findings suggest creating new planning policies aimed at solving these issues that is based on the American experience; those policies can be utilised when planning new neighbourhoods. Alskait specifically suggests creating design competitions in Arab countries to achieve better neighbourhood concepts for safety and security.

Mubarak (2004) discovered that in Riyadh, 50% of the city urban plan, covering approximately 1,300km^2, is a pattern of inappropriate, undeveloped or premature subdivisions. Much of this was a result of speculative land deals. The current area of undeveloped subdivided land is approximately 650km^2, which is roughly equivalent to the city's currently developed land. Mubarak sees the main cause behind the spread of this pattern as the centrality of government ordinances, in combination with the generally inefficient urban planning practices. Both of these factors helped to create 'dysfunctional' sprawl by mandating big plots and overly wide street network, and have encouraged the transformation of the outlying desert landscape into unchecked land subdivision plans, championed by speculators and land developers. Mubarak predicts the city's population will exceed ten million inhabitants by 2020, and hopes future city growth will not continue the same practices of suburbanisation. Mubarak argues for urban management with decentralised authority and independent suburban districts with adequate public facilities and services financing.

Abdulaal (1990) examined the implications of subdivision activity for urban growth in Madina, one of the larger Saudi cities. The land subdivision pattern, according to Abdulaal, is fragmented and inefficient, because it is speculatively based on the estimated ability to sell. The consistency of development of individual plots is based on the buyers' desires for acquisition, as buyers (e.g. in Madina) purchase for reasons other than developing the land. Those that have done so have left the majority of subdivided

plots empty, unused and undeveloped. Abdulaal holds the local authority and the state of the current SR code responsible for the fragmented development. The municipality's land subdivisions approvals are dictated by planning by-laws that govern the subdivision's layout, and these include an agreement to dedicate 33% of developed land to public facilities. Yet, subdivision approvals were not phased to coincide with an anticipated rate of development and occupancy, so there is a greater supply then there is demand. Abdulaal also discusses issues created by urban sprawl, which significantly impairs the efficiency and effectiveness of public investment. Many subdivision inhabitants in the Madina suburbs live without public water services, for instance. The residents initially transport water to their housing units by truck, but because doing so is inconvenient and costly, this is not a practical long-term solution. Similarly, the lack of a sewage network leads to the use of septic tanks in scattered subdivisions, which affects the ground water quality and safety. A small number of subdivisions are connected to the city's service networks, and servicing the sprawling urban pattern has cost the government more than necessary. The cost has increased because the main pipelines and electricity cables must reach fragmented areas. Services such as schools, clinics, parks, shops are also found less frequently in sparsely populated sprawling areas. Less access to services requires the inhabitants travelling long distances, which results in more street traffic because the automobile is the only reliable means of transportation. Most subdivisions, especially the largest, have allocated land for schools and mosques. Yet, in most subdivisions, the land allocated for public facilities is not developed until threshold populations are crossed. Without schools accessible by foot or by public transportation, residents often have to take their children to school themselves, at times conflicting with work schedules and at significant distances from their homes and work. Abdulaal found that Madina trades its land for speculative purposes rather than for complete development, producing inadequate and inefficient results. The question remains as to how pervasive these practices are across KSA.

In Ali's (2005) study of the impact of SR on the efficiency of highway performance in Riyadh, he evaluates current SR in terms of the disadvantages created on the main roads. These include multiple access points between the blocks, the spread of business activities – services and small businesses of an administrative nature – on to roads, and the increase of small plots on roads. Ali argues that the issues have spread onto the main roads, disrupting traffic flow during most of the day. He calls for the government to

improve the current SR code, and to include new requirements that will lead to increased highway efficiency.

3.6.2.2 Local Study Knowledge Gaps

Examination of the studies mentioned above help to create a better collective understanding of the current SR and the LSP practices in KSA. Yet, the understanding and research may still be improved, as it exhibits a number of knowledge gaps. First, there is a lack of knowledge about the importance of SR as a tool. For instance, there has been no attempt to illustrate the context of SR, define its contents in detail, its historical context, explain the approval process or its purposes, or define its drawbacks. There is no in-depth analysis of the current SR in KSA with comparable western models. There is no documented information on officials' views towards SR, or on the types of studies officials conduct for a plat approval, the technology used to enhance the decision-making process, or the main participating actors of the approval process. Secondly, although there are a few studies which study and analyse SR and LSP practices in Jeddah, the contexts are limited to the macro level. Harefsha (2008) covers a narrow perspective of public service sites in private subdivision plans, and Alghamdi (1984) studies LSP activity. Another knowledge gap exists with regards to the developers' role in the subdivision development process, as no research has tried to demonstrate developers' views, characteristics, methods and practices, means of obtaining approval, and approach to implementation and post-implementation. There is no documented information on unconventional subdivision plan practices and their developers' views towards the SR and regulators in any Saudi cities.

Finally, some studies have shown the impact of SR on the pattern of land subdivision practices. Abdluaal (1990) has attempted to analyse the pattern of subdivision plans in Madina at the macro level. He defines subdivision plan activity and its growth direction. He illustrates utility networks connection with regard to the growth of plats in the city and provides the percentages of developed and undeveloped subdivision plans. Alghamdi (1984) studies the same issues but has shown the availability of public services and facilities in subdivision plans, and the direction of growth in Jeddah. Alskait (2003a) illustrates two types of subdivision developments in Riyadh, but does not provide detailed information about the two types, such as their prevalence in numbers, development process, and quality. Ali (2005) shows the impact of SR on the

efficiency of highway performance in Riyadh. At the subdivision plan level, or micro level, there are two studies defining the impact of SR. Alskait (2004) discusses issues of security and safety in neighbourhoods, and Edrees (2006) discusses residents' perceptions of use of the *barha,* or open space. However, all these studies have not dealt with both macro and micro level analysis of subdivision plans, nor have they discussed the impacts of SR on both levels. They have also not analysed the output of the current SR on the residential built environment using visualisation technology, such as GIS, to precisely show the impact of SR on the ground.

This thesis attempts to address these research gaps, by studying and analysing the SR context, the land subdivision development process, its main actors, its impact on both the macro and micro levels in Jeddah, and the perceptions of stakeholders. The study will define the needs and preferences of residents and utilise these definitions to propose guidelines regarding how to better regulate, design, plan and develop subdivided residential land in Jeddah, with the ultimate goal of rewriting the current out-of-date SR.

3.7 Problems Associated With Policy Transfer between Different Socio-Economic-Political-Cultural Contexts

Though there are no adequate studies regarding SR in the local context of KSA, available local studies reveal that SR have deficiencies that must be removed. These deficiencies exist *prima facie* because the concept of land subdivision regulation in KSA was brought from the open democratic society of the US to the traditional monarchy of KSA: an entirely different socio-economic-political and cultural context. Most of the problems may be associated with the adoption of such regulations in a different context.

It is not strange for countries to adopt or borrow policy from different countries and contexts (Hoyt, 2006); policies are transferred throughout the world to a large and indefinite extent (Tipple et al., 1994). There are several examples where such policies and regulations were important, such as the US borrowing the idea of national income tax from the UK, while the UK imported the notion of skyscrapers from the US (Hoyt, 2006).

However, adopting policies and planning mechanisms such as SR and/or building designs in dissimilar contexts carries inherent risks, as the new context may not have the

same socio-economic or political arrangements and understandings that ensured the policy or mechanism was effective in its original context. Consequently, imported regulations in many cases fail to respond to people's needs and aspirations; for example, zoning ordinances in the African context, which were introduced by colonial regimes, failed to deliver people's needs (e.g. Njoh, 1995; Eben Saleh, 1997; Tipple, 2000, 2001; Al-Hemaidi, 2001).

Similarly, Western architecture replaced traditional building plans in the Islamic cities of the Arab region; but the new designs do not have a strong link with Arab societal practices (Moustapha et al., 1985). As an example, in the US, housing in rows aligned with straight streets is popular; conversely an Arabic house must consist of a common area or courtyard, while the dwelling could be circular, square or rectangular along with the common area (Njoh, 1995). The inconsistencies of planning regulations with the indigenous (political-social-economic-cultural) scenario has failed to provide a systematic and sustainable urban development (Moustapha et al., 1985; Tipple, 2000; 2001). Therefore, it is important to understand people's values, which differ from place to place or city to city (Cullingworth and Caves, 2009).

Scholars warned that, when adopting policies from different contexts, policymakers must remain mindful of the local context's needs and aspirations (Rose, 2005) to avoid any unwanted negative impact or failure.

The researcher feels that the land subdivision regulations that KSA adopted from the US have such weaknesses as discussed above; later chapters will shed light on these weaknesses.

3.8 Conclusion

In KSA, despite population growth and the correlated urbanisation and economic development during the last few years, SR are still in the first and most basic developmental stages. It has been revealed from the literature presented, that there are several reasons behind the lack of code development surrounding SR. First, it found that the current planning system and its centralising role has played a significant role in the lack of improved SR. Second, the lack of authority or full control of the cities' municipalities has hindered the possibility of creating new SR to be appropriate to local people's needs. Lastly, the lack of studies about SR and their approval process, the land

subdivision development process, and even the views of stakeholders towards the regulations have contributed significantly to the continued application of the most basic forms of regulation and to the continued use of the conventional approach development for subdivision developments in various cities. Despite the three uniform SR codes published by MOMRA in the last few years, the purpose of SR does not differ significantly from previous publications. The purpose remains focused on asking developers merely to subdivide the land into blocks, streets, some open space areas, and indeed the housing plots. The review contained in this chapter reveals that there are many aspects are not taken into account in the current SR code, compared to what the SR code is designed for in other countries like the US, as shown in the previous chapter. Additionally lack of alteration and modification of land subdivisional regulations in line with local context also led a lot of paucities.

CHAPTER FOUR: JEDDAH'S 21ST CENTURY CHALLENGES AND SUBDIVISION REGULATION PRACTICES

Chapter 4: Jeddah's 21st Century Challenges and Subdivision Regulation Practices

4.1 Introduction

> *Subdivision development does more than create lots for sale or development; it establishes a virtually permanent pattern of community growth and leaves a legacy for future generations. Subdivision code regulation must be up to the challenge presented by the subdivision process* (Freilich et al., 2008:8).

In the past years there has been a reliance on subdivision regulations (SR) formulated irrespective of the particular development and specific circumstances, needs and challenges of the context in which the regulations are implemented. The ordinance has been standardised since then, but considered weak, and do not take into account the provision of a final product, nor several important aspects of planning in a city such as Jeddah. The end result is a scattering of developments creating a larger urban expansion based on conventional subdivision plan patterns that have been developed over the last few years. This chapter discusses various factors which modified Jeddah's urban landscape and produced diverse challenges for the regulators and developers of subdivision planning.

Factors external to Jeddah include climatic changes, pollution and other environment issues; while rapid population growth, limited public services and facilities and growing needs and desires of residents have been taken as internal factors. Therefore this chapter is organised into eight sections. Section 4.2 illustrates the data collection procedures. Section 4.3 explains Jeddah's climatic changes and current climate statutes. Section 4.4 shows Jeddah's demographics needs and requirements. Section 4.5 illustrates Jeddah's dependency on cars**.** Section 4.6 explains land use, urban sprawl, and subdivision plan activity in Jeddah. Section 4.7 the adequacy and availability of public services and facilities. Section 4.8 summarises the major learning points derived through this review and concludes the chapter.

4.2 Data Collection Procedures

Data collection was made from three sources; academic texts and databases; Jeddah Municipality archives; and local newspapers. For example, the archives of key local

newspapers – *Okaz*, *Al-Madina*, *Sabaq*, *Al-Riyadh*, *Shms* and others[12] – were searched for stories filed under investigative journalism discussing issues in Jeddah related to urbanisation, increased housing needs, floods in Jeddah, environmental pollution, traffic congestion and lack of amenities.

4.3 Jeddah: Climate Change and Current Climate Statutes

4.3.1 International Experiences of Climate Change and its Implications for Jeddah's Subdivision Plans

The United Nations Intergovernmental Panel on Climate Change (IPCC) published a report in 2007, warning the international community of the dangers and extent of climate change. The report noted extreme temperatures, rainfall, drought, rising sea and ocean levels, as well as the melting of the ice caps and glaciers. The impact of climate change on human health were studies in the US, which warned of several changes in the climate, including increased rainfall, which often leads to flooding, heatwaves and temperature swings (Gamble et al., 2008). Based on the report, many US states and cities at the local level have worked to rewrite land-use regulations. According to Salkin (2009), many of the planning practices that have been applied in some cities and counties in the US are intended to address challenges arising from climate change.

The most prominent of the challenges is the application of environmentally-friendly policies and requirements for the organisation and approval of residential projects, including, for instance, cluster development regulation, mixed-use development, traditional neighbourhood design, Transit Oriented Developments, and the Leadership in Energy and Environmental Design rating system (Salkin, 2009).

In addition, modern methods are used to deal with increased rainfall and storms, such as Low Impact Development Regulations and Rainwater Collection Requirements (e.g. Kone, 2006; Salkin, 2009; Kelly, 2009). These practices have taken into account climate change and the application of the concept of sustainability in the process of the planning, design and development of subdivision plans.

The effects of climate change must be taken into account at the time of regulating, planning, designing and developing residential neighbourhoods (Carmona et al., 2010).

[12] In KSA the major newspaper as source of referance are *Okaz*, *Al-Madina*, *Al-Jazerah*, *Sabq*, *Al-Hayat, Ashraq Al-Awsat*, *Saudi Gazette* and *Al-Riyadh*. These would be considered 'reliable' sources, which are most likely to check their facts, have a level of scrutiny, and have an ethos of trying to report responsibly.

Considering the case of Jeddah, the city has suffered from climate change during the past five years. The amount of rain has increased tremendously, which has caused flooding in areas unequipped to deal with the waters. On 25 November 2009, Jeddah residents suffered from the risks of rising rainwater in residential areas. A day after the disaster, the incident covered the local newspapers' headlines with images and stories about the suffering of population in residential districts. On the day of the rainfall, it rained heavily before noon and caused severe loss of life and property (*Okaz*, 2009:12–13; Al-Alawi, 2009; Al-Thebani, 2009) (see Figure 4.1).

Figure 4.1: Flooding within Jeddah's districts
Damage to streets and houses and mobility difficulties as a result of flooding are shown
Source: Althemali, (2009)

The mayor of Jeddah discussed the causes in a press conference a few days after the flooding. He cited the rising levels of rainwater, which reached an unprecedented 95ml, combined with the general absence of any drainage system throughout the city. Seventy per cent of the districts in Jeddah have no drainage network. The mayor pointed to the approval and implementation of some residential subdivision schemes on the banks of the valleys that blocked the movement of floodwater and natural destination in Jeddah's eastern quarter (Ghazawi, 2009a). To solve the stormwater challenges in Jeddah city, retrofitting of adequate drainage systems is estimated to cost more than 3 billion SR (Ghazawi, 2009b).

With the acceleration of events, this disaster prompted the King's intervention on 1 December 2009. A royal resolution was issued to end the disaster ending damage to life and property and revealed accumulated mistakes and short-cuts in Jeddah's master plan, mainly because of lack of proper provision of sewers and drainage. The royal resolution was an effort to diagnose the problem. A high committee was formed consisting of several members of government bodies to investigate the causes of the flood disaster and forward recommendations to offer solutions to prevent such types of disasters in future (*Okaz*, 2009:3). The committee found deficiencies in the process of approval for subdivision plans, adoption of many subdivision plans in valleys and flood plains, as well as administrative and financial corruption among many officials, developers, and engineering offices and construction companies. The issues have been taken to court but no decisions have yet been made.

In 2010 Jeddah was flooded again. The *Al-Hayat* daily newspaper published on 31 December 2010 the headline: 'Jeddah, 4 deaths and 200 refugees, promise the re-occurrence of Black Wednesday' (Al-Manjomi et al., 2010). After another year, the same flooding problem emerged again in Jeddah. On 27 January 2011, the *Okaz* newspaper ran the headline: 'Scary Wednesday … Jeddah under drowning level' (*Okaz*, 2011b). A repeat of the disaster had occurred as the retrofitting of stormwater drainage in Jeddah had still not been carried out.

As a result of this repeated disaster, the prince of Makkah region, Prince Khaled Al-Faisal, held a press conference on 27 January 2011, in which he argued that the people mainly responsible for the floods were those who organised, planned and designed the streets and districts of Jeddah (see Figure 4.2) (Althemali, 2011).

An integrated water management system had not been adopted in Jeddah's master plan, local climatic conditions were not properly integrated and developers were not asked to install stormwater drainage while studies recommended. In absence of the above, as a result, Jeddah's rainwater has nowhere to go, and in situations where there are heavy rains, flooding is the natural effect.


النائب الثاني: لا نعاقب إلا بدليل.. وقضاؤنا ملتزم بالكتاب والسنة 02

شمس

عطيف «معطوب»
خطوته الخرقاء أصابت اللاعب
ودفعت مدرب الشباب لإلقاء
«الوديعة»
19

06 أطفال «جارون» يهددون بحارتهم
13 محمود يقود الشرطة لاستراحة حنيش
03 حشروج نظام الشركات على طاولة «الشورى»
10 إيقاف الاستخدام لـ 4 متاحرين بالتأشيرات
24 عيف يعيد معلقة لبيت الزوجية
08 الذوق المجاني يقودنا للمأساة
11 زيتون الجوف ينطلق بـ 3 ملايين شجرة

الكهرباء انقطعت عن 70 ألفا.. و«التربية» علقت اختبارات السبت.. أمير مكة لـ شمس:

من خططوا ورسموا جدة.. أغرقوها!

Figure 4.2: Cover of *Shms* newspaper: the Prince of Jeddah reviews the flooded residential districts and holds the planners and developers responsible
Source: Althemali (2011).

The floods have become a subject in Saudi society. For the first time there was a culture of dealing with disasters in Saudi cities. Heavy rain warnings are to be announced in the newspapers, on TV channels, the radio, and in schools. The recurrent disasters exposed neighbourhoods which lacked stormwater runoff. Statistics accounting for flood damage by Al-Refay (2012) include the number of cars affected at 10,913, the number of properties affected at nearly 11,849, the number of missing persons at 32, and the number of dead at 132. The government distributed more than 25 million SR to help with the damage incurred by the flooding.

Apart from unexpected heavy rainfall in Jeddah, many other Saudi cities experienced unusual extreme weather disasters, like heavy snowfall in the southern town of Namas, despite the fact that snowfall is rarest of the rare across KSA (see Figure 4.3) (Al-Barqawi, 2012).

The above facts confirm the prevalence of climate change in KSA; hence, there were calls for urban infrastructure retrofitting on an urgent basis if these extreme weather events continued to occur, to make Saudi cities resilient and to ensure their preparedness for future natural disasters (heavy rainfalls or snowfalls). Street layouts, pavements, stormwater drainage networks, and cooling and heating equipment must be redesigned, retrofitted or replaced, as they can prevent losses at the time of disasters; these measures should not only be exercised at the level of the city's infrastructure but also at the building level.

Figure 4.3: Snow covering streets of Al Namas city: subdivision regulations created a built environment unsuited to these winter circumstances
Source: Al-Barqawi (2012).

4.3.2 Climate Conditions in Jeddah

It is really important to understand general climatic conditions in Jeddah for further study climate change challenges in the context of an urban setting.

4.3.2.1 Temperature Variations in Jeddah

Temperature, rainfall, humidity and wind patterns are critical to further prediction of unforeseen extreme climatic events or climate change in the city of Jeddah; they are equally important for the drafting of SR.

Figure 4.4 shows Jeddah's temperatures during the period between 1999 and 2010. The highest temperature was recorded up to 43–50°C during summer (from June to August) in 2005, while in previous years the highest temperature only reached 38°C at the same time of year (confirmed by Meteorological and Environmental Protection Department). From December to the end of February residents of Jeddah often used to frequent the areas for recreation and beaches, while the temperature becomes pleasant ranging from 18 to 25°C. Unfortunately, the planning, designing and development of green and open spaces, tree shade and pavements for pedestrians are not paid due attention in residential areas.

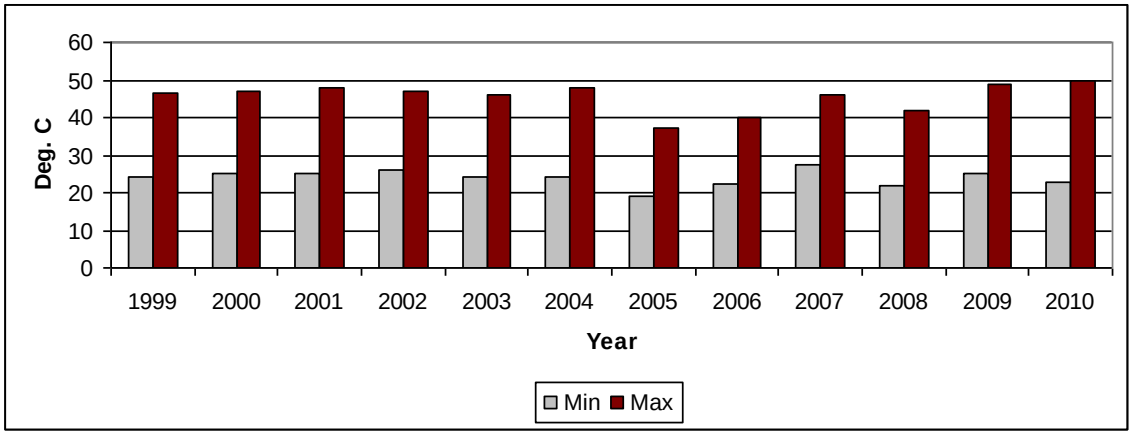


Figure 4.4: Temperature levels in Jeddah, 1999–2010
Source: adapted from the National Meteorology and Environment Centre (NMEC) in Jeddah

4.3.2.2 Precipitation in Jeddah

Normally Jeddah receives most of its rainfall from the end of October to the beginning of April. Studies indicates the annual average rainfall is low in the city, typically 40mm, while in the past three years the rainfall has increased significantly (Bokhari, 1978; Aziz-Alrahman, 1985; Salagoor, 1990). In 2009 the highest rate of rainfall ever registered occurred (270mm); in 2010 it was approximately 95mm, and in 2011 the average rainfall was 111mm (NMEC, 2010, 2011). In the past, Jeddah has had high overall rainfall rates, but there was no flooding and other damage because the rain was lighter, sporadic and over longer time periods. Al-Hmdan (1990) discussed two important periods in Jeddah concerning rainfall. The first was in 1968; the level of rainfall was approximately 80mm. The rain fell at the end of December, and eventually led to the demolition of the residential neighbourhood of Ghulail and part of the wall near the old Jeddah airport. In 1972, there were heavy rains again. Approximately 83mm fell at the end of November. The water accumulated in standing pools across the city that led to environmental pollution and a breeding ground for mosquitoes, which increases risk of dengue fever and produces great threats to urban health, which is an essential ingredient for any urban planning practice to examine.

4.3.2.3 Relative Humidity in Jeddah

Various studies (Bokhari, 1978; Aziz-Alrahman, 1985; Salagoor, 1990; JCC, 2011) confirm that Jeddah's location on the banks of the Red Sea leads to high humidity rates. Humidity rates reach their peak during the summer season, and ranging between 98% and 100%. In winter, moisture levels decline, humidity ranging from 5% to almost 12%. Humidity rates average between 60% and 70%, which make the city's climate unpleasant.

4.3.2.4 Winds in Jeddah

The old residential built environment of Jeddah was responsive to winds. The predominant winds blow from the north and the north-west. The wind also carries a sea breeze. Previously, the planning process and the formation of streets and residential buildings in the old Jeddah responded to the natural climatic conditions, using them to the benefit of the overall built environment (Bokhari, 1978; Aziz-Alrahman, 1985; Salagoor, 1990). Currently there is little interest in designing and planning for

environments that respond to the local climate, either to reduce energy expenditure or harness it. Beyond the lack of social or cultural interest, there is no requirement within any tier of the planning system to ensure appropriate responses to the local climatic context. In Jeddah, according to JCC (2011), the average wind speed was 7kts and usually mild to moderate during the year.

In brief, Jeddah's climatic conditions are characterised by high summer temperatures, low precipitation, high humidity and winds in general; the indigenous residents responded and accommodated these climatic considerations in their building planning practices, reflected clearly in the old city of Jeddah, while it seems to be neglected in modern city planning. Hence, this thesis attempts to put forward problem-solving recommendations to tackle the challenges produced by the city's climate, on the basis of which it would be possible to reform the current SR.

4.4 Jeddah's Demographics: Needs and Requirements

The demographics of Jeddah have changed significantly in 20 years. The regulations were created for communities quite different from today's. The residential districts in Jeddah are populated by Saudis and non-Saudis, Arabs and non-Arabs, Muslims and non-Muslims, etc. Each category of inhabitants has its own beliefs, desires and needs.

Significant changes have been observed in Jeddah's demography in the past two decades, while the same SR remains, which failed to accommodate unique challenges faced by individual cities because of their diverse sizes, growth, topography, climate and socio-cultural norms.

4.4.1 Jeddah's Population and its Developmental Implications

Similarly to many other Saudi cities, Jeddah has experienced unprecedented and rapid population growth during the last 60 years, attributed to economic growth, improved national healthcare, and immigrants and migrants (Al-Hmdan, 1990; Aljoufie et al., 2013; Abdulaal, 2012).

Figure 4.5 shows the growth of Jeddah's population. Some studies (e.g. Bokhari, 1978; Daghistani, 1990; Al-Hmdan, 1990; Al-Otabi, 2006) indicate that the population of the city prior to the demolition of the wall was 30,000. Currently, the population has reached more than 3.4 million (MOEP, 2010). Rapid population growth generated great

challenges for regulators to sustainably fulfil people's needs and aspirations in terms of housing, and concerned essential urban amenities and infrastructures, which ultimately paved the way to make the choice: whether to form new subdivision regulations or to continue with current conventional SR which do not take into account Jeddah's changing population.

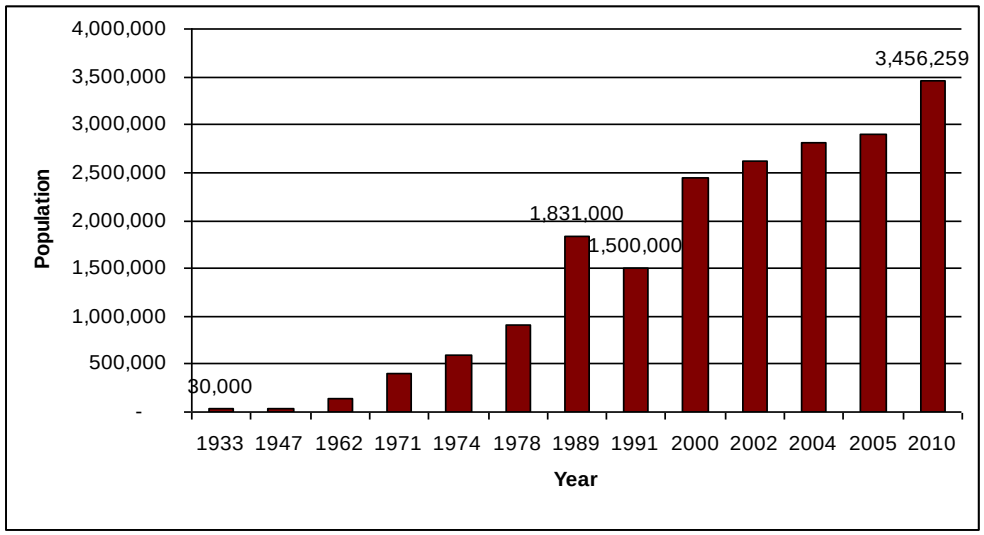


Figure 4.5: Jeddah's population growth, 1933–2010
Source: adapted from MOEP (1974, 1978, 1992, 2001, 2004, 2010) and Al-Hmdan (1990)

4.4.2 Population Analysis

Seven aspects related to the population are discussed below: population projections, national population distribution, distribution of nationalities across the population, age structure, family size, employment status, and household income.

4.4.2.1 Population Projection

There are many studies on Jeddah's population growth estimates, which indicate that the city's population will reach 4.5 million in 2015 and with an annual growth rate of 3.55% it could touch 13 million in 2052 (Al-Beeah Consultancy Office, 2004; Qadah et al., 2004). The rapid population growth is putting stress on regulators to improve the form, types and components of LSPs, especially in the areas where future expansion will occur.

Previous studies propose several future population growth estimates, where the population expectation for Jeddah should be taken seriously by regulators and private

developers in the process of planning, designing and developing LSPs (Qadah et al., 2004; Al-Beeah Consultancy Office, 2004; Mandeli, 2011). This thesis will attempt to demonstrate how it would be possible to accommodate future population growth under expansion through enabled LSPs.

4.4.2.2 National Population Distribution

Figure 4.6 illustrates the percentages of the native Saudi population and expatriates in Jeddah between 1974 and 2010. In 1974 the percentage of natives was greater than that of expatriates. The predominately native population predates the growth and expansion of the city. Presently, there are equal numbers of natives and expatriates living in Jeddah. The city of Jeddah at the moment is a favourable choice for migration (work, study or business investment). Thus, Jeddah city is heading towards becoming a globalised cosmopolitan city, as reflected by its population distribution.

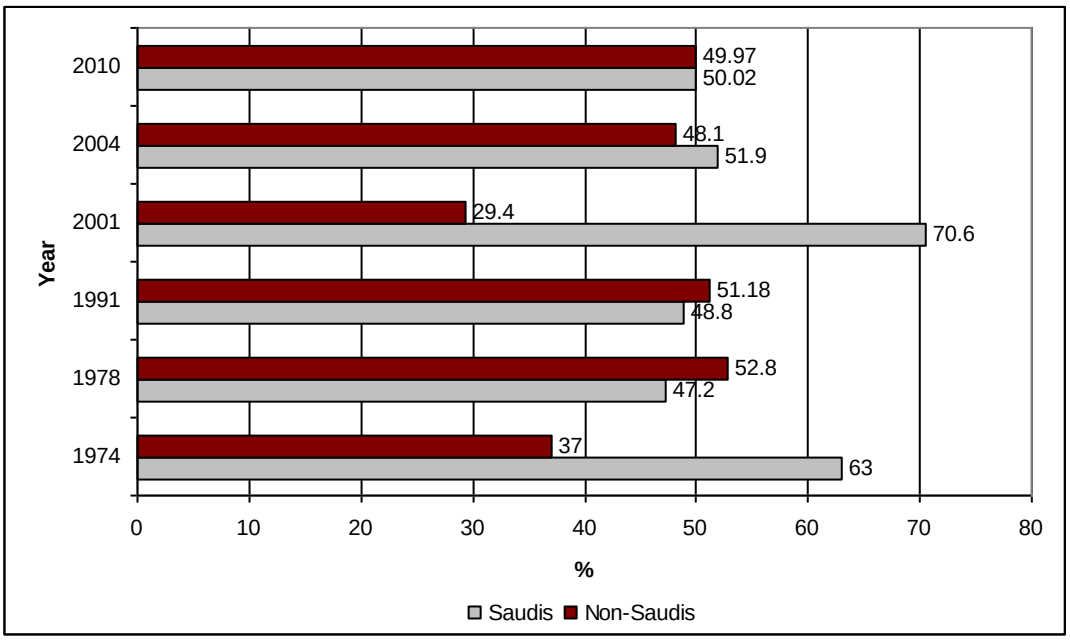


Figure 4.6: Jeddah population nationality structure evolution, 1974–2010
Source: adapted from MOEP (1974, 1978, 1992, 2001, 2004, 2010) and Al-Hmdan (1990)

4.4.2.3 Nationality Distribution

The distribution of nationalities, shown in Figure 4.7, indicates that the Saudis represent the largest segment of the population, accounting for more than 50% of the total population. Asians make up approximately 25% of the population, followed by non-Saudi Arabs. Each of these categories of the Jeddah population have opinions, desires and needs, requiring a variety of related components and characteristics of residential areas. For example, usually some spaces are assigned to public services within a subdivision plan. A mosque is a common public service allocation, but is appropriate only when the majority population is Muslim. There are non-Muslims that have other religious, even non-religious, needs and desires that should be taken into account when planning for public services (MOEP, 2010).

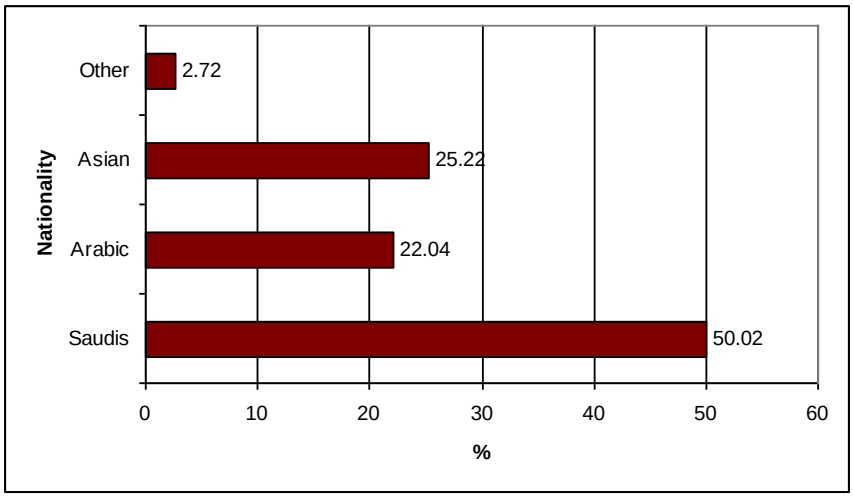


Figure 4.7: Distribution of nationalities among Jeddah's population in 2010.
Source: adapted from MOEP (2010)

4.4.2.4 Age Composition

Generally, the population of Jeddah is young. Thirty-nine per cent of the total population is under the age of 15. This age group has varied recreational needs, in residential areas for instance, in comparison with the same age group three decades ago.

Figure 4.8 clearly shows the demographic of Saudis under the age of 15 is higher than non-Saudis, where the percentage below 15 is 21.72% (see Figure 4.9). The discrepancy is caused by immigrant labourers that arrive in Jeddah at working age. Many of the immigrant workers are single, or otherwise unaccompanied by family members. In contrast, the young age group – both Saudis and non-Saudis – have specific

entertainment needs and desires. Those that make up the large young generation also have longer life expectancies that will require different types and scopes of amenities within residential areas.

Thirty years from now, the younger generation will reach the age of 50 or 60. The age group is likely to be healthier, more active, and live longer than those of previous generations. Looking at retirement age and beyond, this generation will need providing for into their older age within their respective residential areas. The question here is whether urban planners will be able to adequately anticipate these needs in order to provide for a better future.

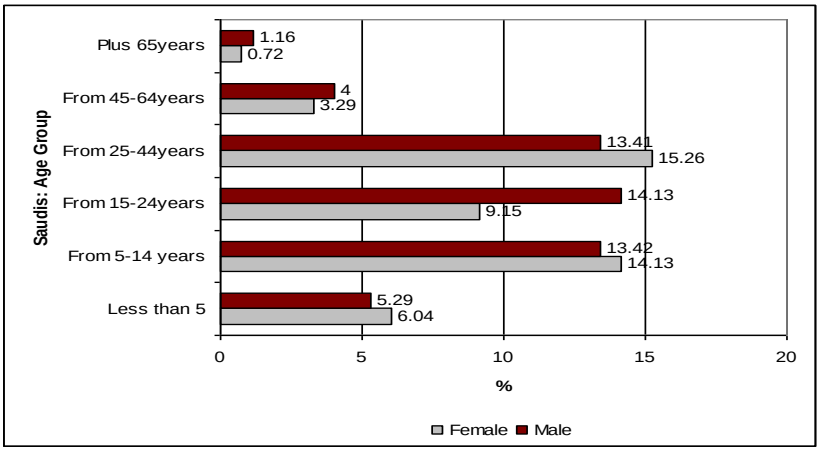


Figure 4.8: Age distribution of Saudi population in 2010
Source: adapted from MOEP (2010).

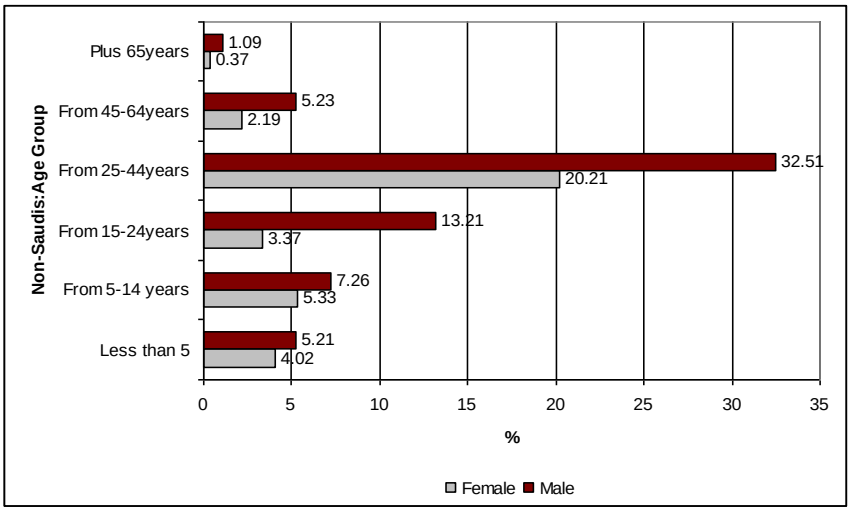


Figure 4.9: Age distribution of non-Saudi population in 2010
Source: adapted from MOEP (2010)

4.4.2.5 Household Size

MOEP's (2010) report showed that the average household size in Jeddah was 4.7. Comparing this rate with previous rates, such as that in the Fifth Master Plan of Jeddah in 2004, the average household size then was 4.9 persons per family, and 4.37 persons per family excluding servants as family members. By nationality the average family size of Saudis is 5.19, followed by Asians (4.53), non-Saudi Arabs (4.27) and others (3.89). Household size is an important indicator, ideally used to determine such urban planning issues as the appropriate numbers, types, quality and locations of housing, and other amenities (recreational, educational, medical, etc.).

4.4.2.6 Employment Status

Figure 4.10 illustrates the employment rate is close to 30%, while the percentage of students is about 34.74% (of the working-age population). The percentage of housewives is 16.18%. Figure 4.11 shows the percentage of households that have one worker at more than 52%, while the percentage of households that have two workers is about 22.96%. The latter statistic indicates that both husbands and wives work. The high cost of living forces both parents to work, and means there is a need for services and facilities close to home, ready to use, and convenient to them. Despite the existence of this busy category of population with new needs – for example, care centres for children, a variety of entertainment services, walking and cycling trails – their wishes are not taken into account in the SR and are not provided within their neighbourhoods. Lack of sufficient time for this category of the population, especially after the completion of the long working day, may lead to the frequency of use of the parks and playground within the neighbourhood.

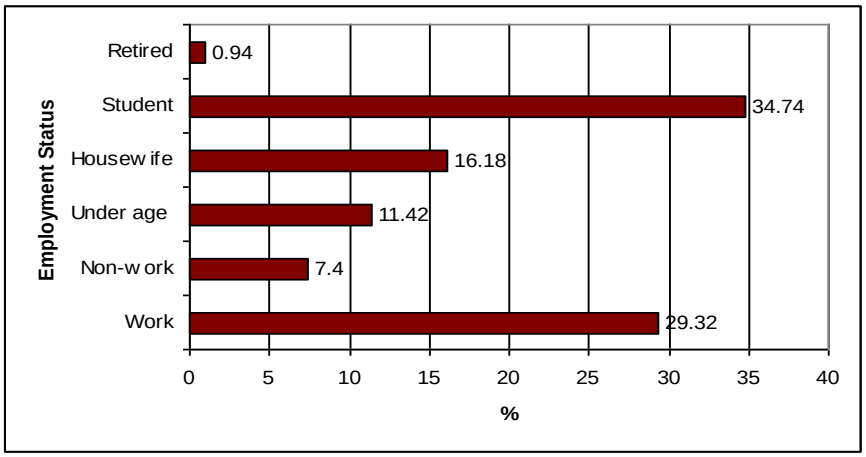


Figure 4.10: Distribution of families according to their employment situation in 2010
Source: adapted from MOEP (2010).

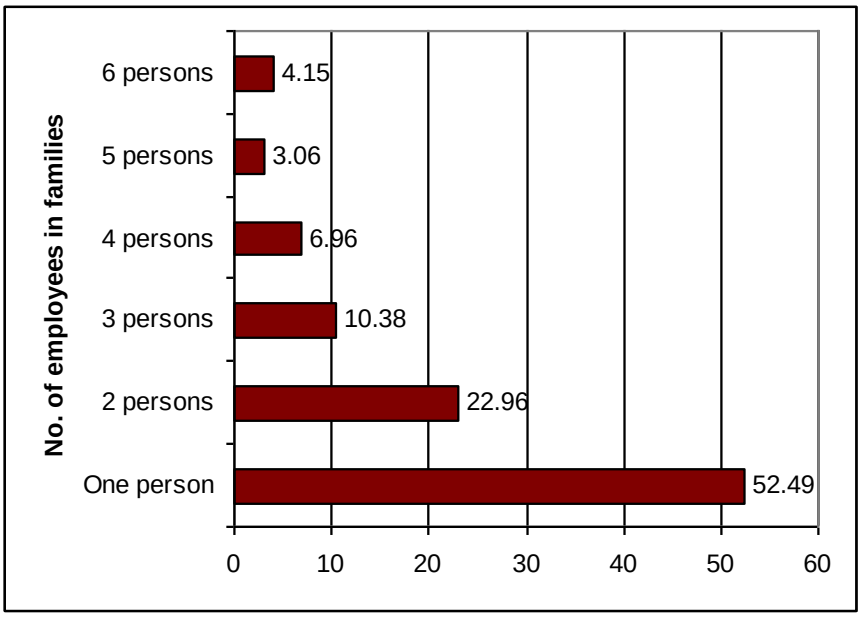


Figure 4.11: Number of employees in Jeddah families in 2010
Source: adapted from MOEP (2010).

4.4.2.7 Income

Approximately 33% of the Jeddah city population have an income in excess of 8,000 SR per month (more than £1,300), effectively making up the Saudi upper class which can afford the luxuries even if the living cost is rising.

As shown in Figure 4.12, 60% of the Jeddah population have monthly incomes under 8,000 SR per month (less than £1,300), comprising the middle and working classes.

This population is given no option but to reduce monthly expenses, by getting rid of servants and drivers. Such amenities are common in the typical Saudi household. Some recent local studies predicted there may be changes to spending patterns, i.e. cuts, in the typical Saudi family, for example recreation, goods, use of car, and even renting housing (Al-Sheakh, 2012; Okaz, 2013).

With the rising cost of living and urban expansion of Jeddah, there is an urgent need for public services and facilities to be close to residential units, ready for use by the districts' residents, instead of the current situation, where there are numerous amenities planned in the LSP, but have not come into existence yet. Abdulaal (1990) traced out that in Madina city, land has been allocated in subdivision plans for schools, mosques and parks but these have still not been developed as per plan, while the population threshold for the planned amenities has already been crossed. Thus, residents are forced to send their children to school outside the subdivision neighbourhood, often a long distance away with a time-consuming journey; this costs the household money and effort. Several households deployed spare cars with expatriate drivers just for transporting family members to schools, shops and recreation areas. These things are cumulatively responsible for high living costs and affect residents' incomes negatively.

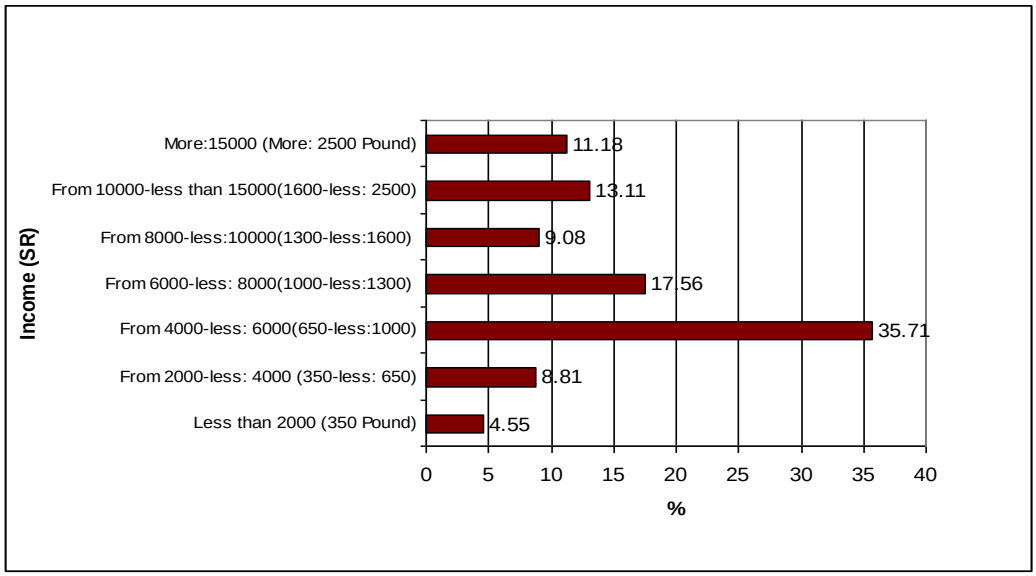


Figure 4.12: Families' distribution according to income categories
Source: adapted from Al-Beeah Consultancy Office (2004)

4.5 Jeddah's Dependency on Cars

Cars are the necessity in Jeddah's scenario, as public transport in the city is neither reliable nor adequate. This has resulted higher car ownerships, where around 90%

household own one or more cars, while the other 10% largely depend upon local taxis for transportation purposes. In fact, public transport is unpopular among native Saudis and used mainly only by expatriate labourers (MOEP, 2010).

Another important reason for higher car ownership is the lack of civic and commercial amenities in the neighbourhoods; the neighbourhoods are not walkable, and most of the amenities are scattered over the city landscape, which forces residents to travel long distances by cars. Planning for sustainable cities actually draws planners to plan a city in a manner where most of the civic amenities are located at walkable distances, which not only eases traffic congestion but also reduces carbon emissions, saves the residents time and money, and most of all improves the city's physical environment, urban health and quality of life. None of these exist in Jeddah's current situation (see Figure 4.13 for traffic congestion in Jeddah).

A recent study in the *Lancet* journal indicates that more than 65% of Saudis are not physically active (Lee et al., 2012). One of the important reasons preventing people from engaging in physical activity is inadequate pavements and lack of walkways within LSPs, as well as a lack of appropriate corridors for cyclists. Physical barriers in urban areas prevent human physical activity, as validated by a local study in the *Arab News* entitled: 'Walking up a storm on pavements' (Humaidan, 2011). Across a diverse sample of engineers, architects, and other specialists in Jeddah, all parties attributed people's lack of physical exercise as a direct result of inadequate pavements, poorly shaded routes, use of inappropriate materials, aesthetically unappealing and unsafe environments, and physical obstructions. Advertising companies use the pedestrian pavements to place billboards that interfere with proper usage by pedestrians (Humaidan, 2011). On the other hand, a news report in the *Shms* newspaper reveals that there are no options for Jeddah residents to engage in physical activities like walking, running or cycling in their neighbourhoods, due to the absence of supporting infrastructure and amenities, as well as safety measures. This, in fact, shows the deficiencies of the LSPs in practice; a few people risk their lives or health to walk, run and cycle while remaining vulnerable to traffic accidents (Al-Asmari, 2010) (see Figure 4.14).

Figure 4.13: Car ownership in Jeddah has increased dramatically, causing traffic congestion on connecting roads
Source: Al-Madina (2012).

Figure 4.14: Interviews with a number of teenagers in Jeddah in *Shms* newspaper, trivialising cycling
The teenagers complained about the lack of appropriate places within the districts, streets, and main road to cycle. In spite of the street design for cars, cycling put them at risk of being hit
Source: Al-Asmari (2010)

Based on various estimates there are approximately 872,000 cars in Jeddah city (837,000 private cars and 35,000 taxis) generating five million daily trips. Considering the higher number of cars and trips; traffic management in the city is quite poor, which resulted in 78,000 traffic accidents, 2,700 injuries and 350 deaths in the year 2007 alone (Jeddah Municipality, 2009a; Kattan Consulting Engineers Office, 2009; Al-Saadi, 2012; Al-Enainy; 2012).

All the above facts attract regulators' attention to the provision of safe neighbourhoods (by improved walkability, offering safe cycle routes, expanding the mass rapid public transport system and developing efficient transport management systems) in the LSPs of Jeddah.

4.6 Land Use, Urban Sprawl, and Subdivision Plans Activity

Over two decades ago, Abdulaal (1990) published his study about the development pattern of LSPs in Madina city, north of Jeddah. He concluded that the plans developed in Madina were based on singular land development rather than providing the final product or any part of it. The LSPs encouraged speculation more than comprehensive development, and demonstrated an ineffective pattern for land development, helping to increase government costs in providing public services, facilities and utility networks. These LSPs actually increased the costs of the municipality annual budget allocated for maintenance; and added to the suffering of the population as a result of non-implementation of land services. Moreover, they suffered from environmental problems such as lack of sanitation and drainage networks, and relied upon septic tanks which pollute groundwater; and last but not least, Abdulaal (1990) pointed out that this type of plan is premature, which is sufficient to meet the needs of the future population of the city in the case of developing residential plots and transferring them to residential units. The national development process is a singular, fragmented, and controlled by land developers.

In Jeddah there are two development types. The first is quite similar to the pattern that emerged in Madina. An alternative is the unconventional form, but in very limited numbers (see Chapter 10). The SR contributed significantly to the emergence of a conventional form and continued to appear in Jeddah and other cities across KSA. The pattern of LSP development is the largest challenge currently faced by Jeddah. This

pattern currently forms the majority of Jeddah's urban mass and has come to represent a high percentage of land use.

The strategic plan report for Jeddah (Jeddah municipality, 2009a) indicates that the city's land area is greater than that of New York city or Hong Kong, despite the fact that the populations of each of the two cities are more than double the population of Jeddah. Figure 4.15 shows the urban development of the Jeddah area during the past few years. Some natural and non-natural boundaries, such as the mountains to the east, the sea to the west, the industrial city to the south, and the airport to the north contributed to the predominantly northward expansion of the city. The area of Jeddah in the 1950s was 15.3km^2 (e.g. Bokhari, 1978; Aziz-Alrahman, 1985; Salagoor, 1990; Al-Hathloul and Mughal, 1991). The figure jumped to more than 1,300km^2 in 2004 (Al-Beeah Consultancy Office, 2004), and again to 1,765km^2 in 2009 (Jeddah Municipality, 2009a). The future expectations of Jeddah's land area, according to Al-Beeah Consultancy Office (2004) suggest that the area will double over the next 50 years to more than three times its current size. By 2045, the area is estimated to grow to 3,400km^2. The estimates of the future size and scale of Jeddah present a number of critical planning challenges.

Urban land use is among the most powerful means to direct development as the uses dictate the kind and type of urban development allowable (Egbaria, 2003). A recent study on Jeddah (Aljoufie et al., 2013) explains the development of land uses in Jeddah between 1970 and 2007. The residential area use increased from 20km^2 in 1970 to more than 213km^2 in 2007, and the commercial use increased from 30km^2 to 156km^2 during the same period. This study relies on out-of-date information relating to uses of land to arrive at the numbers cited. Furthermore, the study does not take into account the area and number of subdivision plans that have appeared to the north of Jeddah. A striking aspect of the study is a spatial map of Jeddah that illustrates the development of Jeddah's growth northward and its relationship to the development of land uses (see Figure 4.16). Table 4.1 shows the latest statistics relating to analysis of land uses in Jeddah, whereby residential land use reached 50%. The non-developed lands attained more than 25%, followed by regional uses at more than 12% (Jeddah Municipality, 2009a).

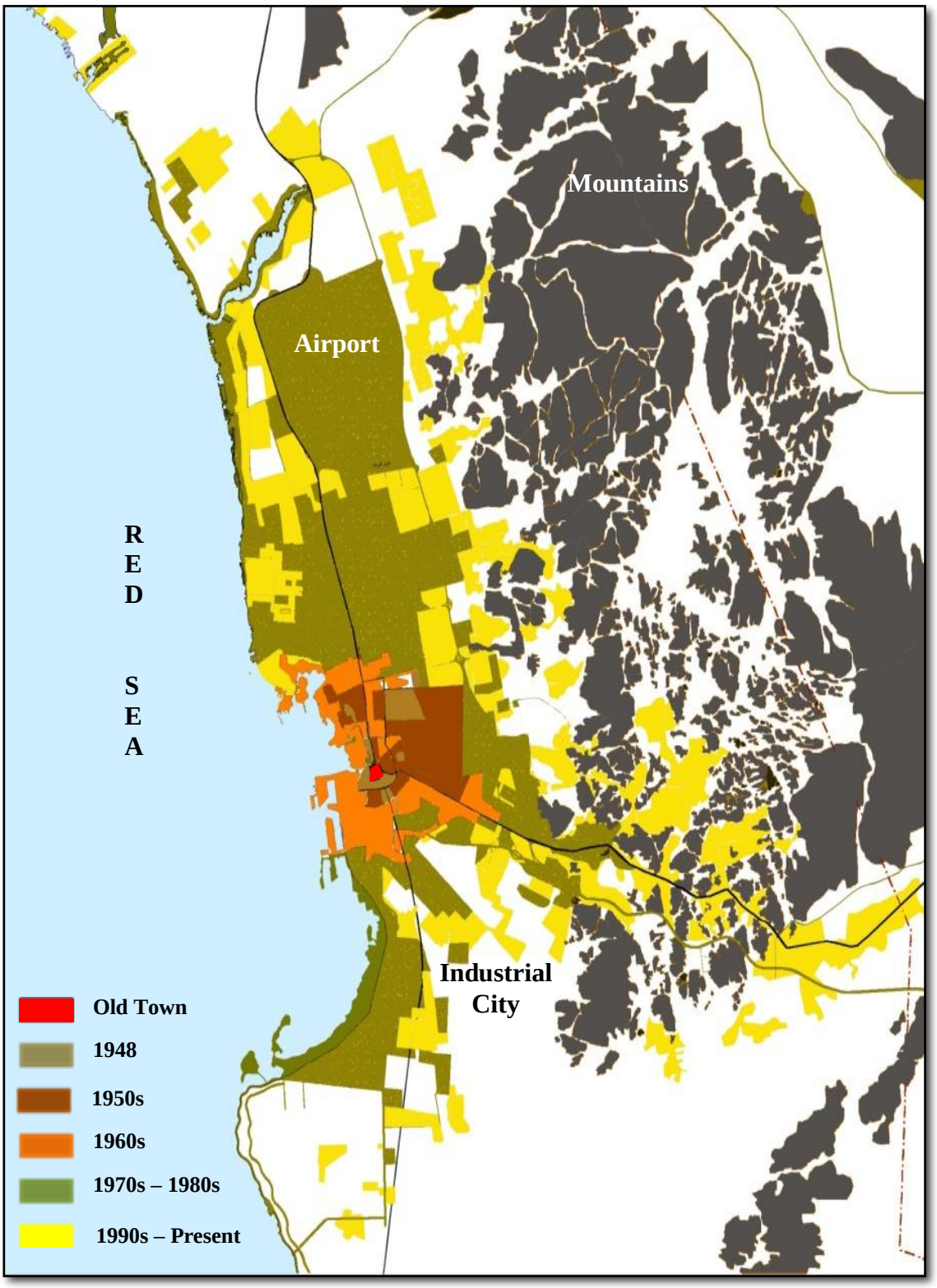


Figure 4.15: Jeddah urban growth expansion
Source: Al-Beeah Consultancy Office (2004) and Jeddah Municipality (2009a).

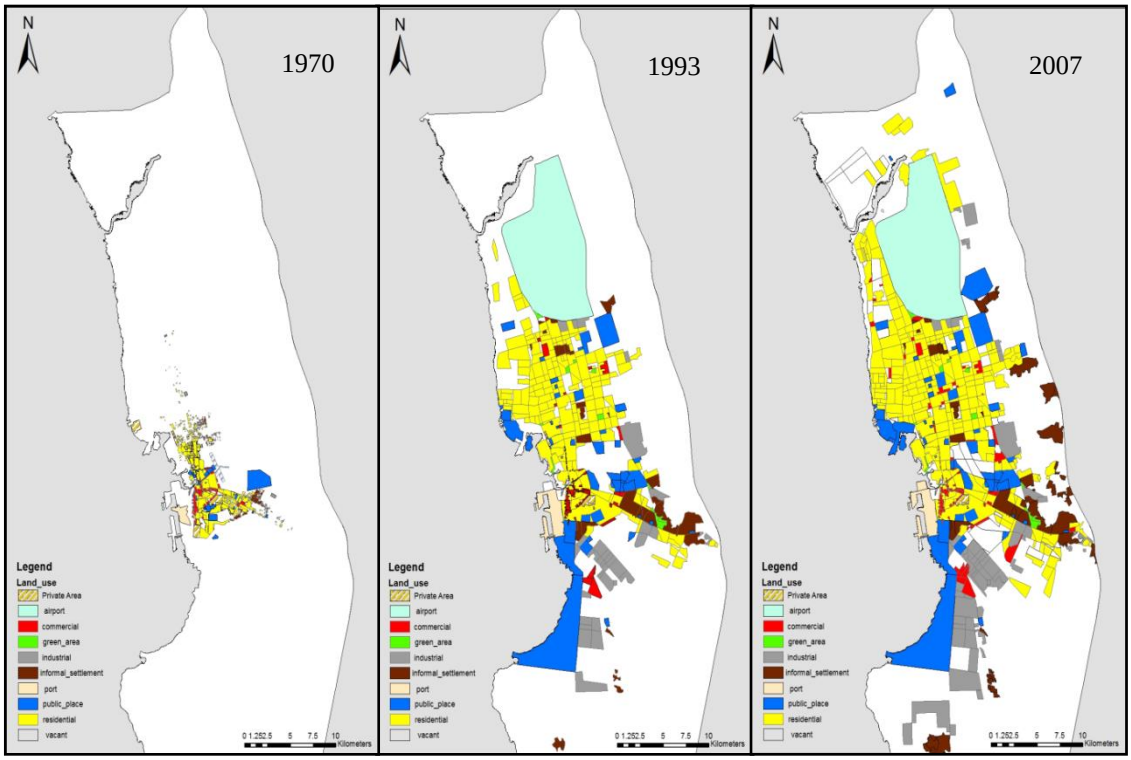


Figure 4.16: Urban land uses growth in Jeddah, 1970–2007
Source: Aljoufie et al (2013).

Table 4.1: Land uses in Jeddah

Land Uses	**Area (%)**	**Area (km^2)**
Residential	50	882
General Services	4.9	88
Regional Services	12.1	213
Vacant Land	25.2	445
Mountains	7.8	137
Total Metropolitan Area	**100**	**1,765**

Source: Jeddah Municipality (2009a)

An accurate classification of LSPs executed in Jeddah was designed, which depends on the classifications of Abdulaal (1990) and information relating to land subdivision plans obtained from Jeddah Municipality, planning documents, construction permits, and satellite images of Jeddah. Table 4.1 shows the resulting classification, which identifies three types:

- *Type I*: 64% of LSPs executed in Jeddah are built as residential units;
- *Type II*: 25% of subdivision plans are partially built; and
- *Type III*: 11% have not yet been built or have been abandoned (see Figure 4.17 and Table 4.1).

The classification is based the proportion of developed plots within the LSPs. When the proportion of the developed plots is over 50% then it is categorised as built. In cases where the number of developed plots is less than 50%, the scheme is considered partially built. In cases where there is no construction or development, or where there is development of a few plots only, it has been classified as unbuilt or abandoned. These plans have been the biggest challenges in Jeddah, as they suffer from several problems. Issues include individual development for lots, fragmented distribution which increases government costs (see Tables 4.2 and 4.3), and a dissatisfaction and inconvenienced population. For instance, between 2003 and 2009, Jeddah Municipality spent more than 460 million from its budget to cover programmes, contracts of operations, and maintenance and hygiene costs for residential areas in Jeddah. The municipality depends on SR that do not allow for the supervision of the LSP developers to ensure that they provide the final product or parts of it. If this thought had been applied years ago, then residential areas in Jeddah would not be classified as unbuilt or partially built.

Table 4.2: Land subdivision plans classification in Jeddah according to plot development

Residential Areas (Land Subdivision Plans)	**Number of Land Subdivision Plans**	**Percentage of All LSPs**
Built	889	64
Partially Built	359	25
Not Built	158	11
Total	1434	100

Source: Al-Beeah Consultancy Office (2004), Jeddah Municipality (2009a) and researcher fieldwork.

Note: The classification is for the conventional subdivision plans only. In Jeddah there are 24 unconventional subdivisions built by big real-estate companies and some government sectors. There are 63 subdivision plans approved but not implemented by developers due to legal and economic issues.

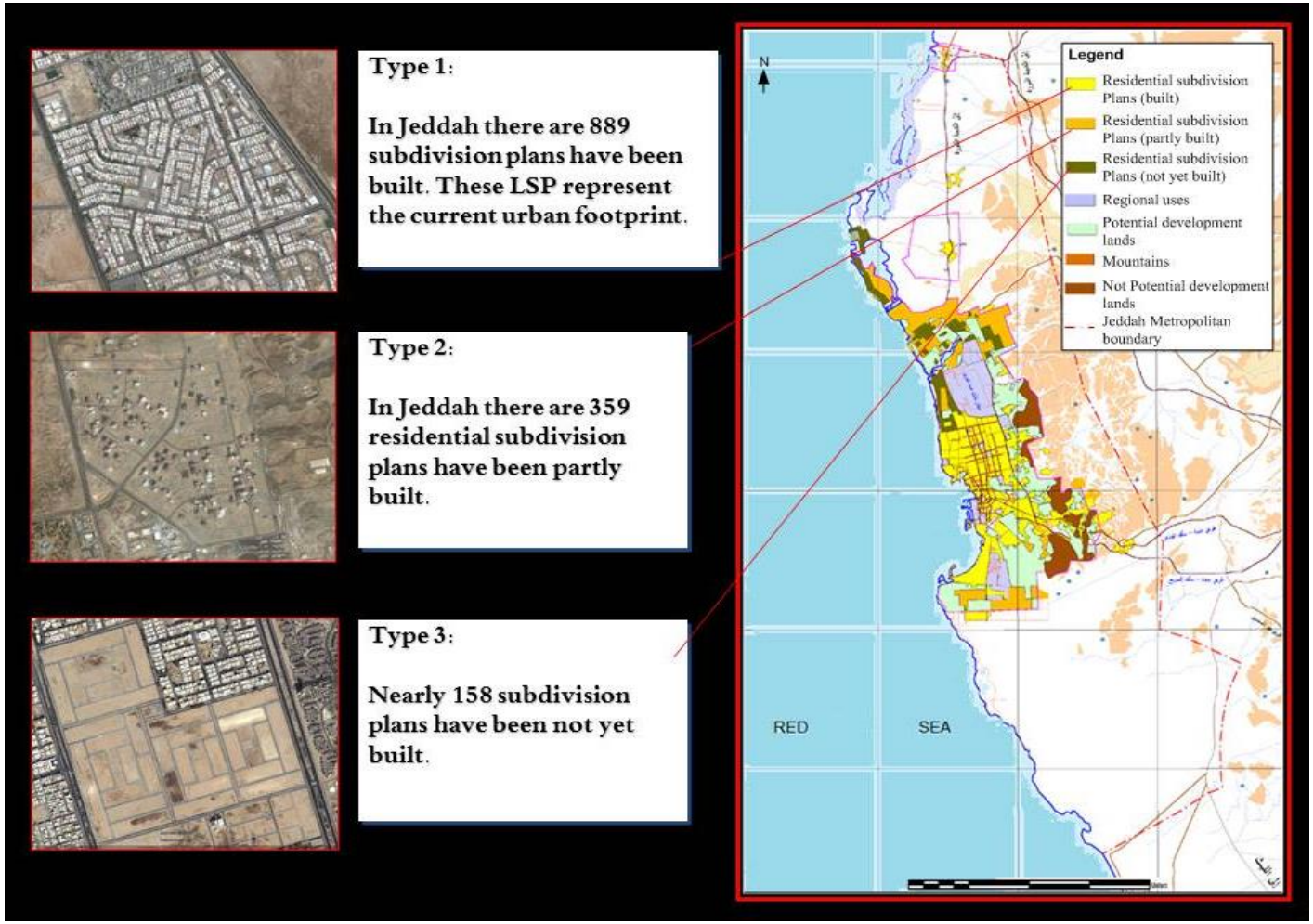


Figure 4.17: There are three types of implemented LSP in Jeddah. These are considered one of the biggest planning challenges facing Jeddah in the 21st century
Source: Jeddah Municipality (2009a) and Qurnfulah (2012)

Table 4.3: Jeddah Municipality budget over a period of six years. It is clear from the table that the cost of maintenance and hygiene has increased

Jeddah Municipality Budget from 2003 to 2009 (SR)						
Budget items	2003/2004	2004/2005	2005/2006	2006/2007	2007/2008	2008/2009
Salaries and allowances	138,411,000	143,990,000	144,000,000	180,664,000	187,668,000	226,480,000
Operating expenses	13,991,000	13,991,000	16,031,000	19,799,000	23,439,000	24,350,000
Programmes and contracts of operations, maintenance and hygiene	279,000,000	300,590,000	360,000,000	441,000,000	450,000,000	467,000,000
Projects	310,373,000	406,374,000	482,000,000	582,750,000	960,931,000	1,048,093,000
Total	741,775,000	864,945,000	1,002,031,000	1,224,213,000	1,622,038,000	1,765,923,000

Source: Jeddah Municipality (2009b).

Table 4.4: Programmes and contracts of operations, maintenance and hygiene costs analysis for Jeddah Municipality budget in 2009

Maintenance and Hygiene Contract costs in Jeddah	**Costs (SR)**
Street maintenance – LSP in north of Jeddah	91,289,000
Street maintenance – LSP in south of Jeddah	25,000,000
Street maintenance - centre and east	90,000,000
Preventive maintenance and asphalting of streets	59,000,000
Changing and renewing lamp-posts	15,042,000
Changing steel lamp-posts to fibreglass	5,142,000
Changing steel lamp-posts to fibreglass in Corniche area	4,000,000
Hygiene	98,000,000
Other	79,527,000
Total	467,000,000

Source: Jeddah Municipality (2009b)

4.7 Challenges of Adequate Infrastructure Provision

4.7.1 Adequacy of Available Infrastructure

Little information is available to determine the adequacy of infrastructure in Jeddah; there are more than 50 districts that have been created in the city on the basis of a single set of SR that came from the Riyadh (central government). Some of these LSPs have been approved and developed without proper identification of the spaces and sites for public infrastructure and amenities; poor implementation of subdivision plans was carried out during the first phase of expansion and growth in Jeddah. In contrast, after the emergence of SR, the process of adopting LSPs could not be carried out without deducting space for these services (for example: parks, mosques, schools). This LSP approval process takes place between developers and Jeddah Municipality without involving other government agencies responsible for the implementation of the service sites in the future. The process does not require developers to develop part of these services and facilities through the development stages. It does not stress the importance of coordination with appropriate government agencies during the design and development process of LSPs. Also, it does not force developers to provide evidence or analytical studies about the location and accessibility of these service sites within the LSP (Harefsha, 2008).

Among other challenges for the non-provision of adequate infrastructure, there are delays in implementation of infrastructure sites, poor facilities to serve the residents of the LSPs, and poor quality locations for these services leading to residents' reliance on cars. A study conducted in Lee County, Florida, illustrates the development of micro-planning measures between organisers and several committees within the state responsible for locating schools within residential areas (Lees et al., 2008). The study focused on discussing the concept of cooperation between the stakeholders, and which obstacles they faced. The findings emphasise the importance of engaging other departments, for example the health department, in the process of identification and selection of school sites within the state. This study recommends establishing integration among stakeholders for LSPs, especially the health department, to increase walkability, cycling and other physical and sports activities among students.

Jeddah Urban Observatory Centre (2007) published a study that measured satisfaction levels of more than 10,677 families within more than 50 residential areas in Jeddah. The residents were asked about a wide range of indicators relating to the quality of life such

as: the availability and adequacy of public services and facilities (e.g. educational, health, religious and social services), appropriate pavements, adequate infrastructure networks, disability access within residential neighbourhoods, and road conditions, as well as many other indicators. The study shows that there was dissatisfaction across a large sample of the population regarding road conditions, rainwater drainage, sanitation, water services, and pavements. In the same study a large proportion of the population were less satisfied with the availability and adequacy of educational, health, social and leisure services and parking within Jeddah's districts.

Harefsha (2008) concludes that among various outcomes, the most important are the absence of spatial and descriptive information related to the sites' infrastructure and service sites within executed LSPs, which has led to a government failure to implement and develop services. These results were reached by conducting a series of interviews with some land developers, engineering offices and government officials responsible for the implementation of public services and facility plots within the implemented LSPs in Jeddah. Also, a sample of implemented LSPs was studied, which aided in determining the ratio of service areas for executed and unimplemented public facilities (Harefsha, 2008).

To discover the current and future situation for a number of public services in Jeddah, some figures have been published in the Fifth Jeddah Master Plan study. Table 4.4 shows service classifications linked to the present and expected population of Jeddah. It is clear that there is a large number of future government services still needed by the residents of Jeddah. The question is whether Jeddah Municipality will continue with the future approval of LSPs based on regulations that do not take into account involvement of other government agencies, and do not force developers to coordinate practically in the design and development process or to provide the final product or part of it; that do not encourage the future population to walk or cycle to the locations of public services within the LSP, but rather rely frequently on car use, as currently occurs.

Table 4.5: Number of governmental services and facilities required in Jeddah

Services and facilities (No.)	Current status for 2002 (population: 2.56 million)	Future status for 2035 (expected population: 8.14 million)
Local mosques	849	2,035
Friday mosques	365	2,034
Eid venues	220	522
Primary schools	660	1,411
Intermediate schools	365	825
Secondary school	220	673
Clinics	186	542
Emergency rooms	14	54
Police stations	8	162
Civil defence centres	29	163
Total area (hectares) of recreational and open spaces	43	2,035

Source: Al-Beeah Consultancy Office (2004)

Current Master Plan does not contain a district-level spatial map of Jeddah, which makes understanding executed and non-executed site locations in relation to infrastructure quite difficult. It does not even have any indication whether site locations promote LSP residents to use public transport or not (Al-Beeah Consultancy Office, 2004).

It is important that the designer of the LSP analyse the design implications of their work at a deep level, and accommodate the diverse needs of government agencies responsible for public services during the designing and planning stages of a subdivision plan (Al-Oleat, 2004; Friedman, 2007; Al-Freadi, 2008).

4.8 Conclusion

This chapter discussed a range of challenges in this century, which include climate change, population growth and the different needs of the people, sprawling urban land use, environmental pollution, and last but not least the (in)adequacy and limited availability of public services, These challenges have been created because of the conventional pattern of LSP development that was produced by adopting one centralised set of SR. SR has since been unified, is considered weak, does not take into account the provision of a final product nor several important aspects of planning for a city such as Jeddah. However, alongside these challenges arise some great opportunities

for both the planners and developers in Jeddah, which is evident from some of the US and KSA examples highlighted above.

The regulators now carry the responsibility of drafting new SR appropriate to the circumstances, characteristics, population, climate, location, and form of the city. For developers, the response to these challenges provides a great opportunity to reconsider the way the design, planning and development processes are used in conventional LSP practice. Even developers must consider what has already been developed and methods to develop them further in light of the issues raised. The next chapter will look at the product of conventional subdivision processes through a case study analysis to explore the quality of what is being produced currently by SR and conventional developers in Jeddah.

CHAPTER FIVE: IMPACTS OF SUBDIVISION REGULATIONS ON THE CONTEMPORARY URBAN FORM OF JEDDAH

Chapter 5: Impacts of Subdivision Regulations on the Contemporary Urban Form of Jeddah

5.1 Introduction

Jeddah is one of the most important cities in KSA due to its location and size. The city landscape has undergone rapid changes and development during the last century in response to various factors such as government policies, demographic changes, economic conditions and environmental concerns. Though rising population and policy measures like SR have shaped Jeddah a great deal, the phenomenon remains less studied; hence, to fulfil that knowledge gap, this chapter attempts a comprehensive review of the Saudi government's development strategy, with special reference to planning and implementation of subdivision planning regulations in the city.

The chapter is organised into six main sections. Section 5.2 explains the data collection methodology for data relevant to this chapter, while Section 5.3 presents an overview of ancient Jeddah city and its transformation into a modern cosmopolitan one. Section 5.4 takes a chronological view of Jeddah's evolution across various developmental stages the formulation of development plans, Jeddah master plans and SR leading to the formation of traditional and modern residential areas. Section 5.5 summarises LSP activity versus Jeddah master plans. Section 5.6 concludes the chapter by summarising the major learning points derived through this review.

5.2 Data Collection Procedures

The objectives of the research made it necessary to gain a good understanding of the current and future challenges for Jeddah's development, how it has developed, and the impact of SR on it.

To achieve this, data was collected from four main sources: academic literature for relevant texts and databases; Jeddah Municipality archives, to gain access to important planning documents such as the municipality's master plans for the last 30 years and the five current key planning documents, both current and historical; expert opinions; and local newspapers.

Very little information was available on the internet on government policies and strategies; however, Jeddah Municipality's archive contains rich information of master

plans prepared over the last three decades, as well as subdivision plans; apart from these, many policy documents were also available in Arabic, which needed to be translated before citation. Opinions were sought from face-to-face interviews with academics from King Abdul Aziz University, and also with some real-estate experts, to save time. These key informants proved valuable in obtaining knowledge on the history and evolution of the subdivision plan and corresponding issues and problems in their implementation. Patterns of LSPs and related maps of Jeddah were also analysed and presented with the help of GIS software (ARCView 10).

5.3 Jeddah: Location, History and Significance

Jeddah is one of the largest cities in the Kingdom, located within the boundaries of the Makkah region. Jeddah has an 80km long coast to the west; the holy city of Makkah is 73km to its east; Taif is 150km distant, while the cities of Madina and Asif are on its southern side (Adas, 2001; Bokhari, 1978).

There are two stories about Jeddah's naming; the first is that the name 'Jeddah' in Arbaic was derived from the legend that the burial place of Eve is in the cemetery located in the Old Town's north-eastern district, while the second is that Jeddah was named after the grandson of a tribal leader, Quda'a, who settled in the area approximately 2,500 years ago. Others have suggested a linguistic explanation, i.e. 'part of land connected to water'. The city has many nicknames such as the '*Red Sea Mermaid*', and '*Gate of the Two Holy Mosques*' (e.g. Al-Hathloul and Mughal, 1991; Adas, 2001; Telmesani et al., 2009).

Jeddah certainly existed in antiquity and developed into a major commercial hub thanks to trading caravan routes carrying fish, spices, incense and gum passing through Jeddah along the Red Sea coastal region. The importance of the city increased further after the establishment of the Islamic caliphate as the city became the centre of commercial activities for Makkah and Madina during the *Hajj* (Islamic pilgrimage) (Al-Hmdan, 1990; Adas, 2001; Telmesani et al., 2009).

Jeddah gained greater prominence during the Ottoman Empire period from the beginning of the 16th century through to the 20th century. It was called '*Bilad al Kanasil*' meaning 'the City of Consulates', as many European countries opened their consulates in Jeddah, as shown in Figure 5.2 (Daghistani, 1990; Salagoor, 1990; Adas, 2001).

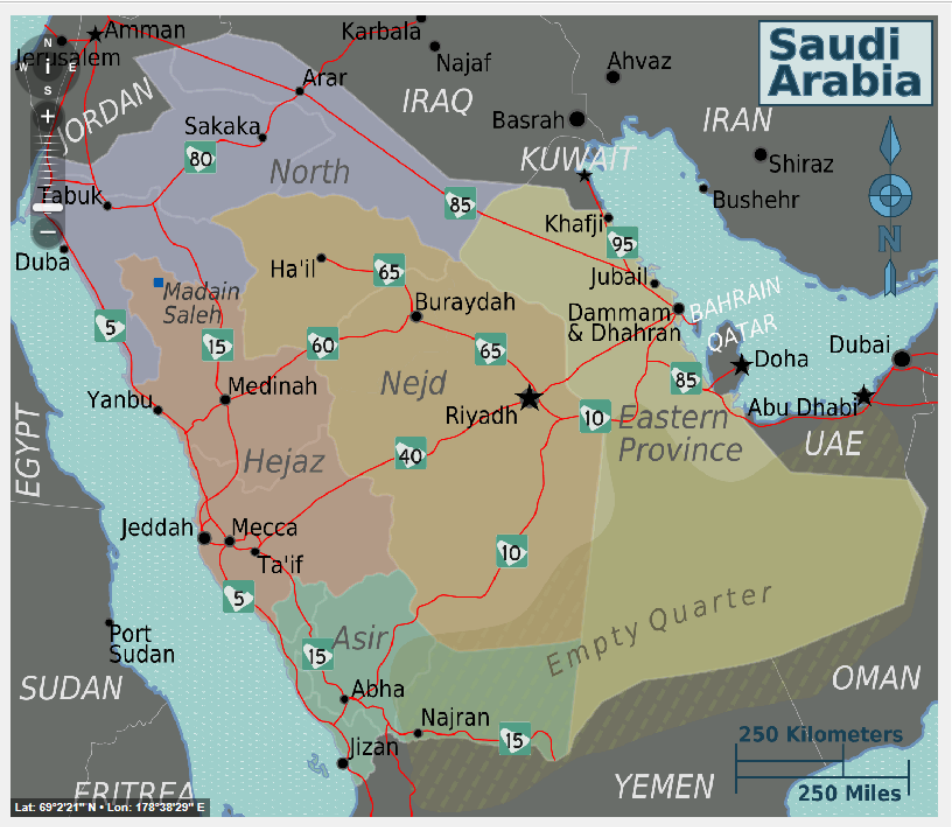


Figure 5.1: Geographic location of Jeddah city
Source: Google Maps (2014)

Figure 5.2: British (left) and French (right) consulates in Jeddah
Source: Jeddah Municipality (2012b).

After the establishment of the Kingdom of Saudi Arabia in 1932, Jeddah attained the position of key commercial and religious gateway through Jeddah Islamic Seaport and King Abdul Aziz International Airport, established in 1951 and 1981 respectively. As of

2004, commuters through Jeddah airport exceeded 15 million, while the import of commodities through Jeddah port was over 55% of KSA's total (Al-Beeah Consultancy Office, 2004).

With more than 320 shopping centres (21% of the total in KSA) and over 100 investment companies, Jeddah has become one of the few cities in the Kingdom to fully embrace capitalist practices and institutions (Al-Beeah Consultancy Office, 2004). Recent research has ranked Jeddah third out of 200 Saudi cities in terms of economic growth and employment opportunities (Brookings, 2012). Abdulaal (2012) has also indicated Jeddah as the third most popular choice for tourists in the Kingdom, as nearly six million people visited the city in 2011.

5.4 Jeddah's Development across History

Jeddah has undergone various developmental phases affected by a host of factors such as social and cultural values, economic prosperity and rapid population growth, application of master plans and land-use regulations. Broadly speaking, these developments can be divided into three phases: 1) the expansion of the traditional city prior to the demolition of the city wall in 1947; 2) the development of unplanned urban forms until 1960; and 3) the planned development from 1960 to date. A description of key factors and salient features of development in each era has been explained in the following subsections.

5.4.1 Phase One: Expansion of Traditional City (up to 1947)

Information about ancient Jeddah has been drawn from the manuscripts of many Arab travellers and Italian, Danish, French, Swiss, English and Scottish adventurers (Bokhari, 1978; Adas, 2001; Telmesani et al., 2009). Most of these visitors have described Jeddah as an unattractive place; few have found it beautiful.

According to Nasiri (1050), Jeddah was a thriving town of 5,000 people surrounded by an impenetrable city wall, while markets were filled with the staples of daily life brought from the neighbouring villages. In line with his description, Ibn Mujawir, in the 13th century, drew a map of the old Jeddah depicting the city wall (shown in Figure 5.3). Later on, Ibn Battuta, in 1326, also described Jeddah as 'a city surrounded by defensive walls' (Telmesani et al., 2009).

In 1762, the famous European traveller Carsten Niebuhr drew a detailed map of Jeddah while visiting the Ottoman Empire. According to his description and map, Jeddah was surrounded by defensive walls, five metres high and two metres wide. The corners of the wall were built with local limestone blocks. The city was accessible through several gates built within the ancient wall. The gate of Makkah was one of the most famous of these gates pointing the route to the Holy Ka'aba while the second gate was named after Madina and located on the northern wall looking towards Madina, the Prophet's Mosque. Other doors included the gate of the Moroccans and the gate to Al Arba'ain, located on the waterfront with access to the seaport.

Jeddah continued to flourish in the Ottoman Empire with a population of 25,000 (in 1920) living in six residential areas (*harat*), of which four existed within the city wall and two outside it, as shown in Figure 5.3 (Aziz-al-Rahman, 1985). The districts bore the same names as they do now. The districts are known as quarters and are described here:

- *Al-Sham Quarter*: located inside the wall in the north-western part of the city near the sea.
- *Al-Madhlum Quarter*: inside the wall, one of the oldest and busiest residential areas.
- *Al-Yemen Quarter*: one of the largest sites in the south-east of the city.
- *Harat Al-Bahra Quarter*: a sea quarter located to the south-west of the city.
- *Al-Kandarah Quarter*: located in the north-eastern quarter of the old city (this quarter is outside the city wall and it developed in the beginning as a resort for the families of the traders, especially under the rule of the Ottoman Empire. Under the Saudi state, it has become a residential area dedicated to housing Bedouin immigrants.
- *Al-Bughdadeyah Quarter*: located outside the wall, it was inhabited by Bedouin immigrants and continues to be known for this today (Daghistani, 1990; Al-Hmdan, 1990; Salagoor, 1990; Adas, 2001; Telmesani et al., 2009).

Figure 5.3: Old Jeddah: city wall and gates in 1938 (A) and quarters (B)
Source: Telmesani et al. (2009).

After Jeddah had fallen under Saudi state authority in 1924, and prior to the demolition of the city wall, the shape of the old city had not changed, whereby the form of the city depended on the Islamic principles and standards that formed many of the neighbouring Islamic cities of Jeddah, including Makkah and Madina (Adas, 2001; Telmesani et al., 2009). Ben-Joseph (2005) described the Islamic principles as follows:

> *Islamic law and rules of the Islamic city show a great deal of adaptation and emphasis on social behavior rather than prescriptive physical regulation. It seems likely that the enforcement of such rules depended more on the customs of the town than the role of officialdom. […] The rules are based more on social behavior and cultural norms than the prescriptive physical regulations. Such social norms suggest that in earlier times, prescriptive quantitative, and centralized systems of the city planning rules were not the sole force behind urban regulations* (p.17).

Jeddah city was shaped by adopting the Islamic rules. These regulations were based on the social behaviour and cultural norms of Jeddah local community during this period. This role has created one type of development which contributed substantially to Jeddah's place identity.

The form of Jeddah's Old Town is based on the traditional development pattern. This traditional form is the product of following the function of the whole society (Abdulgani, 1993; Adas, 2001). In other words, the Islamic guidance and standards, in addition to the unique social and cultural characteristics of Jeddah's community at the time, are considered the most important reasons for the emergence a traditional building type (see Figure 5.3). The city wall held a major role in shaping the architectural style of the ancient city, by restricting growth. The limited land area available for construction within the boundaries of the wall forced the then population to build vertically instead of horizontally, which kept households close to each other increasing the intensity of social relations (e.g. Abdulgani, 1993; Adas, 2001; Telmesani et al., 2009).

Due to the local climate (sea breezes), the *suq* (shops or shopping areas) and the form of Jeddah city, shaped by the sea, residential areas were inhabited in a manner so that they could benefit from the sea breeze blowing from the north-west and west and the aesthetic comforts from the sea view and the marketing amenities from shops. All the city's areas were linked through a primary road network and a secondary pedestrian narrow road network for people's and animals' movement (Salagoor, 1990; Adas, 2001).

The shape and components of residential areas (see Figures 5.3 and 5.4) were based on a traditional form. Each residential area contained a set of adjacent residential buildings serving multiple roles, and both a large mosque and small mosque (*zawya*). There are no limits or breaks between urban residential areas. All residential areas were connected to each other with corridors and routes that took several forms. The roads and pathways were covered by shade in daytime as a result of the adjacent buildings, which functioned well for the pedestrian traffic (Salagoor, 1990; Adas, 2001; Telmesani et al., 2009). One of the desirable characteristics of the old Jeddah was the numerous mosques. There were five large mosques and 30 small mosques. A road network was composed of extensive roads up to 15 metres wide, especially in the market area, while streets that link between residential areas were no more than narrow alleyways ranging from two to four metres in width (Adas, 2001).

The open spaces were characterised by a gradual hierarchy. The most prominent area was the public market area dedicated to all the city's inhabitants. Semi-public areas were located near residential areas and were meant for inhabitants of these areas to gather (Bokhari, 1978; Salagoor, 1990; Adas, 2001; Mandeli, 2011).

The traditional pattern of Jeddah encouraged a variety of activities and relations between neighbours, and also encouraged walking across all demographics. The increase in social interaction strengthened the relationships and increased feelings of safety among the various inhabitants of this ancient city (Salagoor, 1990; Adas, 2001).

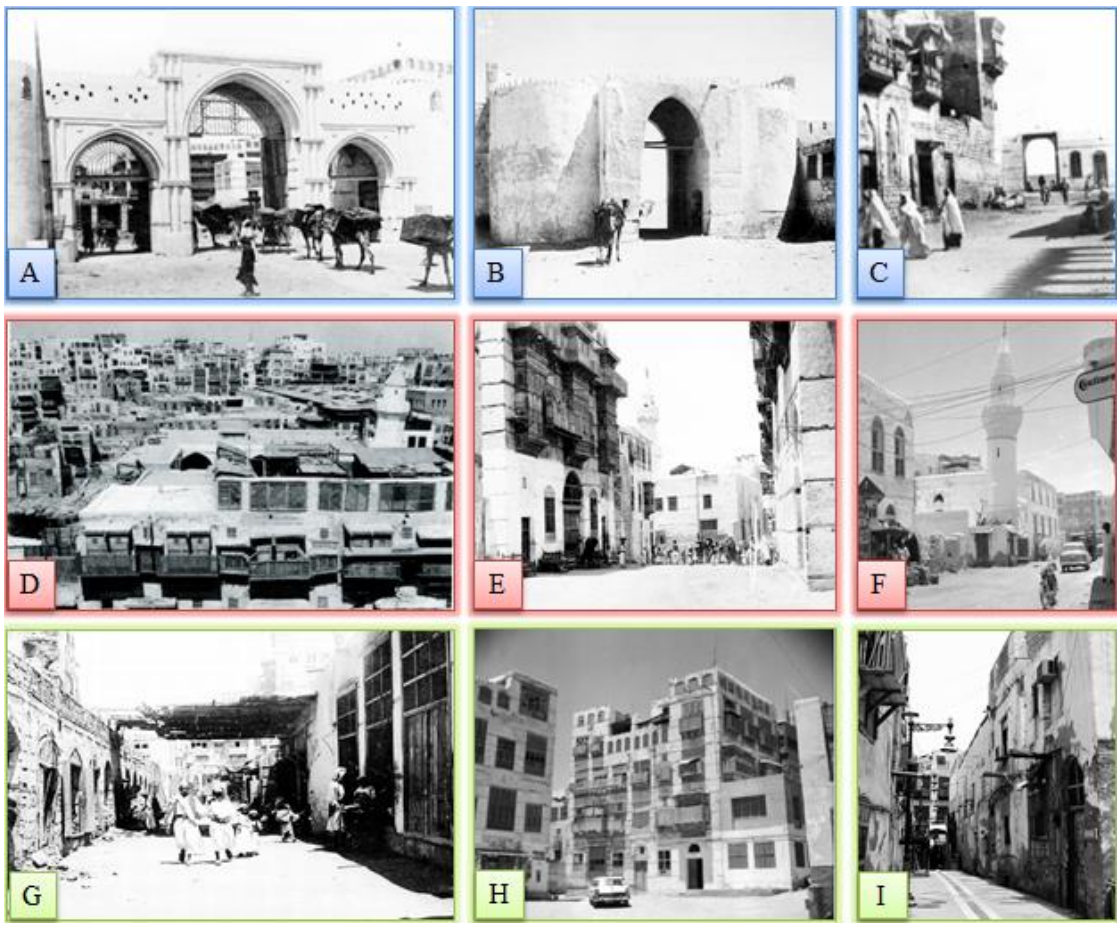


Figure 5.4: Salient features of Jeddah Old Town: A–C: gates; D–F: central mosque and access roads; G–I: streets and open spaces
Sources: Jeddah Municipality (2012b)

Before the demolition of the city wall in 1947, there were a group of settlements outside the wall of the city known as *taddyat*, or 'spontaneous developments' (Bokhari, 1978). Salagoor (1990) and Al-Hmdan (1990) describe a similarity between the residential areas inside the wall with those outside the wall, particularly in terms of morphological development. All of these settlements emerged under an Islamic law known as *ahya* which permits people to develop land and build houses without prior permission from the relevant authorities (Salagoor, 1990). During the period before 1947, there was an agreement among government officials to allow the construction of residential areas in accordance with *ahya* specifically for the purpose of housing Bedouin migrants from the villages. In 1937, new laws, such as the Law of the Municipality of Makkah and other municipalities, and also the Law of Roads and Buildings in 1941, started to be implemented (Salagoor, 1990). Subsequently, organisations to do so arose and took legislative control of urban development in Saudi cities. The legislation did not prevent

the continued emergence of residential areas built along the lines of these *taddyat* settlements.

To sum up, the first stage dates back to ancient times and continued into the 20th century prior to the demolition of the old city wall in 1947. The development of residential environment followed contemporary urban function while Islamic rules and values shaped the city's built environment (Bokhari, 1978; Adas, 2001; Telmesani et al., 2009).

5.4.2 Phase Two: Jeddah's Urban Form Post-Wall Demolition

The city wall of Jeddah was demolished and the city's second development phase started, which was initially unplanned and later became planned. The planned part of this phase is in fact a great opportunity to understand how the modern land subdivision plan (LSP) form has emerged in Jeddah.

Phase two began immediately after the demolition of the city wall in 1947 and persists to this day. The demolition of the wall, growth of oil revenues, increase in population, emergence of the modern housing type, and the import and application of land-use regulations all contributed to the modern city form. This stage is divided into two parts: unplanned and planned. The unplanned stage shows the form of the residential built environment before the onset of planning laws, specifically general master plans and land subdivision regulations. The planned stage illustrates the modern trend in the shape and components of residential areas in Jeddah. SR and the Jeddah master plans play a significant role in shaping the modern form of Jeddah. This stage is an important era for the city of Jeddah. It is a period of opportunity to learn how best to configure and shape the malleable urban form in flux. The changing population and economics allow to develop LSPs suitable to anticipated growth, user needs and sustainable practices.

5.4.2.1 Unplanned Stage (1945–1960)

Between the years 1940 and 1947 (before and after the demolition of the old city wall), a group of new housing settlements were built. The most important of these are: Harat Barah (external quarter), Al-Hendaweyah, Al-Amareyah and Al-Sahaifah (see Figure 5.5). The formation of these areas occurred without reliance on SR. Unplanned residential developmental areas emerged in Jeddah due to the technical and administrative incapability of Jeddah Municipality, as well as the absence of regulations

and legislation to control or prohibit unplanned development during this period (Salagoor, 1990).

The Al-Hendaweyah district, lying in the southern portion of the city, was named after its developer Abdul-Razaq Hendaweyah. The district developed was dedicated to housing Indian communities that had come to Jeddah during 1946–1947. The areas were the first schemes in Jeddah to be planned, in 1946, predating the city wall demolition by one year. The district was planned by the Egyptian Royal Survey Authority, assisted by the US government under the supervision of the UN. The Al-Amareyah and Al-Sahaifah districts were developed for the purpose of housing Bedouin immigrants. Location of the Harat Barah district, is between Al-Hendaweyah district and the old city, was developed for inhibiting African immigrants, especially after the *Hajj* season (Salagoor, 1990; Daghistani, 1990).

All of the residential areas that emerged during this time were characterised by a simplicity of urban form and composition. The areas were developed simply in order to serve the basic needs of residents dependent on animals for transportation. The street network was narrow, between about two to four metres in width. There were no discernible public or semi-public spaces. Even public services were not recognised during the development. The residential units were built up at one to two floors. Developers of these areas were not required to pave or illuminate the streets.[13]

[13] Information obtained by the author in interviews with Prof. Daghistani and Mr Balbead in 2008.

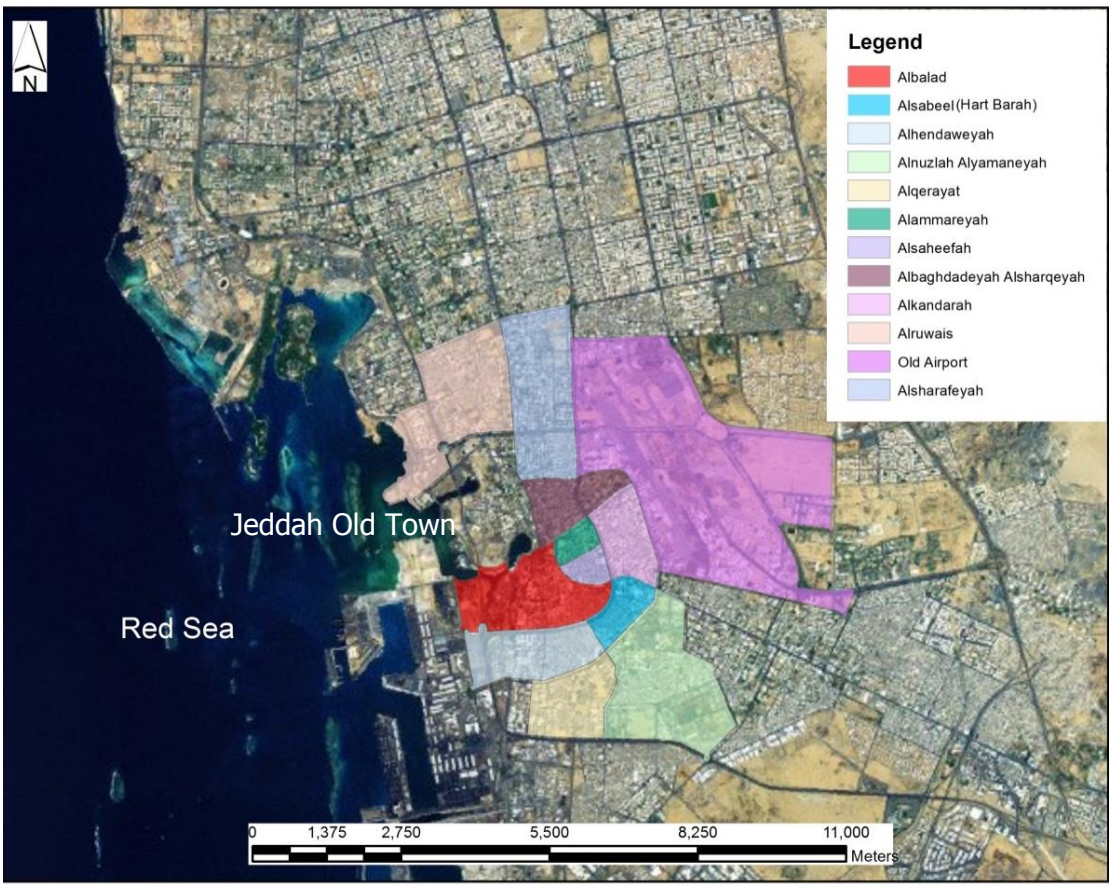


Figure 5.5: Developments of residential areas in Jeddah without subdivision regulations
Source: Adapted from Al-Hmdan (1999) and Pesce (1977). Maps have been enhanced through GIS by the researcher.

After World War II and the demolition of the old city wall, Jeddah began showing the first signs of urban sprawl. The emergence of car use accelerated this, thus significantly increasing the need to extend the networks of appropriate roadways for the movement of cars. The state controlled vast areas of land surrounding the city. King Abdul Aziz issued a royal decree in 1947 to regulate land ownership in Saudi cities. The decree also stipulated the need to stop the violation of land acquisition and development according to traditional patterns. The decree had a significant impact on the advent of modern planning concepts (Salagoor, 1990).

During this period (1947–1960), KSA experienced dramatic economic development resulting from the oil boom; oil revenue was amplified 28-fold (US$10 million in 1947, US$280 million in 1956); the number of pilgrims through Jeddah increased from 24,000 in 1940 to 260,000 in 1959, while the city's population reached 106,000 in 1959 from 24,000 in 1940 (Salagoor, 1990; Abdu et al., 2002; Al-Hathloul and Mughal, 1991).

This boom led the demand for more housing and services, and turned a small traditional city into a big metropolitan area. The area of the city expanded sixfold in comparison with that of 1947. Such expansion was a product of the development of residential areas to accommodate further population growth. The development accommodated both locals and immigrants, who came from some of the neighbouring countries such as Yemen, Palestine, and other Asian countries. During this period, Jeddah became a centre for the migration of a huge number of inhabitants in search of employment and business opportunities and housing (Al-Hmdan, 1990; Salagoor, 1990).

As a result of the royal decree issued to control land ownership, the government was able to control a higher proportion of land in Jeddah. This also gave the Ministry of Finance various authorities during this period. With a few expatriate consultants, the Ministry of Finance set up a technical administration to plan unoccupied land space, which was the first attempt at planning in Jeddah. It relied on the style and planning of LSPs, not the Jeddah master plan. The decree introduced the possibility to plan through subdivision rather than through the master plan, and this became the *modus operandi* for Jeddah's planning system, making the master plan obsolete. According to Abdulaal (1990), the development of LSPs in KSA was one of the early phases in the wider process of land development. The first subdivision plan was created in Jeddah in 1951. This plan was carried out by the Baker Consulting Company, in the northern part of the Al-Baghdadiyah residential district (see Figure 5.6a). The pattern of the subdivision plan was based on the gridiron pattern, which affected the emergence of the first subdivision plan in eastern KSA (see Section 1.3). The pattern has become one of the most prominent planning practices in Jeddah (Daghistani, 1990; Salagoor, 1990).

New schemes for the subdivision of land in Jeddah emerged during 1951–1960. Real-estate traders played a role in the emergence of these areas, whereby some main roads were built, such as Makkah Road in the south-eastern quarter, Al Madina Road through the city centre heading north, and the ring road surrounding the Old City and Khaled Ibn Al Waleed Road in the north-western quarter. The roads encouraged the appearance of subdivision plans. The schemes were based on the gridiron pattern. The plans initially had a square shape (100m × 100m), where each block was split into a number of small residential plots not exceeding 600m^2 each (see Figure 5.6b). Later, the rectangular block shape appeared and was implemented by some developers in Jeddah (see Figure 5.6c). The residential use rate in each subdivision plan ranged between 70%–75%, leaving the remaining subdivision plan area for a road network. There was

no interest in providing areas for public facilities and services at that time. As for the widths of internal roads, these ranged from six to eight metres, with pavements of a width not exceeding approximately one metre. No attention was paid to lighting or landscaping in these areas. Developers, then, were not responsible for asphalting the road, pedestrian paths or infrastructure network expansions; all these remained reserved for the Municipality of Jeddah (Daghistani, 1990; Salagoor, 1990).[14]

[14] Information obtained by the author in interviews with Eng. Babear and Mr Balbead in 2008.

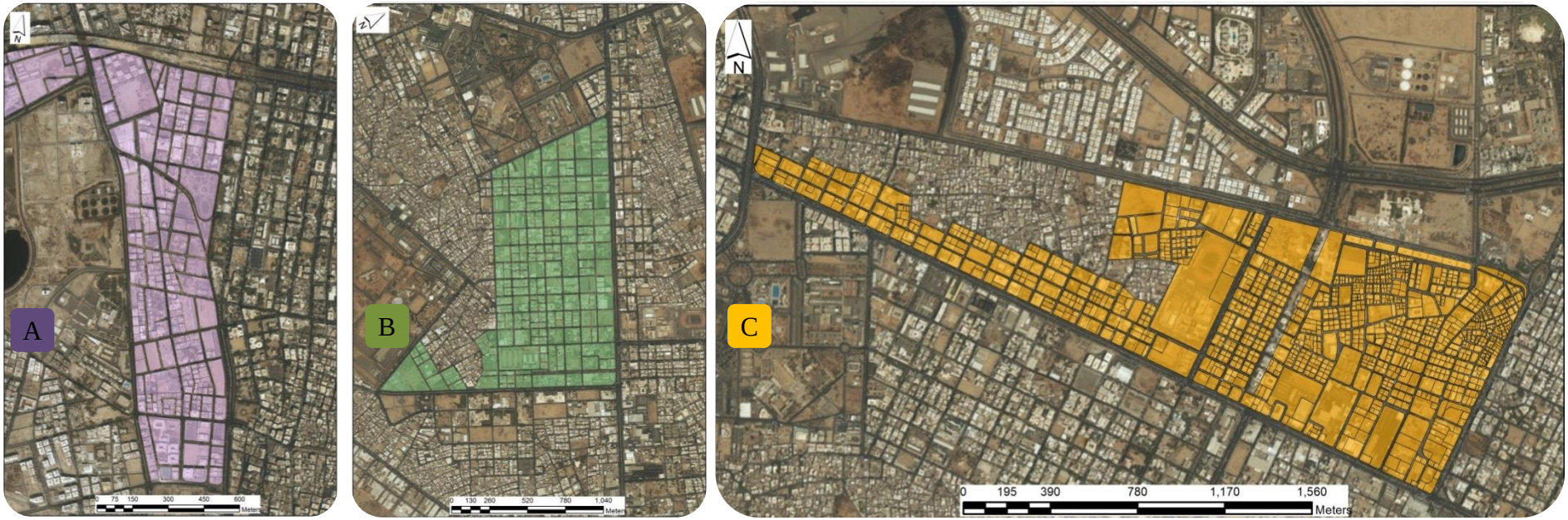


Figure 5.6: Gridiron pattern and emergence of rectangular blocks in the prototypes of subdivision plans in Jeddah (1951–1960): A: first prototype; B: second prototype; C: third prototype
Source: Salgaoor (1990). Maps have been enhanced through GIS by the researcher

There was a lack of SR, and of technical personnel within the Jeddah Municipality; staff blindly copied subdivision plans from central and eastern Saudi cities. Overreliance on subjective estimates and approvals were the main reasons behind the emergence of irregular development pattern of residential areas in Jeddah.

Later, as a result of this regulation process, a group of residential subdivision plans were created. The most important plans, including the Mdaaen Al-Fahd subdivision plan which was allocated to the princes' palaces to the south of the city, and to the north and north-east of the Old Town. In addition, Al-Sharafeyah, Al-Rwais and Bani Malik were occupied by Yemenis, Palestinians and Bedouins. Lastly, the Al-Nuzlah Al-Yamaniah to the southeast of the Old Town and south of Khuzam Palace was occupied by the soldiers of King Abdul Aziz and then by Yemenis. The quarter was extended to the east to form the Al-Nuzlah Al-Sharqyah neighbourhood (Daghistani, 1990; Salagoor, 1990).

Tashkandi (2004) and Salagoor (1990) indicated that there were various disadvantages as a result of the reliance on the LSP development pattern during this period in Saudi cities. The most prominent flaws that emerged in the residential areas in Jeddah included:

- an increase in the proportion of car accidents due to the short-length intersections;
- lack of social relationships between people;
- lack of safety felt by the people, especially when walking on foot;
- lack of pathways for pedestrians;
- lack of places to play for children;
- lack of public and semi-public areas allowing residents to gather;
- lack of attention to public services such as schools, mosques and medical clinics; and
- the high cost of implementing utility networks.

On the other hand, Salagoor (1990) pointed out many advantages arising from the application of the modern form, including a reduction in the spread of unplanned urban sprawl and emergence of traditional residential areas. Also, it helped to improve procedures registering residential land, as well as aiding this pattern to ease the possibility of issuing construction permits from Jeddah Municipality.

This stage, after the city wall demolition, is considered a cornerstone in the history of the development of LSPs in Jeddah. The new development pattern has contributed to a reduction in traditional residential development, but has also helped in the emergence of a new urban form. Lack of SR, and of technical and human capability and modern technology in Jeddah Municipality, have contributed significantly to the reduction of creativity in the design and planning of these areas. In addition, the planning processes during this stage were implemented in much shorter amounts of time. The community was not able to participate in the construction and development of the residential areas. For example, this stage helped to form the roots of urban sprawl in Jeddah. Jeddah depended on conventional residential developments that did not take into account the provision of the final product or parts of it. The developments do not consider pedestrians or cyclists, giving preference to the use of privately-owned cars. The developments suffer from the lack of complete public services and utilities, and do not consider after-sale services such as site maintenance and management.

The next part will portray a new phase of the Jeddah planning process; it focuses on the emergence of planning tools such as the Jeddah master plans and SR. The new format for the development of LSPs may shape the remaining features of Jeddah's urban expansion.

5.4.2.2 Planned Stage (1960–present)

The planned phase was an opportunity to learn about the formation and composition of Jeddah's urban sprawl. It reveals the roles of the Jeddah general master plans and SR in the organisation, or formation, of the LSP. The economic revenue generated by the sale of oil, a growing population, and the emergence of modern technology has markedly changed the everyday lives of Saudis. Technological developments, such as reliance on electricity, particularly air conditioning, and cars has shifted the lifestyle from the traditional Middle Eastern style to something closer to the western lifestyle. One important example showing the transformation in Saudi society in planning practices is the use of modern subdivision plans. The model for them was imported from the US and implemented in local cities, including Jeddah. Subdivisions became the social norm; for example, the model of villas and residential apartments, which have been implemented within the limits of subdivision plans that emerged at the end of the first stage, as the dream of all levels of society during this phase. The idea of land ownership

and house construction spread among members of Saudi society, particularly in Jeddah (Fadan, 1983; Daghistani, 1990; Salagoor, 1990).

In order to plan properly, direction was given by the Saudi government regarding the need for major action plans for major Saudi cities. Jeddah was at the forefront of these. The UN recruited Dr Sayyd Karim in 1958 to review the status of Saudi urban and regional planning; he recommended the urgent need of capacity building in the planning domain. Later, two expats – Dr Abdul Rahman Makh in 1959 and Dr Omar Azam in 1960 – were recruited, who worked to increase efficiency in the technical department of the MOI (planning issues were brought under the Ministry of Municipal and Urban Affairs later) and transformed contemporary planning practices, especially on LSPs and comprehensive planning or master plans for the city (Salagoor, 1990).

Dr Makhlouf's 1962 Master Plan

Dr Makhlouf's 1962 Master Plan was the basis for all major master plans that appeared after this scheme. It is also the plan that determined the future growth and expansion of the city extending north (see Figure 5.7). A number of secondary goals included the implementation of subdivision and zoning regulations. For the first time in the history of the planning and development of the city of Jeddah there was a trend that linked the emergence of LSPs with the Jeddah master plan (Salagoor, 1990). Observation of Jeddah's current situation, with the emergence and spread of the modern housing units concept implemented within Jeddah LSPs, reveals an extension of the concept of the development type and increased demand during the short period between the mid-fifties to 1962 (see Table 5.1). During this period there was a lack of space for public facilities and services within the limits of the executed subdivision plans, not taking into account the requirements of buildings setback were not taken into account, and technical problems existed relating to the implementation of the road network and intersections; hence, these observations encouraged planners to consider the deficiencies, and design, plan and develop residential areas in an organised manner. Moreover, consultants suggested the need to be prepared and link the zoning regulations with the SR (Salagoor, 1990; Al-Eidiny, 2000).

Table 5.1: Jeddah housing stock in 1962

Building Typology	No. of Houses	Typology %
Palace	156	0.55
Detached Villa	1,342	4.70
Attached Villa	47	0.18
New Apartment	8,790	36.75
Traditional Houses	5,695	19.92
Arabic Houses	7,133	24.96
***Sanadg* (Huts)**	5,420	18.96

Source: adapted from Daghistani (1990), Salagoor (1990).

Unfortunately, the majority of the goals and proposals in this plan were not implemented. The reasons for the failure to implement them relates to a limited availability of technical personnel and professionals at the local level, as well as the government's lack of confidence or belief in the need to implement all the master plan objectives (Salagoor, 1990).

The above scheme laid the foundations for a solid base that has been relied upon since the formation of other master plans for Jeddah. One of the most prominent aspects that shaped the growth and expansion of the city is the identification of land for a new airport north of Jeddah; also the formation of the Corniche Road area, and other areas in the north and south of Jeddah. The development ideas were introduced as proposals for the growth and expansion of the city, contributing significantly to increased growth and the emergence of Jeddah LSPs after that period (Abu-Sulaiman, 1996). This phase saw a further population increase, both in general and in the number of pilgrims. The number of inhabitants in 1962 reached 150,000 people, while the number of pilgrims rose to nearly 280,000 (Al-Hathloul and Mughal, 1991; Abu-Sulaiman, 1996). This led to a corresponding increase in the demand for housing, public services, facilities and utilities.

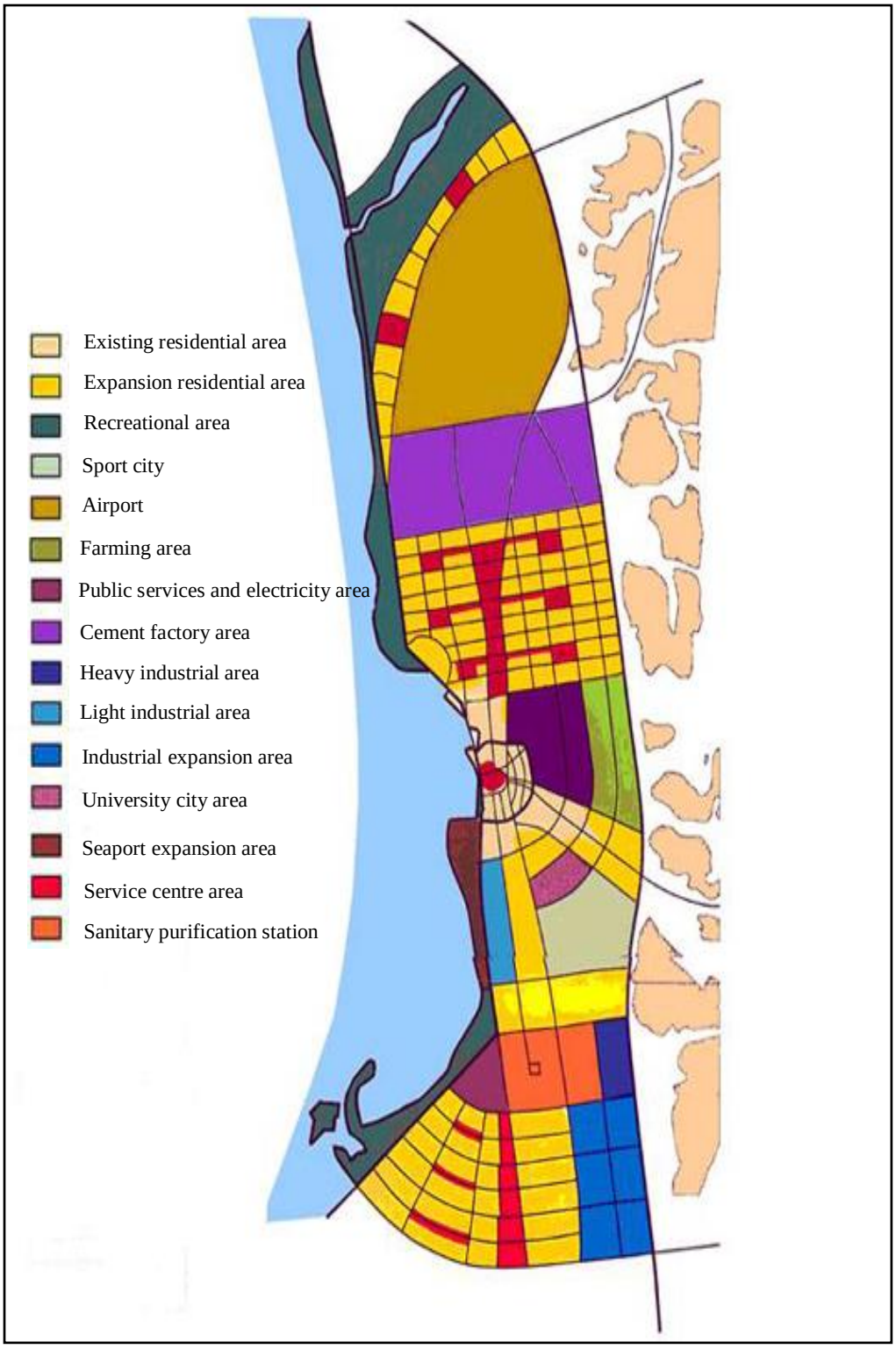


Figure 5.7: The First Master Plan of Jeddah: Dr Makhlouf's plan in 1962
Source: Adapted from Jeddah Municipality (2012).

Hence, the need for public services and infrastructure called for new residential subdivision plans in Jeddah. The overall success of an LSP depended upon offering the final product, or part thereof, with a proper grid pattern together with improved street layout; unfortunately, in the contemporary LSPs there was no significant interest in providing space for public facilities and services, as there was no obligation for developers to provide paved streets, pavements, outdoor lighting, or to extend the infrastructure network (see Table 5.2).[15]

Table 5.2: Characteristics and components of the approved and implemented LSPs during the First Master Plan period

Subdivision Plan Analysis Elements	Description
Number of subdivision plans	**277**
Development type	**Conventional**
Layout pattern	**Grid pattern: many intersections (+)**
Internal street system	**Narrow width (6–8m), then become 8–10m. Lack of street-side car parking.**
Pedestrian pavements	**Less than 1m in width along both sides of street.**
Entrances and exits	**Multiple, allowing cars to pass in all directions**
Pedestrian footpaths (walkways)	**Not available; no requirements for these**
Cycle paths	**Not available; no requirements for these**
Public facilities	**No conditions**
Public services	**No conditions**
Utility networks	**Extending water and electricity networks**
Planting and shading	**Not available; no conditions.**
Implementation process	**Jeddah Municipality is responsible for: paving of roads and pavements, illumination, and extension of utility networks. Developers are responsible for the division of land into blocks and plots.**

[15] Information obtained by the author in interviews with Eng. Babear and Mr Balbead in 2008.

Subdivision Plan Analysis Elements	Description
Urban design elements	**Not available; no conditions regarding these**
Provide traffic-calming elements	**Not available; no conditions regarding these**
Disabled access	**Not available; no conditions regarding these**
Maintenance, cleaning, management services	**Jeddah Municipality role**
Development of residential units	**Not carried out by the developers. Separate process by plot owners; takes years to complete the subdivision plans.**

Source: adapted from Jeddah Municipality and fieldwork: 2008–2010 data

The 1966 Wilson-Murrow Study of Jeddah

In 1966, Waheeb Ben Zagr was appointed the mayor of Jeddah. Ben Zagr immediately came to an agreement with the office of Wilson-Murrow International Limited (WMIL), a specialised office in architecture, planning, and economics (Abu-Sulaiman, 1996). The office studied various aspects relating to Jeddah, including, for example: administration, the city's institutional organisation, finance, budget, planning, zoning, personnel administration, building inspection, engineering, public works, street lighting, traffic engineering, water, sewers, police and fire protection.

The work of the office was not the preparation of a general master plan for Jeddah. However, its work was to prepare a comprehensive analytical study of the status of the city of Jeddah during the 1960s. One of the most prominent aspects referred to in this study is the rapid population growth and expansion of the city. It also showed that there was a necessity for local government to intervene to control the problems of rapid growth. It also referred to the lack of zoning regulations, which led to the emergence of a group of problems, including, for example, a single zone with multiple land uses, encroachment on land allocated for specific services, no building setbacks and no organisation of population densities within residential areas. Jeddah continued to encounter problems related to urban water flow and sanitation, especially very limited sewer line networks and overreliance on septic tanks. A reference to the problem of the increase of demand for drinking water, in addition to that of floods and the importance

of protecting residential areas, especially at the time of rainfall, were also reported. Finally, a central reference was made to the city administration and the lack of absolute power at the municipality to control the adoption of residential areas (Wilson-Murrow International Limited, 1966; Abu-Sulaiman, 1996).

Further, one of the prominent recommendations of the study was the importance of a comprehensive city plan; the consultant called for the rapid provision of such a plan, utilising the findings of the study (Abu-Sulaiman, 1996). These recommendations led to swift preparation of the Second and Third Master Plans for Jeddah.

Second and Third Master Plans for Jeddah (1970–1980)

The city of Jeddah and other Saudi cities witnessed a set of new trends as a result of population growth and unregulated urbanisation processes. For example, Jeddah suffered at the end of the 1960s from various problems, including traffic congestion, urban fragmentation, established squatters' residential areas, lack of utility networks, public services, facilities and housing (Mandeli, 2008).

The population of Jeddah reached more than 350,000 people in 1970, in addition to an ever increasing number of pilgrims, which reached nearly 450,000. On the other hand, with the decrease in petrol prices, the extension of some roads to the north and south of Jeddah, and increases in income, the automobile became the sole means of transportation. Car ownership increased from 50 cars per 1,000 people in 1970 to 120 in 1978, and an estimated 250 in the early 1990s or two cars per household (Al-Hathloul and Mughal, 1991).

The new trends above represented a warning to the Saudi government. This period witnessed the emergence of a wide range of reforms at the planning and economic level throughout the Kingdom. The Ministry of Municipal and Rural Affairs (MOMRA) was established in 1975 (Alkhedeiri, 1998; MOMRA, 1999). The Saudi government started the implementation of the first national five-year development plan (1970–1975), whose purpose was to achieve developmental and economic stability at local and regional levels (Daghistani, 1990; Mandeli, 2008). In the early 1970s, a British official, Robert Matthew, headed a 35-month long contract for the preparation of Jeddah's Second Master Plan, which had five stages; the plan came into practice by 1973 (Figure 5.8).

As a result of the economic boom, high government spending occurred in Saudi cities, especially after 1975. The spending in the cities was not met with an equal level of planning, as there was a scarcity of planning professionals. There were not enough planners to follow up the first city plan, which led to uncontrolled and unmonitored growth outside the boundaries of the Second Master Plan (Salagoor, 1990). The economic boom increased the income of many members of Saudi society. Higher incomes allowed citizens to enter and develop the real-estate market. Real-estate speculation increased; many people engaged themselves in the buying and selling of plots within residential subdivision plans. Some bought land with the sole intention of selling later on for a profit. The speculative real-estate market has developed partially because there are no property taxes and no development requirements for those that buy within areas planned for development. Speculative real-estate owners impeded effective and efficient urbanisation because they did not develop the plots, while the plot prices reached an artificially high level because of speculative ventures. Also, the government has found its expenses are higher due to the growth. All of these variables, along with the launch of the Second Five-Year Plan (1975–1980), contributed to Jeddah needing a Third Master Plan (Abu-Sulaiman, 1996).[16]

Jeddah's master plan was revised by Sert Jackson International in 1977 and approved in 1980; background studies of this revision revealed one of the most prominent analyses carried out by the advisory work before the adoption of the scheme was to evaluate and study the current situation of Jeddah. For the population study, the consultant concluded that the residents of Jeddah numbered 916,000 people in 1978. The figure surpassed the Second Master Plan's estimates where the population of Jeddah was estimated at 880,000 people in 1991. It became clear that there had been an increase of more than 500,000 inhabitants during seven years only (1971–78). The study also worked to draw population estimates for Jeddah. The study predicted that the population of Jeddah in 1999 would reach 1.6 million people, while in 2002 it was expected that it would reach more than two million inhabitants. Physically, Jeddah has reached more than 1,200km^2 in area, including an additional 97km^2 newly developed (Abu-Sulaiman, 1996; Salagoor, 1990).

[16] Information obtained by the author in interviews with Prof. Dagstani, Eng. Babear and Mr Balbead in 2008.

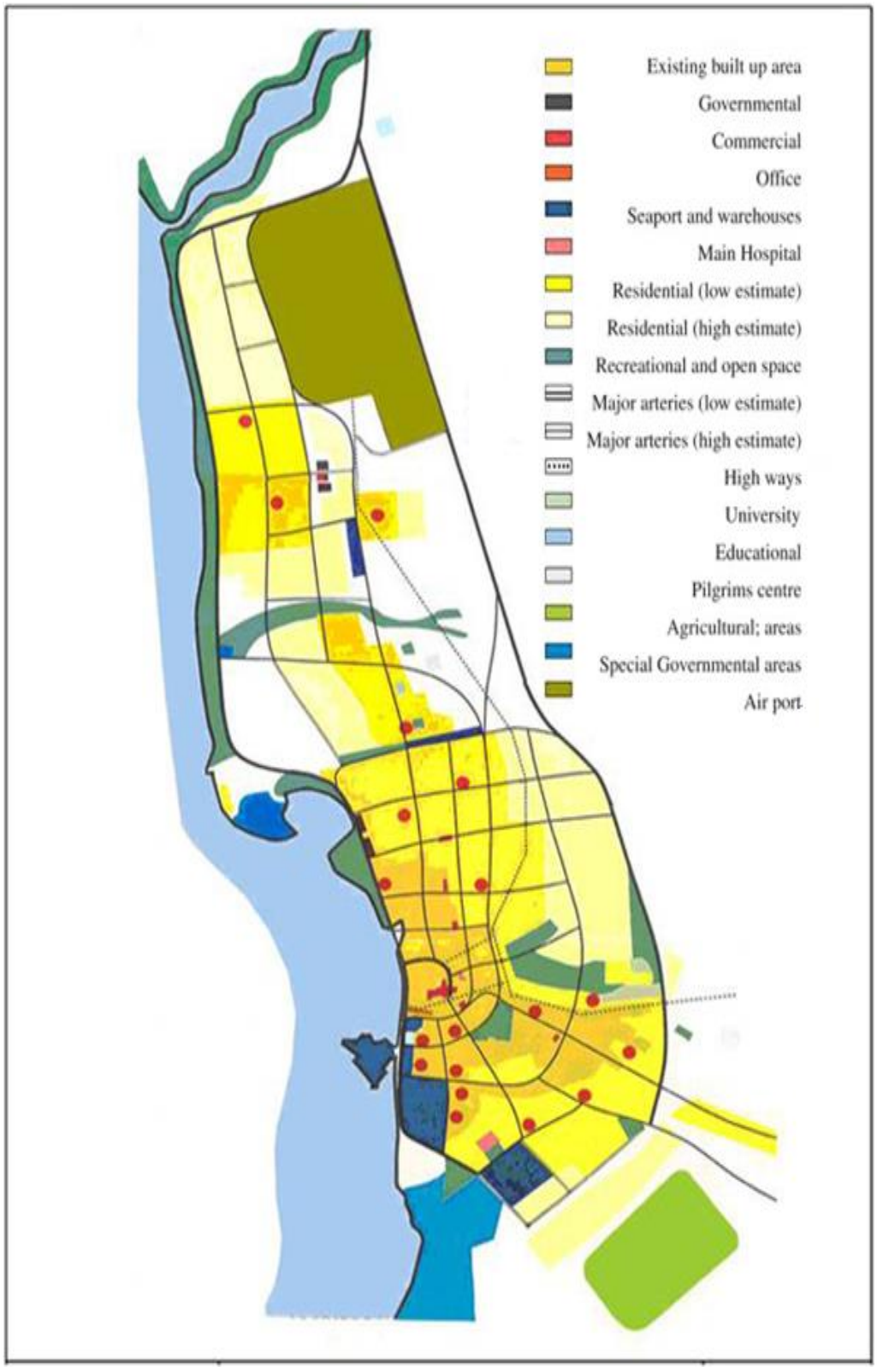


Figure 5.8: Second Master Plan of Jeddah: Matthew's 1973 plan
Source: Adapted from Jeddah Municipality (2012).

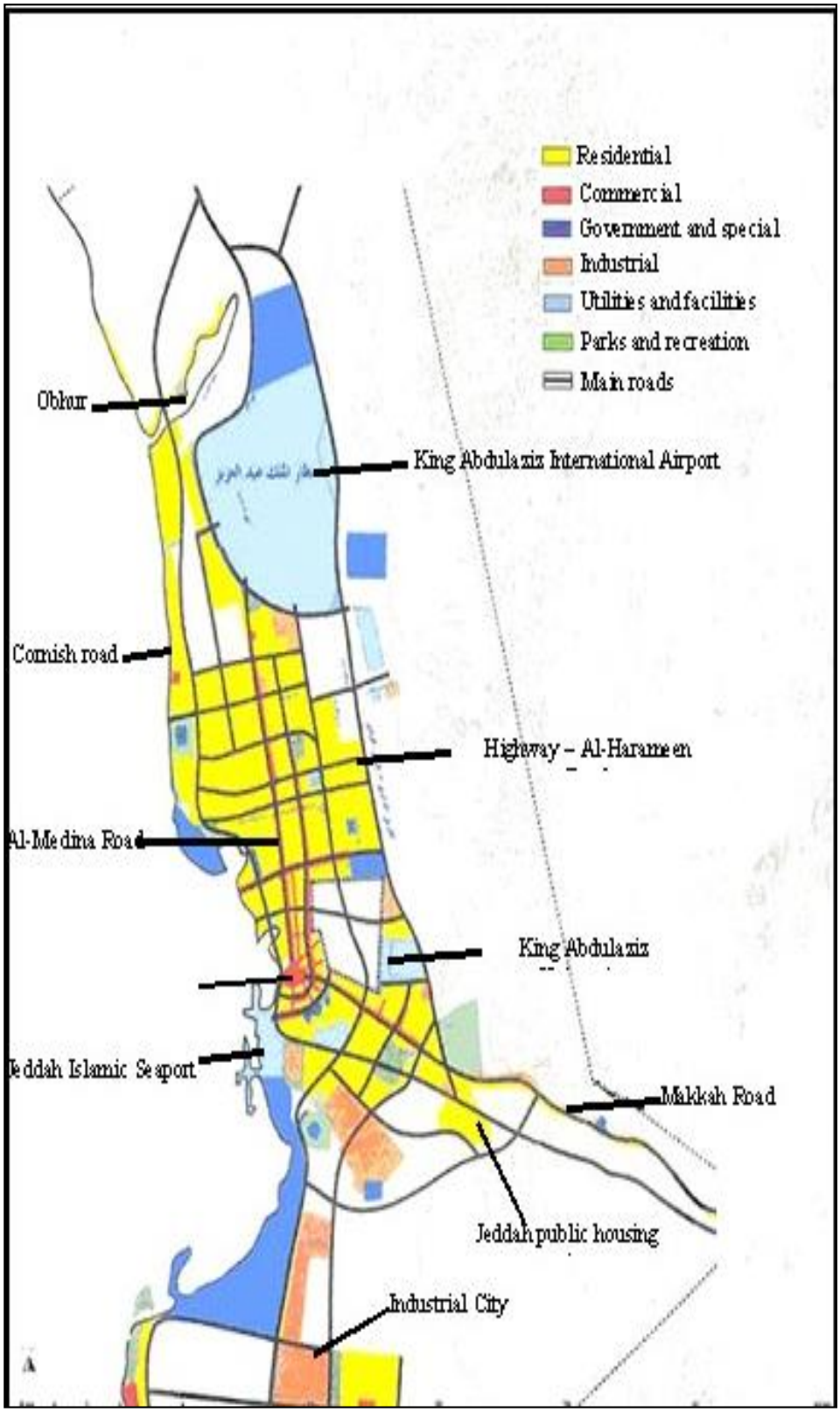


Figure 5.9: Third Master Plan of Jeddah: Matthew's 1977 plan
Source: Adapted from Jeddah Municipality (2012).

The most common features between the two master plans is that they were founded on the ideas of the previous master plan. The two plans divide Jeddah into a network of roads at right angles, which cross the city from north to south and from east to west. Each district is surrounded by a street network, as the residential district takes the square or rectangular form. This approach has been called the Super Block method, which first appeared in various application in North American cities (Al-Oleat, 2004). Based on the application of the method, the city was divided into specific areas determined by the type of land use, building height limit, and the percentage of allowable construction.

Salagoor (1990) and Abu-Sulaiman (1996) indicate that the Second and Third Master Plans have established the future physical structural elements to Jeddah. In addition, both plans guided the growth towards the north of the city. Many residential subdivision plans appeared during this stage to the north. The process of organising land subdivisions was linked for the first time with the general requirements contained within the general master plan. For each plan, there were requirements known as zoning regulations which to refer to the site of the land development within the master plan; for example, zoning regulation conditions such as type of permitted use, housing density, heights of permitted floors, allowed construction rate and measurement of building setback (during the approval process of LSPs these requirements must be reviewed). On the other hand, all interior details relating to the organisation of a piece of land to be developed and subdivided could be traced in the SR manual. The first SR requirements were issued in 1972, followed by the first SR manual in 1976. Neither master plan included the creation of special regulations related to LSPs as part of its objectives.

This concept or process of regulating subdivision plans has been repeated in the other Saudi cities, such as Riyadh. Al-Oleat (2004), Alskait (2004) and Al-Freadi (2008) indicate the absence of a direct relationship between Riyadh's first two master plans and the internal details related to subdivision plans that have been adopted and implemented in the city of Riyadh. For example, the processes of organising public services, utility networks, internal street networks, residential plots, type of residential development, etc., were within the remit of the plan; they are referred to in the SR manual issued by MOMRA and which was circulated to be implemented and applied to all Saudi cities.

In fact, there was a lack of detailed plans within the First and Second Master Plans of Jeddah, which should calls for precise details related to the process of organising

residential areas in Jeddah. Overlooked details include the distribution of sites of public services and facilities, road network layout, cycle and pedestrian networks, and the relationship between the residential neighbourhoods. Some detailed plans were carried out for parts of the city; these were development proposals only which were non-binding on implementation (Harefsha, 2008).

The *thinking of the time* and the lessons from the gaps and deficiencies in the first phase of LSP development gave birth to a different pattern of the organisation and development of LSPs in Jeddah (Table 5.3). During the period of the Second and Third Master Plans, many aspects were implemented. For instance, the application of a road network hierarchy or what is known as *Al-Maforkah* (twisted form) occurred. Developers were obliged to reserve an amount of space for public services and facilities, yet were still not required to develop the services and facilities in the scope of their work. Road paving, footpaths, illumination, and extension of utility networks were the responsibility of Jeddah Municipality until 1986, after which they became the developers' responsibility. The SR that have been applied at the level of Saudi cities that consider the general requirements of the city master plans have contributed to the improved quality of residential developments' built environment during this period (compared to Jeddah's First Master Plan period).

The development form of the LSPs that appeared during this period was conceptually different, and therefore so in practice. The new concept depended on:

- Land division based on deducting a certain percentage of land for public services and services;
- Extension of streets, pavements, and lighting networks;
- Encouraging car dependency;
- Fixed infrastructure networks (e.g. water, telephone, electricity).

Developers were not obligated to provide after-sales services such as development of housing units, maintenance, cleaning or running of the neighbourhood. The conventional developmental pattern which emerged during this period was appropriate to the circumstances and characteristics of that stage. However, this pattern continued for years through the expansion of the city.

Table 5.3: Characteristics and components of approved and implemented LSPs in Jeddah during the second stage (period between the application of the Second Master Plan to the end of the Third Master Plan)

Subdivision plan analysis elements	Description
Number of subdivision plans	**677**
Development type	**Conventional development type**
Layout pattern	**The majority of subdivision plans depended on: new grid pattern or *Al-Maforka* form (twisted form).**
Internal street system	**Wide street – hierarchical form of streets – street width between 15–16–20m- car parking along both sides of streets – intersection type: many (T) with fewer (+).**
Pedestrian pavements	**Not more than 1.2m in width – on both sides of street – no planting strip.**
Entrances and exits	**Multiple – allowing cars to pass in all directions.**
Pedestrian footpaths (walkways)	**Not available – no requirements for these paths**
Cycle paths	**Not available – no requirements for these paths**
Public facilities	**Special requirements: deduction of 33% of the area of land development for street network, pedestrian pavements, parks, playgrounds.**
Public services	**Special requirements: deduction of 2–3% of land development for: schools, mosques, clinic and other services.**
Utility networks	**Extending water, electricity and phones networks only.**
Planting and shading (aesthetic aspects)	**Not available – no conditions for this aspect**

Subdivision plan analysis elements	Description
Implementation process	**Before 1986, Jeddah Municipality was responsible for: asphalt roads, sidewalks processing, lighting spots, and the extension of utilities networks.** **After 1986, developers became responsible for above tasks in addition to the division the lands to blocks and plots.**
Urban design elements	**Not available – no conditions regarding them**
Traffic-calming elements	**Not available – no conditions regarding them**
Infrastructure for people with disabilities	**Not available – no conditions regarding them**
Maintenance – cleaning – management services	**Jeddah Municipality role**
Development of residential units	**Not carried out by the developers – separate process done by plot owners and small builders – takes years to complete the subdivision plans.**

Sources: Jeddah Municipality archive with researcher's modifications (data collected during pilot study phase summer 2008 and main fieldwork phase from December 2009 to February 2010).

Fourth and Fifth Master Plans for Jeddah (1985–present)

In the mid-1980s, Jeddah rapidly expanded. The expansion was caused by an increased population of more than 1.8 million people, and an increasing number of pilgrims, nearly one million. Physical expansion of Jeddah has resulted in an increased number of residential subdivision plans being adopted and implemented; on the other hand, the road network in these areas increased to 8,000km^2. The rate of expansion placed a great deal of pressure on the municipality, particularly as their budget was inadequate for the demands. The budget in 1985 exceeded 430 million SR per year. The number of professional planners working for Jeddah Municipality reached 100 (Al-Hathloul and Mughal, 1991; Abu-Sulaiman, 1996).

As a result of the rapid growth and extension of the city in this form, Salagoor (1990) and Abdu et al. (2002) illustrated the emergence of 'leapfrog development' (this was not equally distributed all over the city, rather it was 'here and there'). Many residential subdivision plans appeared in the far north and east of Jeddah. Loans from the Real Estate Development Fund contributed to the growth of leapfrog development in Jeddah

as well as other Saudi cities. The state was still distributing soft loans to citizens to assist development of residential units. The loans encourage the real-estate traders to develop subdivision plans in the outskirts of cities and at appropriate prices for private ownership for low and middle-income residents (Mandeli, 2011).

This phenomenon in Jeddah is similar to a kind of urban sprawl found in most North American cities, yet, there are particular differences. Some studies (e.g. Nelson et al., 1995; Gillham, 2002; Harrison, 2009) account for the conventional residential areas within American cities. The areas have the following characteristics: cookie cutter developments (developing some places in isolation); easier and faster to build and finance; layout pattern depends on cul-de-sac and curvilinear streets, with poor connections to adjacent neighbourhoods; wide streets; low or medium density; limited entrances and exits; reduction in through car traffic; single use designs; encourages the use of cars; and high demands for public service. In addition a different nature of development approach exists; in the US experience, the majority of these projects depend on the idea of complete development or near-complete components of the scheme compared to Jeddah.

Due to the emergence of the leapfrog development phenomenon in Jeddah and in many other Saudi cities, the Council of Ministers intervened by passing legislation to implement the Urban Growth Boundary Policy. In 1986, MOMRA stopped the approval and implementation of residential subdivision plans in all Saudi cities. The purpose behind this step was to prepare studies related to urban growth boundaries (Abdulaal, 1990; Mubarak, 2004; Mandeli, 2008). The urban growth boundary is a line drawn to depict the stages of development, and through it the planner could control leapfrog development (Weitz and Moore, 1998). As for Jeddah, the city has been divided into urban limits 1, 2 and 3 (see Figure 5.10). Later in 1986, Al-Soumait Engineering Services revised the previous master plan; after studying Jeddah's status the plan was formulated and then applied in 1987 as the Fourth Master Plan (see Figure 5.11) (Al-Eidiny, 2000; Mandeli, 2008; Mahard, 2010).

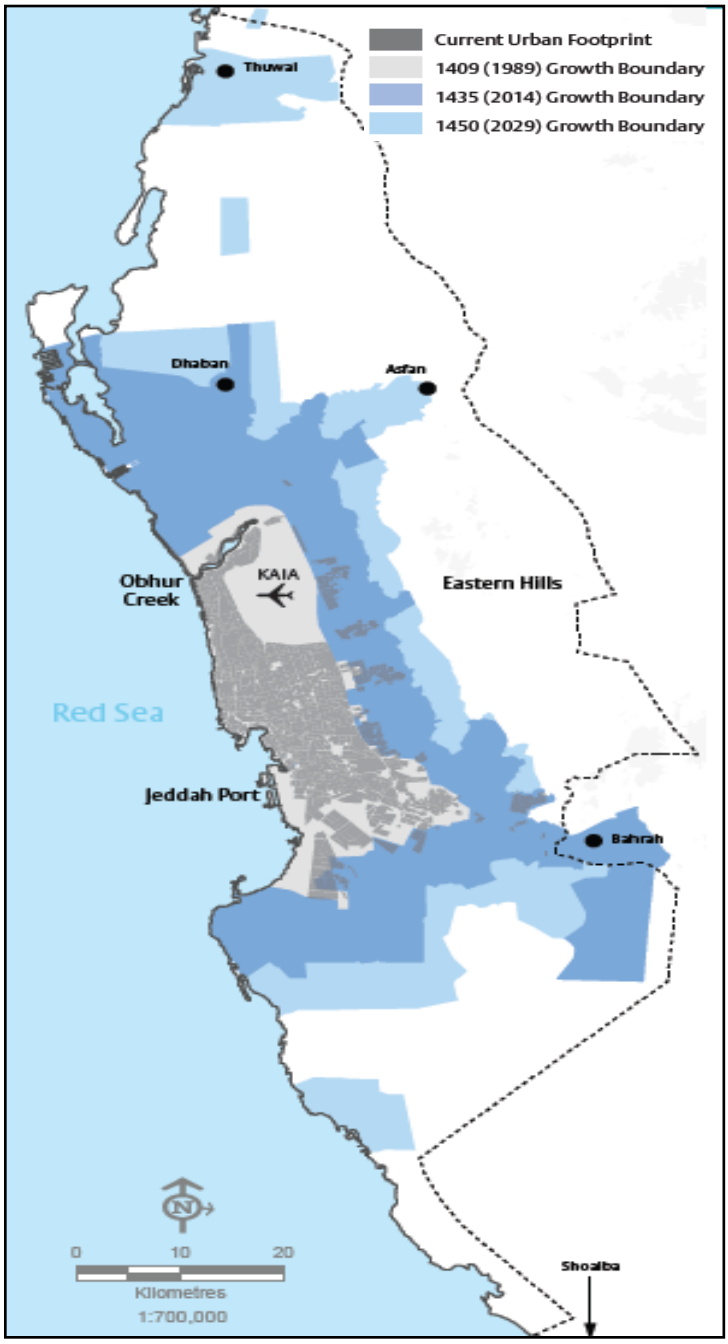


Figure 5.10: Jeddah's urban growth boundaries (UGB) are planned to come into effect at future dates
Source: adapted from Jeddah Strategic Plan (2009)

Figure 5.11: Fourth Master Plan of Jeddah: Al-Soumait's 1987 plan
Source: Adapted from Jeddah Municipality (2012).

During the period of the Fourth Master Plan, the use of conventional subdivision plans continued along with the organisation and adoption of the schemes according to the manner in which they were applied under the Second and Third Master Plans. Ensuring the development of a land parcel within the urban growth limits became part of the planning process. The year 1984 was another important milestone for SRPs when further modifications took place and a new updated guide for subdivision regulations was published.

The Fourth Master Plan was premised on a predicted lower urbanisation rate than Jeddah had previously experienced, but there was still an expectation that it would grow by 6% per year, increasing the urban mass from 39,000 hectares in 1995 to 74,000 hectares in 2005 (Abdu et al., 2002)

All indicators referenced above were subsequently reached. During this period Jeddah was affected by economic decline across KSA. The decline occurred in the wake of lower oil revenues and political instability; the Gulf War of 1990–1991, the events of 9/11 in 2001, the wars in Iraq initiated in 2003. The economic and political instability slowed growth and development in Jeddah and throughout the Kingdom (Qurnfulah, 2005).

The decline unexpectedly brought about a significant positive change: the cooperation of the private sector with the public sector in the development process (Daghistani, 1990; Mandeli, 2008; Abdulaal, 2012). A group of real-estate companies observed various integrated projects including housing, commercial, and tourist projects (Qurnfulah, 2005). At the end of the 1980s, the first integrated residential project, called the Prince Fawaz Project (see Figure 5.12), was completed. The project divided the land and provided a final complete product for the end-users. All the project's infrastructure components were prepared and equipped with a range of housing units allocated for possession with various spaces in addition to public services and facilities.[17] Projects of a similar character in the western context manifest as gated communities, Master-Planned Estates or Planned Unit Developments (PUDs), and Common Interest Developments (CIDs) (Weiss, 2002; Webster, 2002; Ben-Joseph, 2004a, 2005; Dowling and McGuirk, 2006).

[17] Information obtained by the author in interviews with Prof.Dagstani, Eng.Babear and Mr.Balbead in 2008.

Figure 5.12: Prince Fawaz Project in south-east Jeddah
Source: Adapted from Google Earth (2012) and by using GIS ArcView 10.1

Ben-Joseph (2004a, 2005) described the developmental pattern of this development such as Common Interest Developments (CIDs) as having increased at the end of the 20th century in the US. He adds that nearly 47 million Americans live in this type of residential area. He also noted that expectations for development projects range between 8,000 and 10,000 each year in US cities.

Ben-Joseph further described communities as relying on charters, requirements and laws that provide private-sector control and organisation of all land uses, design decisions and social facilities. The communities own, operate and manage all of the residential property, open spaces, recreational facilities, parking and streets. Other writers such as Barton and Silverman (1994), Blakely and Snyder (1997a), McKenzie (1998, 2003) and Bajracharya et al. (2007) indicated that the reason or motive for the

spread of this type of residential development goes back to the common interests of developers, buyers and local government.

Developers gain benefit from this type of development by providing effective design schemes, despite the high cost of land and infrastructure. The buyers also benefit because they have control over their own residential district; it also provides them with an integrated residential environment and a variety of services and facilities in distinct contrast to the areas under conventional development. Local governments prefer such types of projects as a result of the privatisation of infrastructure services and facilities because they reduce government expenses. Seidel (1978) reports criticism of conventional patterns of LSPs on behalf of American planners and government. The conventional pattern appeared in the 1960s in the US and failed to provide well-designed, creative solutions and appropriate planning solutions. The failure of the conventional method of development led planning authorities to search for innovative new methods through flexible and comprehensive design processes to approach the design and planning of residential projects.

This new approach led to the emergence of non-conventional patterns of LSPs development mentioned above. The new patterns have revolutionised subdivision plans across North America. Ben-Joseph (2003) concludes in his survey stating that 86% of American states have requirements or regulations related to the adoption of variety of LSP development patterns; for example, Planned Unit Development, Conservation Development and New Urbanism Development.

In the city of Jeddah, this development is thought to have begun slowly spreading after 1990s. During this period, gated and ungated developments and other innovative projects appear. This research project reviews the design quality and service provision of these developments, and the processes that have produced them, in Chapter 10.

The Fourth Master Plan (and even the earlier master plans) and SRPs never dealt with, defined or specified zones for such projects; they did not even play any role to encourage them. As shown in Chapter 10 (see Section 10.5), this type of project has emerged on the basis of the wishes and aspirations of unconventional developers. The developers based their evaluations on studies of implemented LSPs in Jeddah, to find out what people want, as well as take advantage of the developmental trends and experiences in the West. Developers relied on engineering expertise and planning of the

high numbers of staff of these companies or engineering planning offices that had been contracted.

On the contrary, and as shown in Chapter 10, some developers of this kind of project suffered from a lack of flexibility in the SR used by Jeddah Municipality, as well as delays in the approval process, and their impact on the implementation process in accordance with the timetable specified.

The alternative subdivision plans had several characteristics, as mentioned previously in many studies including McKenzie (2003) and Bajracharya et al. (2007). Some of the characteristics (see Section 10.5) include pattern layout differences from conventional subdivision plans, attention to pedestrian and cycling facilities, reduction in vehicular street traffic; while aesthetics and urban design elements have been given more care and disabled access is considered. The deductions for facilities and public services exceed specifications. There has been extra development of parks and playgrounds, mosques and schools by the developers. The service infrastructure provides integrated networks within the projects, such as electricity, water, sewage, rainwater, sewage treatment, gas, television, etc. In contrast with other conventional schemes, sustainable concepts have been employed, taking into account the environmental and climatic aspects of Jeddah.

The innovative development trend may have led to a paradigmatic shift in the quality levels of residential subdivision plans in Jeddah. The shift helped displace the maintenance and management so that the Jeddah Municipality no longer bears the brunt. The management of housing projects has been given to the corporations responsible for developing them. In exchange for undertaking the development and maintenance responsibility, owners pay monthly or annual fees that cover the costs. Also, some of these projects (not all) provided the housing units ready for the end-users and mostly within budgetary limits. This process helps consumers avoid individual development of residential units, which has been the widespread practice in conventional LSPs. The projects are distinctive additions to the city, and serve as models for the review and amendment of the SR, as well as dealing with questions as to how development and management of the residential areas in Jeddah should occur (see Section 10.5). Ben-Joseph (2005) refers to this point:

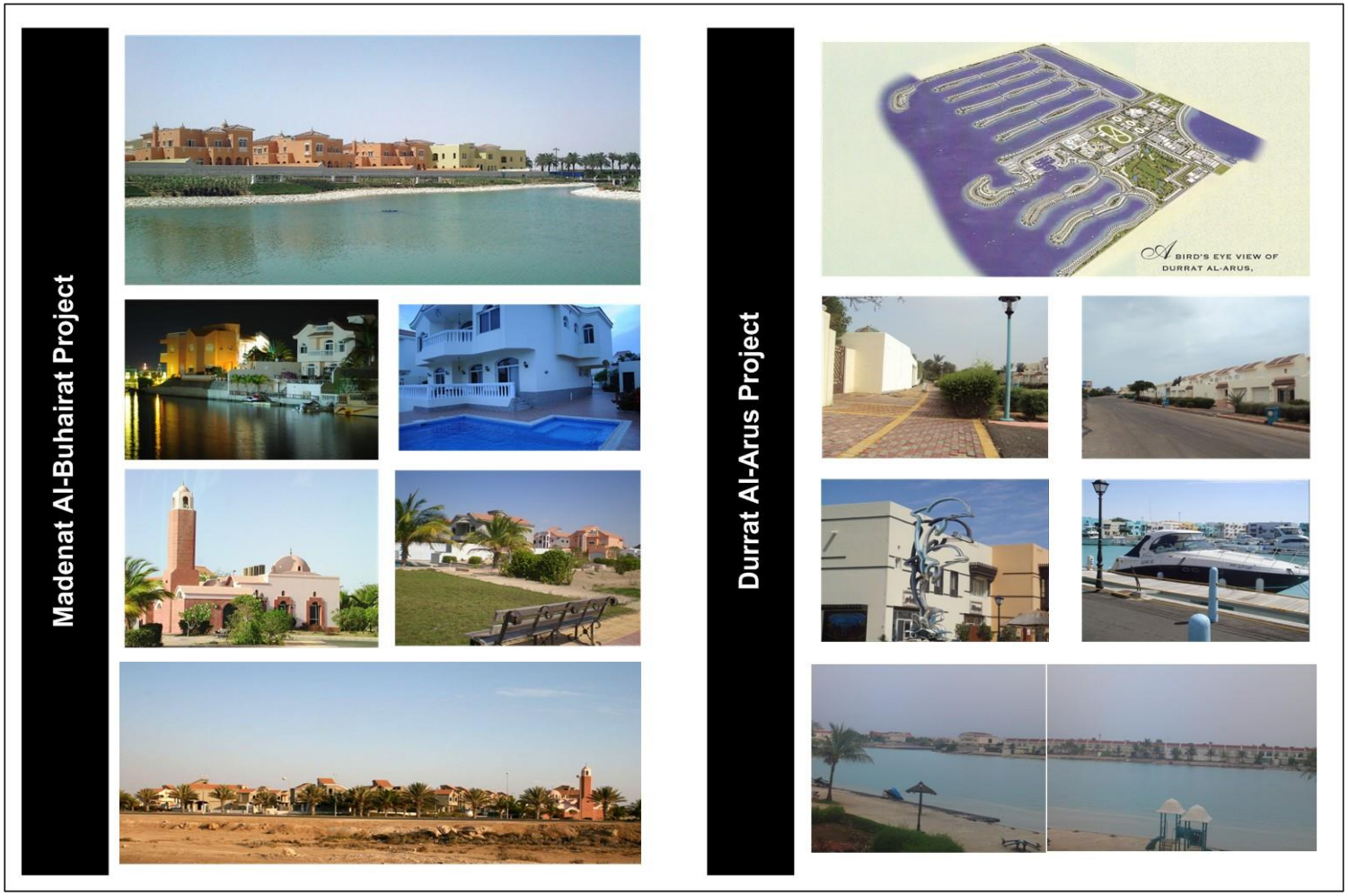


Figure 5.13: Two famous unconventional LSPs in Jeddah.
The projects appeared between end of the 1980s and the 1990s, and were completed by two big real-estate companies.
Source: photos and data from: Waheb (2004), Qurnfulah (2005), Dallah Albarkah Group (2012)

> *The proliferation of CICs, with their ability to plan, design and govern outside public boundaries, can be seen as an indicator of a failed public system. When developers and public officials resort to privatization in order to achieve a more responsive design outcome, and when local jurisdictions acknowledge that privatized communities provide a straightforward way to grant variations and innovation, then something is wrong with existing parameters of subdivision codes and regulations* (2005:147–148).

Ben-Joseph argues that it is important to depend on the future on governmental SR and policies that promote and encourage a diversity of housing and development types. He also points out that consumers are not supposed to push them towards acquisitions in this type of project simply because it is the only type or the only option for the development located within the city. Ben-Joseph also adds that the important quality of the unconventional project is modification and change to the subdivision, and that this developmental pattern means forming links between government officials and developers. He also notes that not all projects developed according to this thinking are complete projects, but are at least longer projects that have achieved efficiency and creativity in design, open spaces, and integration in social and environmental services. He further demands that the projects serve as a kind of model that can be used to improve the deficiencies of the current subdivision code that currently produces conventional projects. In Jeddah, despite the emergence of a limited amount of unconventional residential development, the most desirable method remains ownership within conventional LSPs. The SR, master plans and even the conventional developers are the main reason for the spread of conventional thought.

During the period between 1986 and 2001, a group of planning problems appeared in Jeddah. The most prominent of the planning problems was the continued urban sprawl, high cost of infrastructure networks extension (i.e. water and sewage networks, covering 25% of Jeddah's urban mass). The roads and pavements have become long, with the increase of their maintenance and cleanliness at municipal expense; also, there are delays in executing the locations of the services and public utilities within the plans. Some problems emerged at both local and national levels, such as housing affordability. In Jeddah, there is a large group of undeveloped residential plots within the urban growth boundary. These lands are owned by individuals and located within developed residential subdivision plans (Mandeli, 2008). In order to solve this problem and other planning problems, Jeddah Municipality worked swiftly to sign a contract to begin the preparation of the Fifth Master Plan of Jeddah. The municipality researched an

agreement with the Al-Beeah Consultancy Office for study and preparation of this plan (see Figure 5.14). The consultants relied on the 'smart growth policy' in its preparation and design. They also incorporated concepts of sustainability. The plan encourages higher built density. Higher density encourages development of vacant plots and increases housing stock thus reducing housing demand. The plan was adopted in 2005. The goal of the new plan is to guide and direct the growth of the city until the year 2055 (Al-Beeah Consultancy Office, 2004; Mandeli, 2008; Abdulaal, 2012).

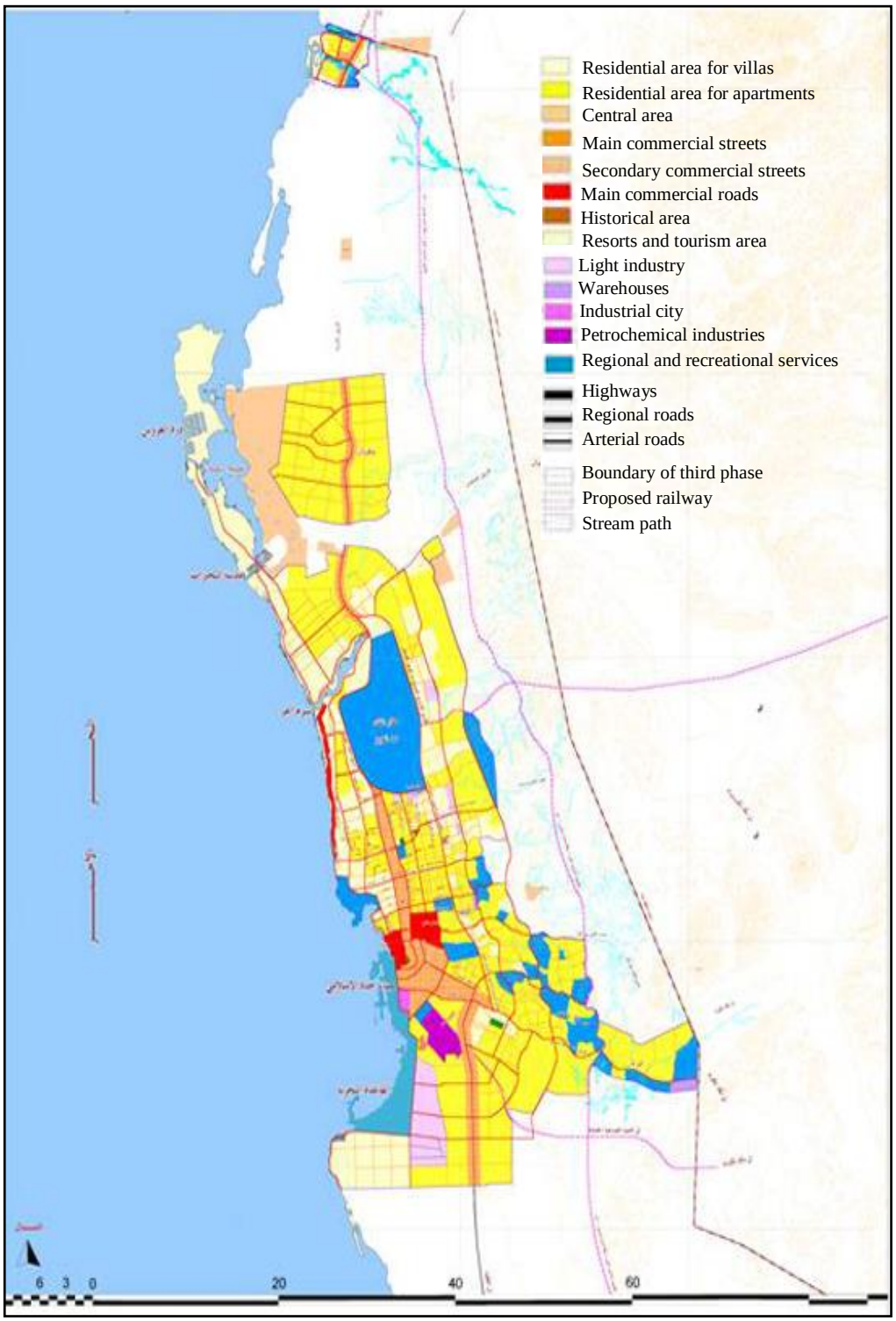


Figure 5.14: Fifth Master Plan of Jeddah: Al-Beeah's 2005 plan
Source: adapted from Jeddah Municipality (2012).

Zoning regulations also encourage higher-density growth. Many villa owners within some LSPs have been allowed to adopt the new regulations. The owners demolished their villas, consisting of two floors, and built new multi-floor residential buildings (five to six storeys). The zoning regulations have encouraged landowners to develop plots quickly. A number of new LSPs appeared that allow the construction of multi-floor units.[18] How will Jeddah Municipality allow an increase in the multi-floor buildings within LSPs that had previously been approved as they were low density, and due to the SR, buildings of this type of density were not previously allowed? Are the widths of internal streets and parking suitable for such a change? Are public services and facilities sufficient and appropriate to accommodate population increase within these areas? Is the capacity of the infrastructure appropriate and sufficient to accommodate the increase in population? Are the current SR appropriate to the kind of residential areas that allow higher floors for new residential areas? Is the Fifth Master Plan observing the formation of SR in Jeddah in particular, taking into account the smart growth policy and sustainability?

The answers to the above questions refer to the non-observance of the provision of this matter. Jeddah Municipality, at the time of the approval of the residential subdivision plan, still based its practice on the idea of reviewing the general requirements contained within the master plan related to the location of the land for development. While the internal details on the organisation of subdivision plans are referred to in a separate manual for SR, they do not take into account the concept of sustainability or smart growth.[19] The most recent version of the SR manual was updated in 2003, which had minor changes from the 1984 release. The regulations were issued by MOMRA in Riyadh and intended for general application across the Kingdom. The regulations are unified, weak and have not been amended, and also do not take into account sustainability or smart growth.

This period saw the continuous emergence of conventional LSPs in Jeddah after the application of this master plan (see Table 5.4). There was also a continuation in the development of unconventional projects in Jeddah, but on a slow trend. The most prominent unconventional projects that emerged include the Al-Fareeda residential project in north Jeddah, the Masharif residential project, the Kingdom City in north Jeddah, and the redevelopment of the slum areas Qasr Khuzam, Al-Sabeel, and Al-

[18] Information obtained by the author in interviews with Eng.Babear, Eng. Almalki and Mr.Balbead in 2008.
[19] Information obtained by the author in interviews with Eng.Babear and Eng. Almalki in 2008.

Ruwais (see Figures 5.15 and 5.16: Some projects were chosen to explain their components).

Table 5.4: Characteristics and components of approved and implemented LSPs in the period from the Fourth and Fifth Jeddah Master Plans

Subdivision Plan Analysis Elements	Description
Number of subdivision plans	Conventional LSPs: 481 Non-conventional LSPs: 24
Development type	• Conventional LSPs: non-abundance of the final product or part thereof – not innovative – individual way of development. • Non-conventional LSPs: innovative – provide final product or part of it – including creative ideas – studying people's interests before development theme.
Layout pattern	• Conventional LSPs: majority of these plans depended on *Al-Maforkah* or new grid pattern (twisted form) – other plans or small number that mixed the 'twisted form' and loop, or used the loop form only. Non-conventional LSPs: majority depended on cul-de-sac form. Other plans are hybrid: cul-de-sacs with curvilinear pattern, or loop, or loop with curvilinear pattern.
Internal street system	• Conventional LSPs: hierarchical internal streets – wide streets between 15–16–20m – multiple intersections – use of (T) type – passing streets. • Non-conventional LSPs: hierarchical internal streets – between 16–20m – majority of these projects utilise non-passing streets.
Pedestrian pavements	• Conventional LSPs: Not more than 1.2m in width in both sides of street – no planting strip area – not connected with each other. • Non-conventional LSPs: Several LSPs with wide pedestrian pavements – between 1.5–1.8m – plus planting strips 1m – connected pavements and with pedestrian paths.

Subdivision Plan Analysis Elements	Description
Entrances and exits	• Conventional LSPs: many – allows passing cars to enter the LSP. • Non-conventional LSPs: limited number of entrances and exits – do not allow cars to pass – may be gated or ungated.
Pedestrian footpaths (walkways)	• Conventional LSPs: Not available - no certain requirements. • Non-conventional LSPs: Majority provide pedestrian walkways - multiple paths, connecting housing units with services – high level of care about details of these paths during the design, planning and development process – special design requirements for these pathways were created before these projects approved.
Cycle paths	• Conventional LSPs: not available – no particular requirements. • Non-conventional LSPs: several provide cycle paths – the designers of these projects care about the requirements relating to the execution of these pathways.
Public facilities	• Conventional LSPs: there are special requirements: deduction of 33% of the area of land development for: street network, pedestrian pavements, parks, playgrounds – these projects did not develop these facilities' plots, nor parts of them, and did not provide for end-users. • Non-conventional LSPs: majority of these projects dedicated between 35–40% of the developed area to be allocated for public facilities – developers developed these facilities' plots, or parts of them, and provided for end-users – these projects used the idea of providing facilities as promotion tool during the stage of marketing and sales the project.

Subdivision Plan Analysis Elements	Description
Public services	• Conventional LSPs: according to SR, these LSPs dedicated 2–3% of the area of development allocated for public services – not executed by developers – did not coordinate with government service providers during the development stages. • Non-conventional LSPs: several projects dedicated between 4–6% of the development land area – some developers obliged to execute some services and be prepared for end-users; some care about coordination with the services providers to execute and develop the area of the services during the project development stages.
Utility networks	• Conventional LSPs: According to SR: extending water, electricity, telephone networks only. • Non-conventional LSPs: the majority of these projects provide: water, electricity, telephone, sewage, drainage, TV cables, sewerage, and some projects provide gas.
Planting and shading (aesthetic aspects)	• Conventional LSPs: not available in the majority of these projects – there are no requirements for these. • Non-conventional LSPs: these projects provide complete ideas related to project landscaping aspects such as: special trees, special lighting spots, high level of streets pavements and pedestrian path furniture's – figuratively aesthetic – shaded places for pedestrians and car parks.

Subdivision Plan Analysis Elements	Description
Implementation process	• Conventional LSPs: developers are obliged to pave the streets, light the roads, extending some infrastructure networks. • Non-conventional LSPs: the majority of developers execute: paving, lighting, forestation, extending all infrastructure networks to the location, mosques, playgrounds, residential units, gates, pedestrian and cycle paths, sports clubs, halls for occasions, shaded areas for pedestrians and traffic alleviation.
Urban design elements	• Conventional LSPs: no care for urban design; there are no requirements for these. • Non-conventional LSPs: these projects care about provision of urban design elements – various design plans prepared and introduced during the approval process of these projects.
Traffic-calming elements	• Conventional LSPs: not available in the executed streets, no care about these elements, no requirements for them. • Non-conventional LSPs: care about providing many traffic-calming elements within these projects such as: small roundabouts, bumps, green islands in the middle of streets, various gates/electronic gates, curved and cul-de-sac streets.
Elements for disabled people	• Conventional LSPs: not available; no requirements for these. • Non-conventional LSPs: a few of these projects provide the elements for disabled people – these projects provide detailed plans relating to this aspect during the approval process – special drawings and plans introduced by project developers during the approval process.

Subdivision Plan Analysis Elements	Description
Maintenance – Cleaning – management services (after-sales services)	• Conventional LSPs: Jeddah Municipality is responsible for the adopted and executed plans – they will be handed over by developer after executing the plan components and after completing residential sales. • Non-conventional LSPs: majority of these projects provide after-sale services such as maintenance, cleaning, security, project management (users pay fees for these services – there are contracts and agreements for the joint ownership between developers and owners of residential units within these projects).
Development of residential units	• Conventional LSPs: Not carried out by the developers – separate process done by plots owners – takes years to complete the subdivision plans. • Non-conventional LSPs: majority of these projects developed residential units, providing many housing unit models to choose between – do not take years to complete the residential district.

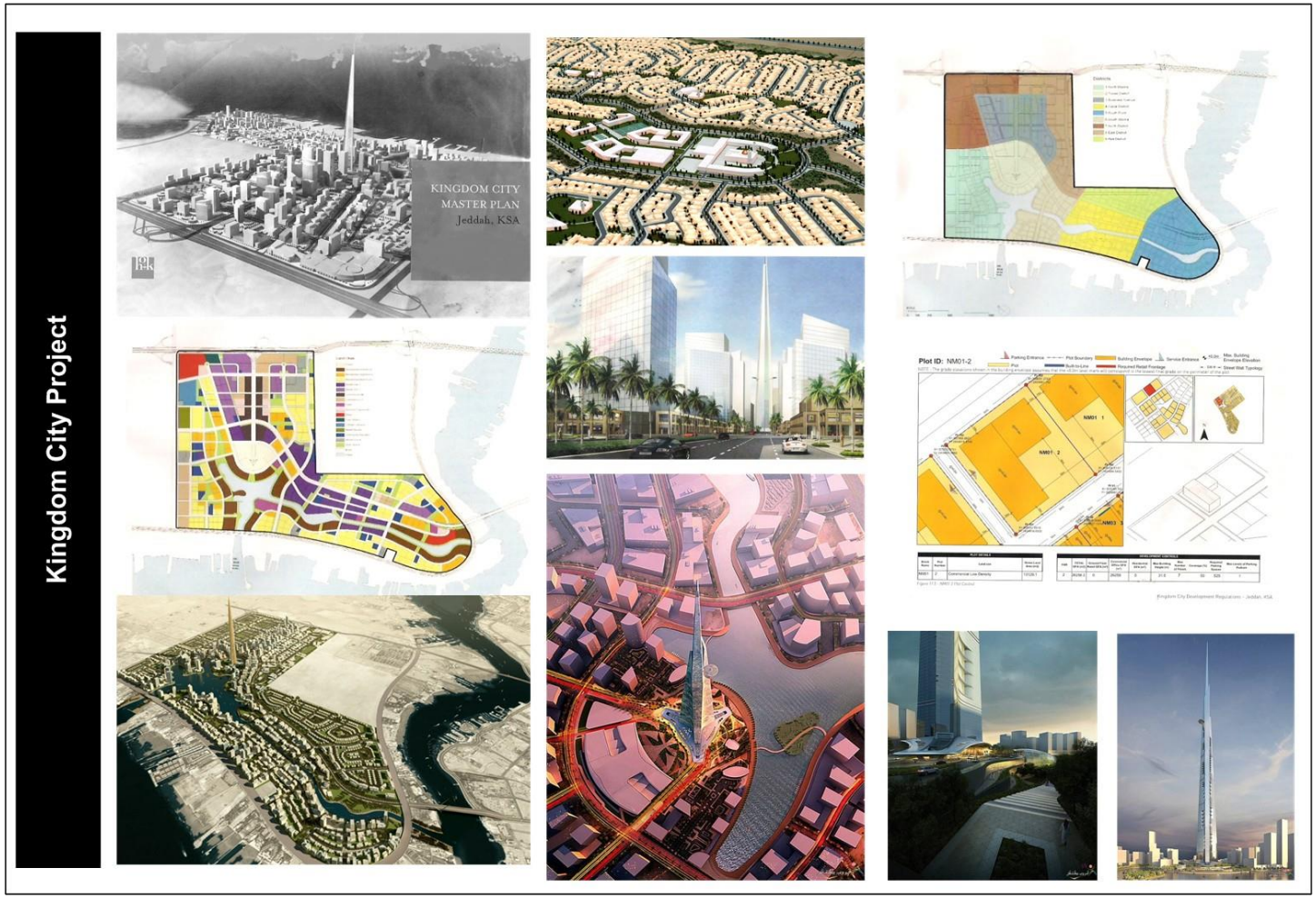


Figure 5.15: The Kingdom City project in Jeddah. The project is considered an innovative development
The developer created zoning and subdivision regulations especially for the project. Photos show the quality level of this project by using sketches and drawings. This project is still under development and there are a number of phases still to complete; the developer developed the business zone first and the tower.
Source: Kingdom Holding Company (2012), *Okaz* (2012), *Al-Riyadh* (2011), Al-Menaa (2012b).

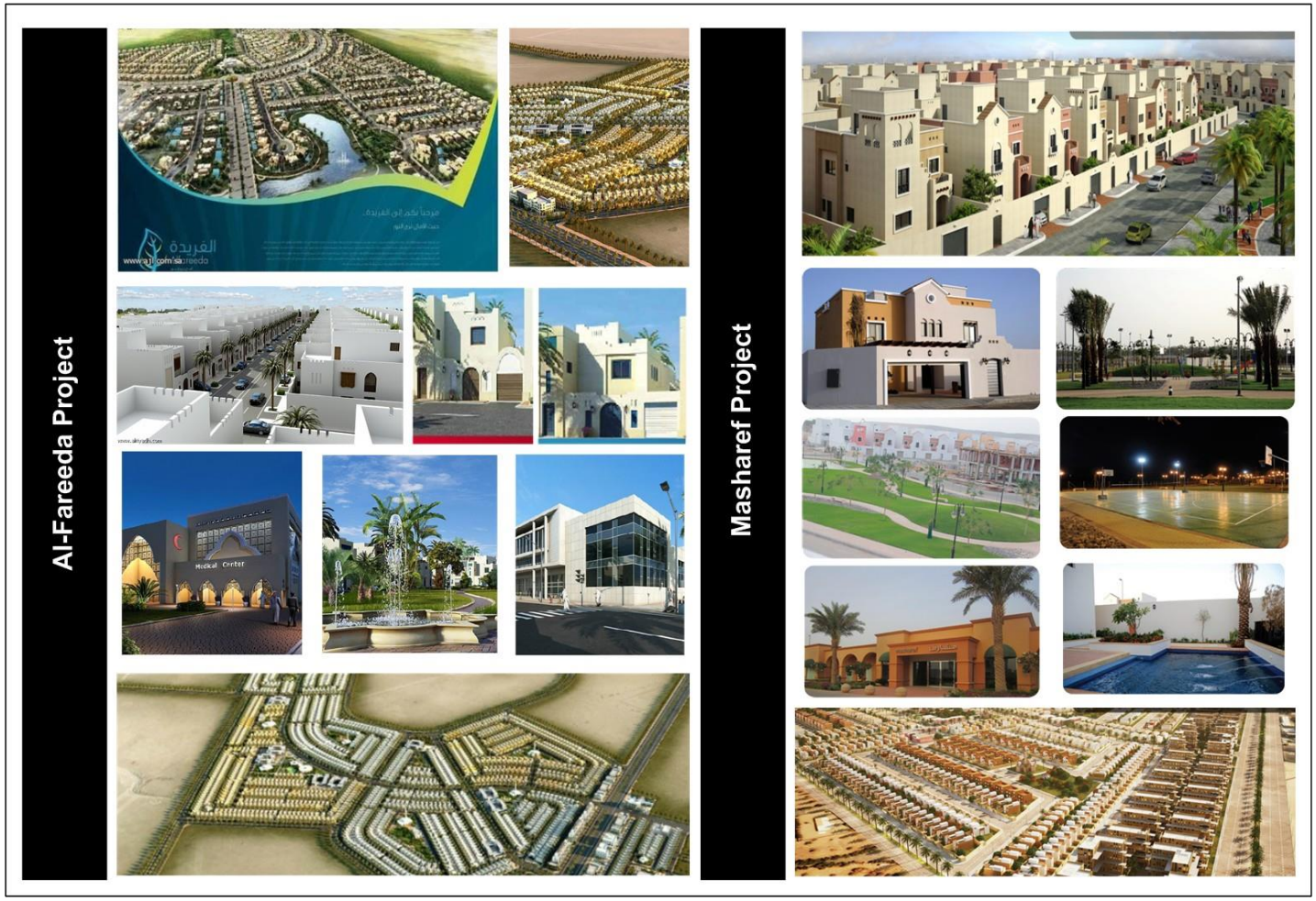


Figure 5.16: Two innovative projects in Jeddah
Photos show services, facilities and housing units within these projects. The projects provide the final product to end-users. They are still under development; for example, in Masharef the developer has completed the first phase
Sources: Tuwaim (2010), Rubaish (2011), Kinan Company (2012), Ewaan Company (2012)

5.5 Jeddah Master Plans versus LSPs (Summary)

The main features of the five master plans of Jeddah have been discussed above. The main purpose of the master plans is to control urban development, and to provide for the future needs of Jeddah. Such needs include housing, roads, public services and facilities, and infrastructure services.

Each of the master plans have articulated goals, objectives and ideas based on the circumstances and survey results of the time. The First Plan paved the way and drew the general shape of the direction of the growth and expansion of the future of Jeddah city. The Second and Third Plans depended on the ideas of the First Plan. The aim is to provide a network of roads intersecting at right angles, with the application of the idea of the gridiron pattern at the beginning, and then the theory of the Super Block. The Fourth Plan continued to apply the same thought, guiding the growth of Jeddah towards the north and east of the city. The last plan has been working on the application of a new concept of development, wherein vertical rather than horizontal expansion of Jeddah is encouraged, as well as sustainable practices in the growth and the development of future projects.

None of the schemes, with the exception of the first, specifically provided special SR for Jeddah linked directly with zoning regulations. Each of the plans created conventional zoning regulations in Jeddah, where regulations within the city divided it into several residential areas or zones. Each zone has its own general requirements for the organisation of the construction and land development process. These requirements are used for reference at the time of the approval of the residential project. All the details of the organisation of internal land development include the type of development, the pattern of development, road network configurations, services, etc. They usually refer separately to the SR manual issued by the ministry in Riyadh.

The early plans predate the idea of encouraging developers and directing them to develop non-conventional residential projects in Jeddah such as New Urbanism projects, gated communities, PUDs and TNDs, etc.

Abdulaal (2012) indicated that the previous four general plans for Jeddah were interested in focusing the control and management of current and future development of Jeddah over creating new projects ideas such as large or mega urban developments. On

the other hand, SR organisers did not provide any incentives for developers to develop such kind of residential projects in Jeddah.

With the advent of the Fifth Master Plan, the idea of applying a policy of smart growth and sustainable practice emerged (see Table 5.5). The consultants involved in compiling the plan defined the sustainability as the ability to continue development that comes from maximising the use of natural, financial and human resources available, reducing operating and maintenance costs and improving the environment for humans. It also requires a strong interest in the quality of design and engineering works (Al-Beeah Consultancy Office, 2004).

Table 5.5: Standards, goals and means of achieving sustainability within the Jeddah Fifth Master Plan

Sustainability Definition	Main Goals	Sustainability Standards	Means
According to the Fifth Master Plan: 'sustainable development is the ability to continue development and maximise the utilisation of natural resources, financial and human, economic and urban and reduce operating and building costs, and improve the environment for humans. It also requires strong interest in the quality of design and engineering works' (Al-Beeah Consultancy Office, 2004).	Development goal and strategy: achieving stabilisation of Jeddah's inhabitants Main goals: Sustainability Improve quality of life Improve economic situation Improve social parity Improve traffic and mobility Improve use of sustainable land	Improving internal investment circumstances Proper building maintenance Provide open areas Improve walking circumstances Reduce crime Improve air quality Reduce annoyance Improve employment opportunity Improve social parity Better employment of natural resources Improve historical and cultural milieu Reduce consumption of power and resources Observe sewage systems Observe improving rainwater drains Improve health	Achieve goals, standards via: Improving circumstances of work and public places Provision of suitable urban structure for growth and economical interest Avoid social isolation Improve training opportunities and housing for low-income people Process road intersections and improve public transport and pedestrian options Provide opportunities encouraging the integrated development, and suitable distribution of Jeddah's function

Sustainability Definition	Main Goals	Sustainability Standards	Means
		Improve housing Improve waste treatment Make use of the sea Improve traffic and public transport	

Source: adapted from Al-Beeah Consultancy Office (2004).

The researcher's observations on the Fifth Master Plan conclude that the *sustainability* criterion stated in the plan seems easy to discuss but difficult to implement, particularly in future residential areas of Jeddah, because the sustainability goals are not well linked to the SR; there is a lack of awareness of sustainability among conventional developers and a lack of adequate capacity of Jeddah Municipality regarding sustainability planning (especially in the land subdivision plans department).

Oak Harbor City (Washington, US) (see City of Oak Harbor Planning Department, 2008, 2009) (for the US, see also Sustainable Communities Online, 2014: it provides several resources such as showcasing sustainable development practices, model codes, ordinances, and successful projects examples implemented by communities to achieve sustainable development goals), Kāpiti Coast District Council (New Zealand) (see Kāpiti Coast District Council, 2005, 2006, 2008, 2009) and Abu Dhabi (UAE) (see Abu Dhabi Urban Planning Council, 2007, 2010a, b, c) are good examples of planning sustainable cities. These experiences are observed to achieve the concepts of sustainability and smart growth through the formulation of several guideline manuals and requirements for the organisation and development process of LSPs. The SR guidelines have been drafted via a participation process and between several actors, such as the users, developers, planners and multiple government agencies.

Over more than 45 years in the history of LSP development in Jeddah, around 1,522 of these plans have been approved and implemented up to 2009. Through this figure, approximately 63 residential LSPs were adopted but could not be implemented due to legal and economic problems. This means that the total number of the plans executed is approximately 1,459 (see Table 5.6 and Figure 5.17). A majority of these plans are conventional; this conventional pattern has created the components and characteristics of urban sprawl in Jeddah over the past years. It is also expected to continue for years to

come, especially in the case of non-interference by regulators in the formulation of modern SR specifically suitable to Jeddah.

Table 5.6: Emergence of LSPs in Jeddah and their relationship with the emergence of the master plans

Time Period		Year	No. of Subdivision Plans	Master Plan
48 years	**11 years**	1962	No data	First Master Plan period: Dr Makhlouf's plan in 1962
		1963		
		1964		
		1965		
		1966	25	
		1967	120	
		1968	50	
		1969	45	
		1970	37	
		1971	38	
		1972	42	
	13 years	1973	41	Second and Third Master Plan period: Matthew's plan in 1973 and Sert Jackson plan in 1980
		1974	39	
		1975	30	
		1976	28	
		1977	31	
		1978	46	
		1979	47	
		1980	62	
		1981	82	
		1982	81	
		1983	63	
		1984	28	
		1985	19	
	1-2 years	1986		
		1987		Fourth Master Plan period: Al-Sumaitt plan in 1987
	17 years	1988	8	
		1989	5	
		1990	14	

Time Period		Year	No. of Subdivision Plans	Master Plan
		1991	17	
		1992	25	
		1993	33	
		1994	13	
		1995	48	
		1996	20	
		1997	36	
		1998	42	
		1999	21	
		2000	22	
		2001	37	
		2002	16	
		2003	18	
		2004	31	
	5 years	2005	33	Fifth Master Plan Period: Al-Beeah Plan, 2005 to date
		2006	14	
		2007	17	
		2008	19	
		2009	16	
Total No. of Subdivision Plans			**1,459**	
	Stop Approval Period for Subdivision Plans			
Note: There were 63 approved subdivision plans but not implemented for legal and economic issues, and not included within this list.				

Source: Jeddah Municipality archive with researcher's modifications (data collected during: pilot study phase (summer 2008) and main fieldwork phase from December 2009 to February 2010).

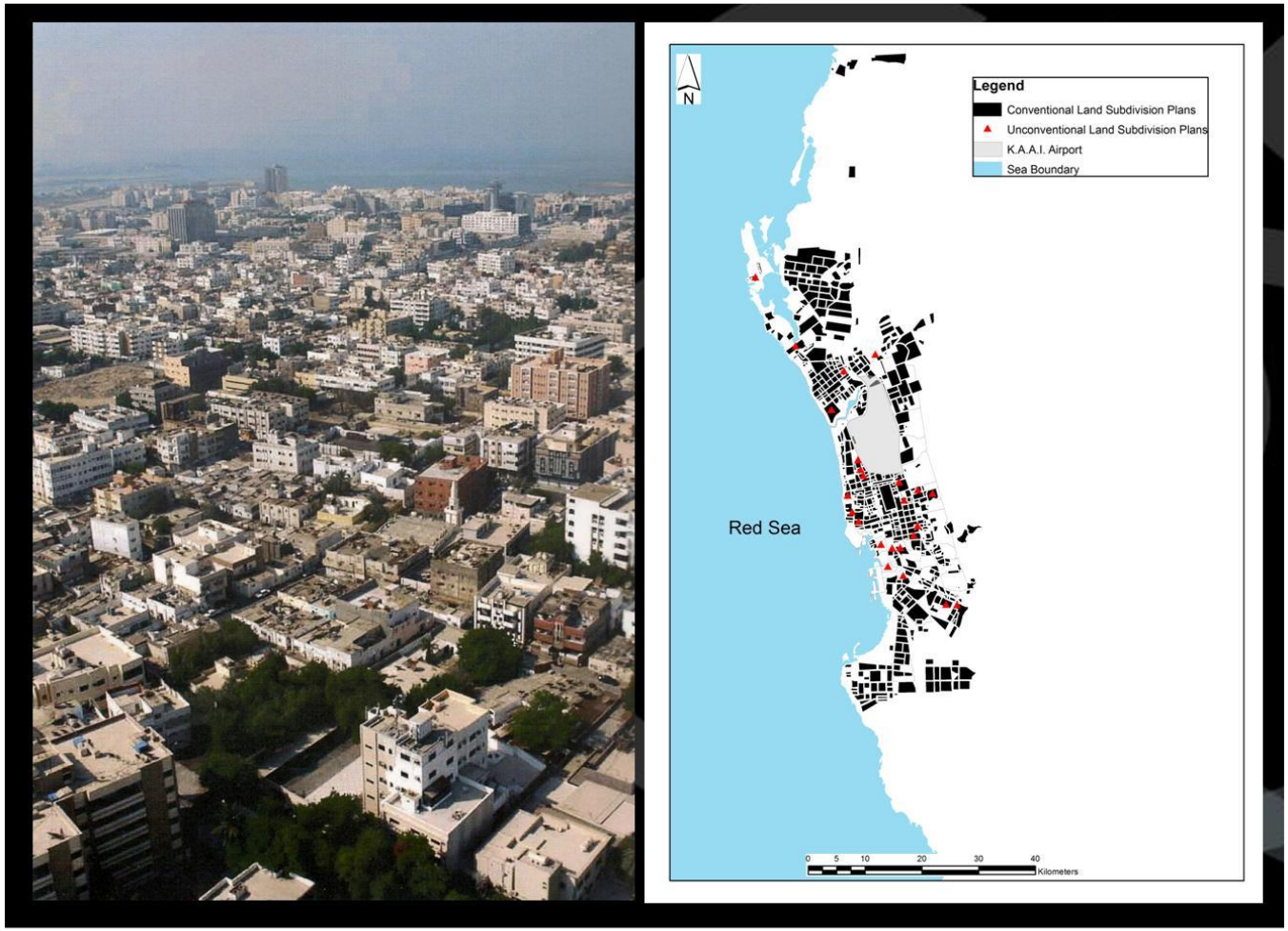


Figure 5.17: The sprawl pattern of LSP activity in Jeddah
There are two types of pattern: the dominant one is the conventional and the less common one is the unconventional
Source: adapted from Jeddah strategy plan (2009a), data from Jeddah Municipality archive. Map prepared using ArcView10.1.

5.6 Conclusion

This chapter has set the Jeddah case study in context, and shown how it has developed firstly along Islamic principles, and more recently through unplanned and then planned development.

Unplanned development, produced through unregulated individual developers, produced relatively simple residential development in terms of their form, physical characteristics and infrastructure provision.

Discussions in the chapter are important in obtaining ideas about the city's development which occurred earlier; later, it would be fruitful to link these planning exercises with the stakeholders' perceptions, as discussed in later chapters.

CHAPTER SIX: CONVENTIONAL PERCEPTIONS OF THE ROLE AND PRACTICE OF SUBDIVISION REGULATION: OFFICIALS' AND CONVENTIONAL DEVELOPERS' VIEWS

Chapter 6: Conventional Perceptions of the Role and Practice of Subdivision Regulation: Officials' and Conventional Developers' Views

6.1 Introduction

This chapter discusses the conventional perception of subdivision regulations, especially those officials from Jeddah Municipality and conventional developers. Such regulators and developers are the stakeholders who believe that subdivision regulations are efficient and being executed in a suitable way.

The chapter is arranged into four sections. Section 6.2 discusses officials' perceptions (of role and practice of SR) while the subject matter of Section 6.3 is conventional developers' perceptions (of role and practice of SR). Finally, Section 6.4 contains the conclusions: a conventional perception of officials and conventional developers in Jeddah.

6.2 Officials' Perceptions (of the role and practice of SR)

The perceptions of officials lay a solid framework to discuss the pros and cons of SR in Jeddah as they are the stakeholders who regulate the legitimacy of such roles and practices.

6.2.1 Research Methodology and Data Collection Procedures

Permission to conduct the research was obtained from Jeddah Municipality at the beginning of a pilot study during summer 2008. However, due to the lack of knowledge of the officials involved in the approval of subdivision plans, the researcher conducted an informal interview with the general director responsible for managing residential subdivision plans. The interview provided much-needed insights about how the department managed its responsibilities, the number of employees involved, the types of technology used in the approval of subdivision plans, and the participating authorities.

There were two teams of officials responsible for reviewing the residential subdivision plans submitted for approval; one in the Planning of Land Subdivisions Plans Department (PLSPD), consisting of five employees, and a Higher Advisory Committee (HAC) composed of four consultants reviewing the subdivision plans approved by the

PLSPD, before final approval by the head of the municipality. The researcher distributed a questionnaire to five officials responsible for approval of the residential subdivision plans; however, none of them returned the questionnaire, blaming lack of time or loss of the form. To overcome the aforesaid problematic practicalities the data collection methodology was changed to the structured interview method.

In total, there were nine interviews conducted – five in the PLSPD and four in the HAC – between December 2009 and February 2010. Each interview lasted 40 to 45 minutes and was tape-recorded. The researcher followed usual interview protocols, explaining the purpose of the research, gaining permission for the interview and for use of the material as part of the research, and agreeing anonymity with the interviewee. The interview questions were structured around four themes: the first related to evaluative procedures for appraisal of subdivision plans and their completion; the second explored the reasons for the non-evolution of SR; the third analysed the relationship between SR and residents' needs; and the fourth questioned the adequacy of development carried out by developers. Besides these thematic areas, the regulators' views were also recorded about the various improvements proposed to existing regulations and procedures.

The five interviewees belonging to the PLSPD may be divided into two groups. The first consists of three officials who have Bachelors' degrees in Civil Engineering, Urban Regional Planning and Landscape Architecture. With less than five years' experience, their role is mainly confined to reviewing subdivision plans on a daily basis. The second group had similar educational qualifications but almost ten or more years' experience. Their main duties included the administrative and technical supervision of the department, reviewing the approval work, considering problems and finding solutions, and developing annual budgets in line with departmental needs.

The rest of the regulators sampled belonged to the HAC, formed in late 2008. The members of the committee were four consultants with high academic qualifications and expertise: two of them held Master's degrees in Urban Regional Planning while the others had PhDs in Architecture and Industrial Engineering. All of them had more than five years' experience in the administrative and technical aspects of Jeddah Municipality.

6.2.2 Major Shortcomings in Approval Procedures

The first and foremost shortcoming is the absence of several authorities/departments from the process, i.e. the Directorate of Education, the Endowments, Mosques and Hajj Department, the Health Affairs Department, the General Department of Parks and Tree Planting, the Saudi Geological Survey Authority, and the Road, Transportation and Traffic Department.

The locations of services and public facilities in residential areas are usually determined by agreement between the developer and the approving authority (by referring to the LSP requirements). However, there is no contact with the authority that executes these services at the time of approval of the plans. Even the financial and temporal plans of these authorities are not made known at the time of approval, and the technical opinions of these authorities relating to the locations of the services and public facilities are not sought, nor are they consulted at the time of approval. Following the approval of the residential LSP, the General Directorate of Development and Planning (under the development and planning director there are a number of departments; one of those is the PLSPD) addresses some of the governmental authorities concerned, and if those authorities intend to develop these services and public facilities, the authorities that execute them are provided with copies of the plans showing the locations of services and public facilities. If these authorities agree to develop them, they contact the municipality in order to refer them to the owner of the land mentioned in the subdivision plan in order to buy the land allocated to all types of schools and health services and other services and public facilities. The areas allocated for parks, playgrounds, roads and pedestrian pavements are public lands whose ownership is directly transferred to the government. It is strictly prohibited to change their uses except after referral of the matter to the municipality. The General Directorate of Development and Planning (Land Subdivision Plans Department) delivers the lands allocated for parks and playgrounds to the General Department of Parks and Tree Planting.

These administrative and regulatory procedures are time-consuming and expensive. Among the observations that have been recorded in the municipality archive with respect to LSPs is the absence of a database of the locations of the services and public facilities in the approved plans; nor is there any follow-up or updating of the locations of these services and public facilities when the LSPs are executed. In Jeddah, many of

the plans are quickly executed a long time before any services and public facilities are developed. This was discovered by the researcher in the study areas of Al-Mouhamadeyah and Al-Naseam (see Chapters 7 and 8). The reasons behind this are the absence of any role of the concerned authorities to follow these up at the time of approval of the LSP, the lack of a database of these locations, and the lack of a timetable for the creation of these services and public facilities. Many locations have been discovered where the residential land is still left without development, which reflects negatively on the users of these residential districts.

With respect to environmental aspects, there is no direct contact between the Saudi Geological Survey Authority (SGSA) and the approving authority. The SGSA is among the departments that are concerned with environmental aspects, and prepares periodic environmental studies and reports about Jeddah. Among these are studies on the torrential rains and hydrological studies. Usually, residential LSPs are approved without consulting these authorities. For example, this applies to the aspects related to vehicular traffic and pedestrian movement; there is no contact with the Traffic and Transportation Department and Traffic Studies Department, although these authorities offer technical advice regarding the safety of roads, junctions and pedestrian pavements.

6.2.3 Studies Prepared by Developers

According to Kaplinsky (2006), every subdivision application must show the boundaries of the subdivision and its relationship to surrounding lands; the proposed lots and their intended uses; the site's topography and its natural and artificial features (e.g. watercourses and railways); the proposed streets and highways; and the existing and planned services and infrastructure. Studies and reports on the soil conditions, hydrology, environmental impact, and other technical studies such as noise and traffic are also attached, as well as other material necessary to support the application. Some municipalities require applicants to submit elaborate (and expensive) urban design plans, including landscaping, streetscaping, park planning and architectural controls. Other work in the field of subdivision plan development processes, such as Kone (2006), Miles et al. (2007), Dewberry and Rauenzahn (2008), and Johnson (2008a, b), shows the importance of such studies to prepare during the subdivision plans' planning and design stage, and before the approval process. These studies help to create a high-quality and efficient subdivision plan pattern.

Employees 4 and 5 indicated that most of the developers get away with the least number of studies possible, as they are not creative or innovative. The studies required from the developers include the following:

- A survey map of the developed land;
- The original copy of the residential subdivision plan design;
- The relationship of the subdivision plan location to the neighbouring areas (usually in a simple form);
- The location of the proposed subdivision plan design in Jeddah, indicating the permitted density and the permitted land use, as well as the relations between the land location and the urban growth boundaries of Jeddah city.

6.2.4 Modern Programmes and Technology Employed

According to Esnard (2012),

> *visualization is facilitated by an array of tools and methods, including graphics, websites, maps, GIS and three-dimensional simulation models. Combined, they contribute to intelligence gathering and knowledge creation at each stage of the planning process, and offer the functionality that can also be described as static (e.g., graphics and maps); interactive (e.g., web sites and GIS), and dynamic (e.g., 3-D and Web-GIS).*

Indeed, spatial analysis tools – Scenario 360 community Viz GIS scenario software, or other programmes such as the Luminous Table or Illuminating Clay – are considered to be the tools that help in decision-making for LSPs (Ben-Joseph, 2005).

Ben-Joseph (2005) and Cullingworth and Caves (2009) reported that many US governmental departments were using modern technology in the planning, design and approval of residential areas. They stressed the comparative advantages of computer-assisted 3D planning in facilitating the early discovery of many problems before actual execution on the ground.

Jeddah Municipality has a specialised department that employs GIS technology. However, there is no direct contact or cooperation between this department and the PLSPD, as the municipality does not require the developers to provide a complete design of the residential LSP using visualisation tools and methods.

Several reasons were highlighted by the study respondents regarding the failure to use modern technology: first, no requirements within the current regulations to use these programmes; second, lack of knowledge and sufficient training for employees to encourage the use of technology; and third, lack of sufficient time to use the programmes.

6.2.5 Approval, Execution and Delivery of Residential Land Subdivision Plans

Following the final approval of the residential LSP, a new stage starts in its development. This stage is characterised by the application of the subdivision plan on the site. Several authorities participate and collaborate with each other at this stage to ensure that the development work on the ground matches the approved plan. Key contributors in this regard are the Departments of Studies and Supervision, Survey and Sketches, and the PLSPD. After completion of work, a notary public is assigned to register the land plots followed by marketing and sales of the land plots by the developers. After the sale of plots, the developers deliver the subdivision plan to Jeddah Municipality, which assumes the responsibility for the inspection of the ongoing building works and the subsequent maintenance and cleaning of the residential units.

6.2.6 Regulators' Perceptions of the Land Subdivision Regulations

Many researchers have stressed the importance of evaluating LSPs after execution. Ben-Joseph (2005) has stated that any evaluation of developed plans must compare the situation of streets, paved roads and footpaths with the guiding standards provided in the land subdivision manuals. Kelly (2009) has argued that such evaluations could reflect upon the adequacy of the existing regulations, and should hence be made mandatory for all major development plans. Friedman (2002) and Kaplinsky (2006) have also suggested similar recommendations for evaluating the LSPs that have been approved and executed at local level.

In the case of KSA, Alskait (2003b), Al-Oleat (2004) and Al-Freadi (2008) have also pointed out the importance of appraising the approved and developed residential plans with a view to improving the adequacy of regulation standards and procedures.

In line with previous studies, the present research also explored the perceptions of regulators about evaluation of subdivision plans pre- and post-implementation. As

expected, the regulators reported the site visit as part of the approval procedures and no further evaluation was carried out after the execution of the plan on the ground. Members of the Advisory Council indicated that evaluation of the subdivision plan after implementation was not included in the functions of the department, and it lacked the technical capabilities to accomplish such a job.

Of the four consultants, three suggested changes in the regulations to make post-implementation evaluation of plans mandatory. They hoped that such evaluations might reveal any mistakes committed during execution and improve any shortcomings before the residents moved in. The evaluation process might also give the municipality a valid reason to acquire full power to formulate LSP regulations for Jeddah. However, Consultant 2 suggested that a special department be set up for this purpose. The department should be made up of individuals specialising in urban design, planning, economics, the environment, transportation and social affairs. This department should be given a mandate to study the adequacy of the regulations and their implementation and to propose improvements.

6.2.7 Reasons for Failure to Improve Subdivision Regulations

Employees of the PLSPD blamed the lack of powers for their failings to improve the regulations. The consultants of the HAC concurred with this key reason but cited some other reasons as well.

Table 6.1: Respondents' views about the failure to develop the land subdivision regulations

Employee no. *	**Type of Answer**
1.	**Neutral**
2.	**Neutral**
3.	**Neutral**
4.	**No powers granted**
5.	**No powers granted**
Consultant no. **	
1.	**Centralisation of the decision/limited powers granted**
2.	**Centralisation/no powers granted**
3.	**Centralisation/limited powers granted/economic aspects**
4.	**Centralisation/limited powers granted/local authority/cultural**

* Employee no.: employee working for the PLSPD.
** Consultant no.: member of the HAC.
Source: Fieldwork, Jeddah, December 2009 to February 2010

Consultant 3 indicated that developers, as major players in the Saudi land development market, have discouraged any changes in the regulations, as the current legal position has helped them to use a single design throughout all the residential areas in Jeddah for a considerable period of time.

Consultant 4 added that the local municipalities lack the organisational culture to promote innovation or support and upgrading of regulations.

6.2.8 Adequacy of Subdivision Regulations

Responses to this question depicted the differences in the perceptions of both groups in stark terms, as employees of the Land Subdivision Plans' Planning Department reported a varying degree of adequacy but consultants from the HAC indicated that the current regulations were not sufficient.

Table 6.2: Respondents' perceptions about the adequacy of land subdivision regulations

Employee no. *	**Answer**
1.	**Adequate and suitable**
2.	**Adequate and suitable**
3.	**Adequate to some extent**
4.	**Adequate to some extent**
5.	**Adequate to some extent**
Consultant no. **	
1.	**Not adequate**
2.	**Not adequate**
3.	**Not adequate**
4.	**Not adequate**

* Employee no.: employee working in the PLSPD.
** Consultant no.: member of the HAC.
Source: Fieldwork, Jeddah, December 2009 to February 2010

However, it is noteworthy that positive views about the adequacy of regulations contradicted the views expressed by residents and developers. Consultant 3 stressed that the current regulations were out of date and lacked the flexibility and innovation required to cater for the diverse needs of the Saudi population.

Consultants 2 and 3 observed that regulations were silent about the evaluation of the work carried out by the engineering offices. Furthermore, the regulations do not require the developers to submit any environmental and hydrological studies, or a study of the site in relation to the surrounding area and the city as a whole. The consultants also

suggested a comprehensive study to evaluate the plans previously developed, in order to improve future practices in Jeddah. Such evaluation should include a detailed financial assessment of project plans, including the land-use budget; total number of the land plots/residential units; population statistics showing general and net densities and occupation ratios; rates of services' usage; surface area distribution various elements of the project; and areas offered for sale. The evaluation must study the traffic system and pedestrian movement in the area as well as their relationship with the designs of entrances, the internal roads network, and pedestrian pavements in various areas. It would be useful to study the ornamentation and tree planting patterns as well.

The recommendations from the HAC for updating the regulations manual have been summarised below:

- Increase the surface area for public facilities from 33% to 35–40% (Consultants 2, 3 and 4)
- Increase the surface area for the services from 2–3% to 6–8% (depends on development size) (Consultants 1, 2, 3 and 4)
- Introduce standards for the pedestrian footpath and cycling lanes and their links with the public services and facilities (Consultants 2, 3 and 4)
- Introduce standards related to traffic-calming measures (Consultants 1, 3 and 4)
- Introduce guidelines/standards for landscaping, i.e. tree planting and shading (Consultants 2, 3 and 4)
- Introduce new requirements for increasing street and pavement widths (Consultants 3 and 4)
- Introduce special and diversified requirements for layout of residential districts in terms of new development, traditional development, and gated communities (Consultants 1, 2, 3 and 4)
- Introduce new requirements for provision of infrastructural network, i.e. electricity, sanitary water disposal system, runoff drainage system, gas etc. from the developers (Consultants 1, 2 and 3)
- Introduce new requirements for payment of the impact and exaction fees to improve the long-term engagement of developers with subdivision plan development (Consultants 3 and 4).

6.2.9 Role of Developers

The HAC members held negative opinions about the role of the developer in the current set-up. Consultants 2 and 3 felt that the developers regarded the land as a commodity for sale, and therefore bothered little about providing facilities which would be utilised by many generations. Out of all stakeholders, they considered the developers responsible for developmental anomalies in Jeddah. Due to well-established relations with the authorities, most of the developers carry out the bare minimum development required by the regulations before the sale of land plots to users.

Contrary to the views of consultants, employees of the Land Subdivision Plans' Planning Department indicated that the developers were playing their role properly and demonstrated their keenness to apply the LSPs' requirements in the most appropriate manner. They believed that the developers should be thanked for their positive role in this field. A city like Jeddah, according to them, would never have developed and expanded in the absence of developers' efforts.

6.2.10 Proposals and Recommendations

The researcher presented three proposals to the sample members, with a view to detecting their opinions and the prospects of applying them in the future.

6.2.11 Perceptions about the Need to Amend the Subdivision Regulations

Perceptions about amending the SR can be classified into three groups. The first consisted of two experienced employees who decided to remain silent on the subject, only expressing their disagreement with any amendments. The second consisted of other employees who agreed to certain additions and changes to the regulations. The third was comprised of consultants, who emphasised that the regulations needed radical changes to plug a number of loopholes. Consultant 2 suggested that as a precondition, Jeddah Municipality should be granted the power to amend the regulations responding to specific local needs. Consultant 3 concurred with that view and opined that municipalities across KSA should be allowed to formulate their own regulations. Consultant 4 stressed the need to respond to modern trends, such as the ones that have appeared in developed countries, e.g. Form Based Codes, PUD and New Urbanism regulations.

Table 6.3: Perceptions about amending subdivision regulations

Employee no. *	**Answer**
1.	**Neutral**
2.	**Neutral**
3.	**Agree to some extent**
4.	**Agree to some extent**
5.	**Agree to some extent**
Consultant no. **	
1.	**Agree**
2.	**Agree**
3.	**Agree**
4.	**Agree**

* Employee no.: employee working in the PLSPD.
** Consultant no.: member of the HAC.
Source: Fieldwork, Jeddah, December 2009 to February 2010

6.2.12 Perceptions of Public Participation in Development of Plans

All employees and consultants shared the belief that it would be beneficial to involve the general public; however, many of them felt that another department should be set up to engage in multiple stakeholders' consultations with the developer, the engineering office, a sample of end-users, one of the approving engineers and a member of the Advisory Committee. Several consultations would develop public input into the design of the plans that are submitted for approval, as well as make people's voices heard by the developers and the approving authority simultaneously.

Table 6.4: Perceptions of public participation in the development of LSPs

Employee no. *	**Answer**
1.	**Neutral**
2.	**Neutral**
3.	**Agree to some extent**
4.	**Agree to some extent**
5.	**Agree to some extent**
Consultant no. **	
1.	**Agree to some extent**
2.	**Agree to some extent**
3.	**Agree to some extent**
4.	**Strongly agree**

* Employee no.: employee working in the PLSPD.
** Consultant no.: member of the HAC.
Source: Fieldwork, Jeddah, December 2009 to February 2010.

6.2.13 Changing the Role of Developers

Most of the respondents preferred the developers to provide the final product with some of the public services and facilities in place. A minority held the opinion that developers should also assume some role in the management and maintenance of the residential district after the sale of the land plots. However, employees from the planning department suggested that the views of the developers should be sought before expanding their roles. Members of the HAC, on the other hand, pointed out that by imposing a requirement on the developers to provide the finished product, some of the developers involved in speculation could be removed from the market, while other conventional developers might set up real-estate companies instead of improving their practices.

6.3 Conventional Developers' Perceptions (of the role and practices of SR)

Among all the stakeholders, conventional developers are the representatives of outmoded thinking on the role and practices of SR.

6.3.1 Data Collection and Analysis

To begin with, the researcher obtained a list of 30 developers from Jeddah Municipality. After the initial contact, only five developers confirmed their availability for interview; however, after repeated contacts through phone, fax and post, five more agreed to participate in the study. The initial reluctance to join in was probably due to the developers' distrust of the researcher, believing that he was trying to gain access to confidential commercial information which would be leaked to their business rivals. However, after strong persuasion and explaining the academic nature of research with a strict code of confidentiality attached to all information exchanged with the researcher, the developers made extensive comments on the themes discussed. In total, ten interviews were conducted from December 2009 to February 2010 in Jeddah, with each interview consisting of open-ended questions lasting for 40–45 minutes.

6.3.2 Developers' Profile

Most of the developers had significant experience in real estate, as 50% had been in the real-estate market for more than 20 years, while another 30% had work experience

spanning between 15 and 20 years; only 20% had less than 15 years' work experience (see Table 6.5).

Most of these developers entered the real-estate market as speculators and gradually shifted to the development of residential subdivision plans. Seven out of ten also worked in other related sectors such as purchase and sale of real estate, real-estate investment, management of real estate, and building and construction.

Five developers had implemented more than 12 residential subdivision plans in Jeddah; another three had implemented 10 to 12 subdivision plans, while only two had executed less than ten projects.

Four developers claimed to have developed residential plans averaging 500,000 to 1 million m^2, while three developers had each implemented residential plans with an average of either less than 500,000 or more than 1 million m^2.

All of the developers adopted a conventional approach in the development of the residential subdivision plans in Jeddah. The subdivision plans were not fully developed; the land was subdivided into plots, which was followed by asphalting of the roads, erecting lamp-posts and extending some of the infrastructure networks for water, electricity and telephones, while leaving sewage disposal systems, waste water and runoff drainage facilities out. Developers were used to following such a pattern of development because the requirements of the land SR required the developer to the divide the land into plots while keeping 33% of the area for services and public facilities. However, as there existed no requirement for the developer to be in charge of public facilities, developers allocated 2% to 3% of the land for mosques, schools and clinics, after which the residential subdivision plan would be delivered to Jeddah Municipality, which was responsible for provision of public services, further development of facilities, and management and maintenance of infrastructure after the sale of plots to the potential residents.

Around 80% of the developers lacked specialised departments or teams to deal with marketing, sales and technical issues. Since most of the developers manage real-estate companies, which despite their small size develop several residential plans at any given point in time, the meagre resources remain overstretched. While this could be taken as an indicator of developers being greedy, it also represents a general lack of

professionalism in the management of their work as observed by the researcher during his visits to their sites.

Table 6.5: Summary of the main points recorded in interviews with the developers of the residential subdivision plans in Jeddah

Developer No.	Work Experience	No. of Developed Residential Plans	Average Developed Space Area	Provision of Final Product to Users	Other Fields of Work				Notes
					Manage-ment of Real Estate	Purchase and Sale of Real Estate	Building and Construc-tion	Real-estate Investment	
1	22	15	500,000 to 1 million m^2	No	✓	✓	✓	✓	The work team is no larger than some small sections in the establishment. Most of the workers are building and construction workers. The developer has only five qualified employees to manage the administrative, technical and development work.
2	18	10	More than 1 million m^2	No					A small establishment managed by a team of 15 employees. They manage and follow up the development work. Developed residential subdivision plan No. 2 in Al-Mouhamadeyah district.
3	17	12	Less than 500,000 m^2	No	✓	✓			Despite the number of residential plans developed by this developer, the work is not to professional standards. The number of employees is no more than 12. They carry out all the development tasks inside this establishment.

Developer No.	Work Experience	No. of Developed Residential Plans	Average Developed Space Area	Provision of Final Product to Users	Other Fields of Work				Notes
					Manage-ment of Real Estate	Purchase and Sale of Real Estate	Building and Construc-tion	Real-estate Investment	
4	21	14	More than 1 million m^2	No	✓	✓	✓	✓	This developer has specialist purchase, technical and engineering, finance, and investment sections, but a limited level of professionalism.
5	10	5	Less than 500,000 m^2	No					This developer is less experienced in the real-estate market. Developed a few residential subdivision plans with a work team of 10 employees. Has a limited level of professionalism.
6	23	15	500,000 to 1 million m^2	No	✓	✓			This developer developed residential subdivision plan No. 1, constituting Al-Naseam district. Level of profes-sionalism is low. Team is small and works in the buying and selling of subdivision plans.
7	25	16	More than 1 million m^2	No	✓	✓	✓	✓	One of the oldest developers. Started with purchase and sale of real estate, and then extended to development of residential plans and other activities. The establishment has several sections including sales, real-estate management, and building.
8	16	11	500,000 to 1 million m^2	No	✓	✓	✓	✓	Despite the long period this developer had spent in real-estate market, his work did not achieve a good level of professionalism. Team consists of 10 individuals carrying out various tasks related to development work.

Developer No.	Work Experience	No. of Developed Residential Plans	Average Developed Space Area	Provision of Final Product to Users	Other Fields of Work				Notes
					Manage-ment of Real Estate	Purchase and Sale of Real Estate	Building and Construc-tion	Real-estate Investment	
9	10	6	Less than 500,000 m^2	No					A small real-estate establishment that developed residential subdivision plans of just over SR800 million. Workforce is no more than 9 employees.
10	21	13	500,000 to 1 million m^2	No	✓	✓	✓	✓	The third oldest developer among the sample members in the real-estate market. Developed residential subdivision plans of just over SR2 billion. Has a limited number of administrative sections in his establishment.

6.3.3 Development of Subdivision Plans in Jeddah

Half of the developers thought that the residential subdivision plans developed by them adequately met the needs of residents. From their viewpoint, the successful sale of the plots within a short period of time was the key indicator that such subdivision plans met the residents' needs.

All developers considered the high demand for the land plots resulting in quick sales and profits as a major factor in the success of subdivision plans in Jeddah.

On the other hand, the rest of the developers admitted that they had never attempted to discover the opinions of the users after the sale of the land plots. They acknowledged that while knowing the residents' views should be given due importance, it had never been done because no-one had asked them to do so.

One of these developers also pointed out that most of the buyers of the plots do not become the end-users and instead sell the land after a rise in price. He therefore did not bother to find the satisfaction levels of end-users as he felt that was the responsibility of

Jeddah Municipality. This view was common among several developers who considered that the municipality had direct contact with the users of the district and the owner of the residential units.

Most of the sampled developers were satisfied with the subdivision plans developed in Jeddah, mainly because the financial returns matched their ambitions. However, the developers who had spent longer periods of time in the market indicated that the profits some 20 years ago were much higher than those made nowadays. They lamented that this was the case, due to rapid urban development and the increases in the maintenance costs of Saudi cities, and MOMRA changing the process of developing the subdivision plans so that developers are now required subdivide the land, asphalt the roads, pave the footpaths, erect the lamp-posts and provide some of the infrastructure networks.

With reference to the barriers impeding the developers to hand over the final product to residents, the respondents cited the regulations of the LSPs, the marketing style of residential plans, high costs required for total development, lack of qualified staff, inadequate capabilities and relatively lower demand for fully developed residential areas in Jeddah.

Ninety per cent of the developers considered SR as the key reason which encouraged development of residential subdivision plans with the minimum set of requirements needed for obtaining the necessary permits from Jeddah Municipality.

Eighty per cent of the respondents felt that marketing of subdivision plans had failed to evolve during the past few decades, in Jeddah or elsewhere, and continues to hamper the need for innovations.

Sixty per cent of the developers indicated that the cost of development borne by the developers would increase significantly if they opted for developing the plans further.

Fifty per cent of the developers contended that inadequate human capabilities and lack of resources restricted them from presenting the final product to users. Since development of subdivision plans is a multi-stage process, the completion of the entire process becomes costly to the developers, both in time and money, and provision of the final product would require a large number of staff, high financial liquidity and significant technical capacity with a high degree of professionalism.

Forty per cent of the developers referred to the lack of demand for fully developed subdivision plans in Jeddah as most buyers of plots prefer to own land and wish to develop residential units according to their own preferences.

6.3.4 Factors Affecting the Development of the Subdivision Plan

In total, four main factors were found to affect developers' decisions regarding the development of subdivision plans: capital, location, investors and politico-economic realities.

The first element, capital, was mentioned by 80% of the developers. The availability of capital to invest in the market was considered as the most important factor by these respondents. The reason for such a high degree of importance was simple, as explained by one of respondents: 'the process of the residential plans development includes many different tasks, each of which needs liquidity on a continuous basis, in order to manage the process of executing the residential plan and offering it to the market'.

The second factor in order of importance was the location of the residential plan, an aspect mentioned by 60% of the respondents. The relevance of this factor is related to the developer's keenness to determine the potential of the land in terms of the type of use, resident density and the permissible number of stories according to the master plan of the city.

Fifty per cent of the developers considered the availability of investors as a key factor as well. Within the real-estate market, developers either work alone and bear all the development costs, or work with a group of investors (shareholders) who raise the amount of money needed for development and then share the profits allocated to them when the sale of the land plots to the residential users has been completed.

The fourth element was the politico-economic context that surrounds the area. Four of the developers explained that factors such as wars, the collapse of global markets, lower oil prices and terrorist acts had negative effects on the real-estate market which in turn affected development and investment decisions in Saudi cities.

6.3.5 Design, Planning and Organisation of the Subdivision Plan

6.3.5.1 Design and Planning of the Subdivision Plan

The process of designing the residential plan begins immediately after selection of land for development. Based on their practice, the sampled respondents could be divided into two groups. The first tended to carry out a set of tasks, including the mapping of the site, a soil survey, preparation of the final residential subdivision plan, and submission of the residential plan for approval to Jeddah Municipality, followed by implementation of the residential plan after approval. Seven out of ten respondents reported such a pattern of development; the focus of their practice was their reliance on the survey and engineering offices in Jeddah, mainly due to the lack of technical and engineering staff directly employed by the developers. However, such practice reduced developmental costs and increased profit margins for the developers, due to the rapid approval of their submitted plans built on the surveyors' knowledge of the land SR and the approval procedures, as reflected in the following comments:

> Over the past years, I have always relied on the survey offices to undertake the tasks related to the development of the residential plans. Their engineers are low-cost, easy to deal with and possess knowledge about subdivision regulations and approval procedures (Developer 6).

> It is difficult to have a new design for each residential subdivision plan in Jeddah. The survey offices have access to a variety of engineering designs that have been executed in and outside Jeddah. In most of the cases, I prefer to choose an appropriate design to be applied to the project and leave the rest of the work to the survey office. They know exactly what I want and understand the purpose of this stage (Developer 9).

The second group of developers consisted of only three developers who employed technical engineers in their own companies to do the field survey and prepare the designs for approval. Obviously, these developers were willing to spend extra money to get all the work completed in-house.

6.3.5.2 Types of Investigations Provided

Financial feasibility, soil survey and site exploration studies were conducted by almost all developers during the preparatory phase. However, many other studies, such as an environmental assessment, a hydrological study, a traffic planning report, an analysis of

the preferences and needs of the targeted population, and preparation of a revised subdivision plan, were not even considered by the majority of developers.

The developers' reasons for the failure to conduct these studies included the insignificance of these studies in relation to their purposes, the lack of mandatory requirements to conduct them prior to the approval of the subdivision plan (100% of the respondents), the high cost to developers (80%), being time-consuming, resulting in the delayed implementation of the plan (60%), shortage of qualified personnel (50%), reluctance to rely on professional specialist authorities (40%) to direct the developer in upgrading the level of residential subdivision plans' development.

6.3.5.3 Length of Time to Complete This Stage

Sixty per cent of the developers were able to complete the first stage within four months, while 30% of them took four to six months to complete this stage and the final design of the residential plan. Only 10% of the developers took more than six months to complete the preparatory work associated with this stage. The varying speeds taken to finish the designs and requirements of the residential subdivision plan can be attributed to many factors, such as the involvement of survey companies helping the developers to finish their work quickly; use of designs and plans already executed elsewhere shortened the length of time allocated for this stage. The avoidance of conducting many desirable studies also reduced the completion time as developers mostly fulfilled the basic and minimum requirements of the SR to expedite the approval procedure. This statement from Developer 10 adequately summed up the developers' approach as follows:

> I do not care much about the preparation of the residential subdivision plan design; I always want to finish it as quickly as possible. I am least concerned about what a subdivision plan may contain except that the minimum requirements of the land subdivision regulation would be met to seek the preferences of the approval authority. After the approval, I care more about selling the land plots to get my profits as soon as possible.

6.3.6 Subdivision Regulation and Approval Procedures

The researcher did not expect that the sample members would criticise the SR, as the current regulations have helped and encouraged this category of developers to follow one development approach (conventional) in Jeddah; however, the interviewees were critical of the excision of 33% from the area of residential plan land to be allocated for development of services and public facilities; the widths of the network of internal roads and pedestrian footpaths; and the extension of some of the infrastructure networks.

The developers unanimously considered the percentage withheld for the development of services and public facilities unfair. They suggested that the percentage should be in the range of 20 to 25% of the total area instead of 33%. Despite the fact that the withheld percentage would be used to develop facilities, the developers wanted it to be reduced in order to increase their profits.

In contrast to the residents' survey respondents, who wish to have well-connected and safe footpaths at both sides of the roads, around 80 per cent of the developers wished the footpaths to be provided on one side of the road only, as part of their exercise to reduce the development cost, which has increased significantly in recent years; while 60% of the developers wanted a reduction in the widths of the internal roads in order to save 10%–15% of the cost.

Fifty per cent of the developers wished the provision of infrastructure and facilities to be transferred to the companies or departments responsible for the services, such as the electricity company, the Saudi Telecommunications Company (STC) and various water companies. The main reason for such suggestions was to save costs; however, the developers also argued that such an arrangement would benefit the end-users who would pay the companies for facilities and their use for many years, instead of a higher price for a plot to the developers.

6.3.7 Approval Procedures for the Subdivision Plan

Developers levied severe criticism on the authorities responsible for approval of residential subdivision plans in Jeddah. There were three topics of criticism: the absence of a set timescale for the approval of subdivision plans (80% of sample); second, delays in approval of submitted plans, which were responsible for increased costs of development and an increased price per square metre (60% of sample); and lastly, the

lack of qualified technical personnel in charge of the approval processes (20% of sample).

6.3.8 Approval and Implementation Stage

6.3.8.1 Time Taken for Approval of Subdivision Plan

The approval process took less than five months for 10% of the developers; five to ten months for 40% of the developers; while for the remaining 50% of developers it took more than ten months. Such delays were attributed to administrative procedures, modifications required from developers in the design of subdivision plans and, finally, delays at MOMRA in Riyadh in granting the final approval.

6.3.8.2 Delays in the Implementation of Subdivision Plans

Sixty per cent of developers began the development immediately, while 30% waited three to six months and the remaining 10% of developers delayed the development work by more than six months. The reasons for the delays included the tendering processes from the developers looking for partner companies with the cheapest prices, liquidity issues and the emergence of new residential subdivision plans in the market near the developmental locations.

It must be understood that in the regulations there are no time restrictions regarding developing the area after approval; hence, the developers wait to start work until the land prices have risen to a higher level, as shown by the comment of Developer 5:

> Following the approval of the residential plan, there is no specified period of time after which the developer would be required to start work on the site. Therefore, I have several plans that have been approved, and I would not develop them unless the land prices get higher.

6.3.8.3 Completion Time for Development of Subdivision Plans

Eighty per cent of the developers completed the development processes rather swiftly, within five to six months, to reduce costs and make profits through quick sale and disposal to Jeddah Municipality; while 20% of developers took more than six months to complete the process.

6.3.9 Public Services and Facilities

All the developers accomplished the asphalting of the roads and streets, erecting the lamp-posts and some of the infrastructure networks as part of completing their portion of development, while leaving the rest to government departments.

The parks, playgrounds and car park plots would be delivered to Jeddah Municipality, while land allocated for mosques, schools and clinics would remain under the ownership of the developer, not to be used, changed, sold or disposed of except with the approval of the relevant government agencies, e.g. Ministry of Education, Ministry of Health, Ministry of Endowments, Mosques and Hajj, etc. in coordination with Jeddah Municipality.

The developers highlighted many reasons for such practices:

1. Eighty per cent of developers stated that the land SR did not require the developer to develop the land with facilities and services;
2. Seventy per cent blamed the high costs of developing infrastructure and facilities;
3. Sixty per cent felt that it would be illogical to develop all facilities in advance as it would take at least one to two years before the residential units would become reasonably populated;
4. Fifty per cent pointed out a lack of qualified workers to take up such development; and lastly,
5. Forty per cent of developers referred to lack of knowledge of the detailed requirements and standards for various services and facilities, which would rest with the authorities responsible for their development.

6.3.10 Post-Development Roles of Developers

After the completion of the development process, developers approach Jeddah Municipality – specifically, the operations and maintenance department – to review the site, a process followed by all developers interviewed by the researcher. Subsequently, the planning department of Jeddah Municipality evaluates the developments on-site against the approved plan. Finally, the Jeddah public notary registers the land plots. After the registration, the subdivision plan is introduced into the market and bids are invited through auction. Eighty per cent of developers launched advertising campaigns

in the newspapers to promote the sale of land plots, while 20% offered the land plots to real-estate speculators and investors in the market, saving themselves the cost of an advertising campaign (see Figure 6.1).

After the end of the sale of residential lots and registration with the public notary, the developers assumed no role whatsoever related to the management and maintenance of existing facilities or any further development of the subdivision.

Regarding the reasons for this, the key fact pointed out by all developers was the lack of any requirement in the existing regulations for them to play any role after the completion of the registry of the land plots and delivery of the residential plan to Jeddah Municipality. Other than that, high costs, lack of expertise in management and maintenance of infrastructure, and of well-qualified personnel, hindered 80%, 60% and 50% of the developers, respectively, from assuming additional roles (see Figure 6.2).

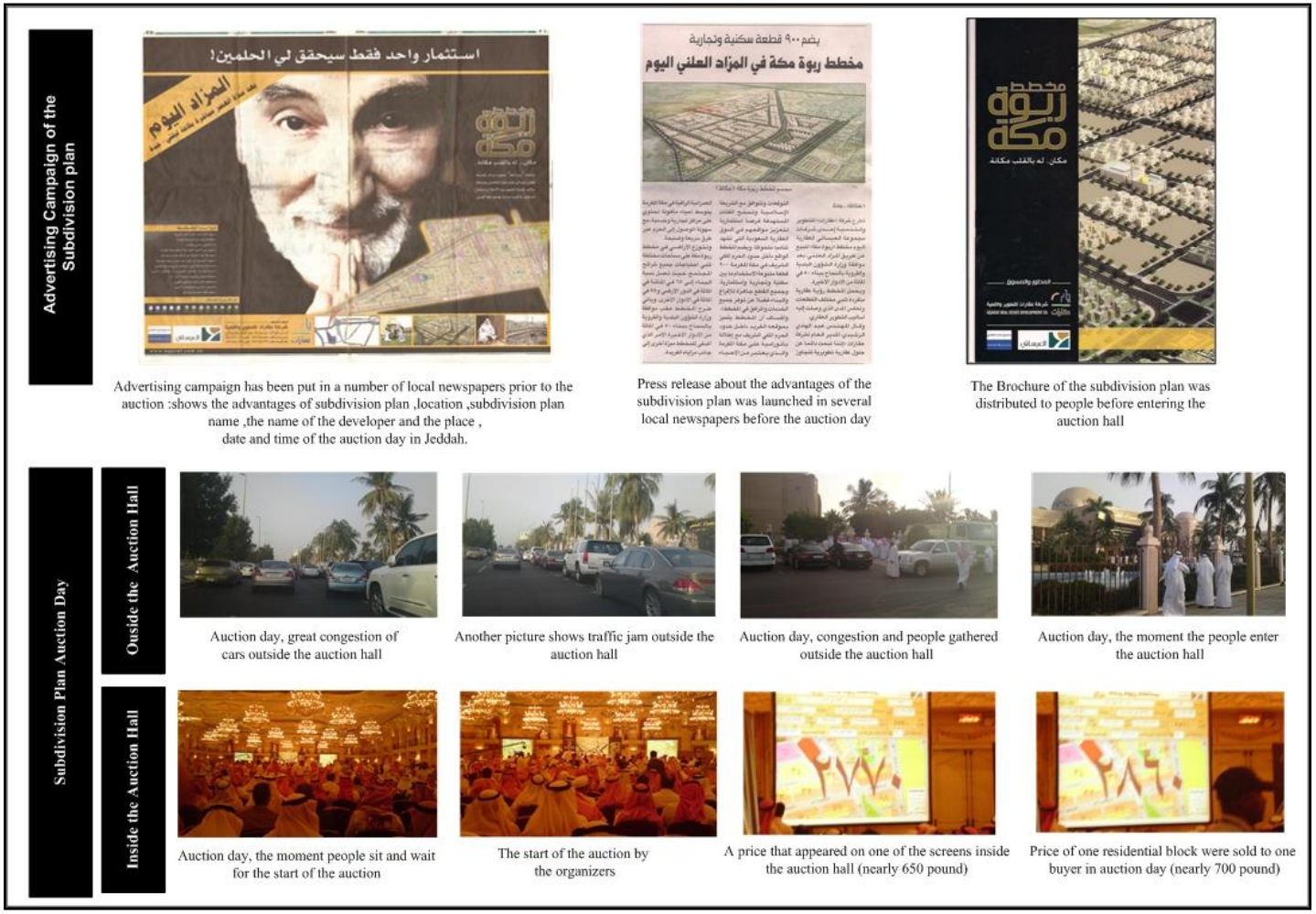


Figure 6.1: Auction day for one subdivision plan, showing the process of marketing and sales of the lots to the public
Source: Fieldwork, Jeddah, December 2009 to February 2010

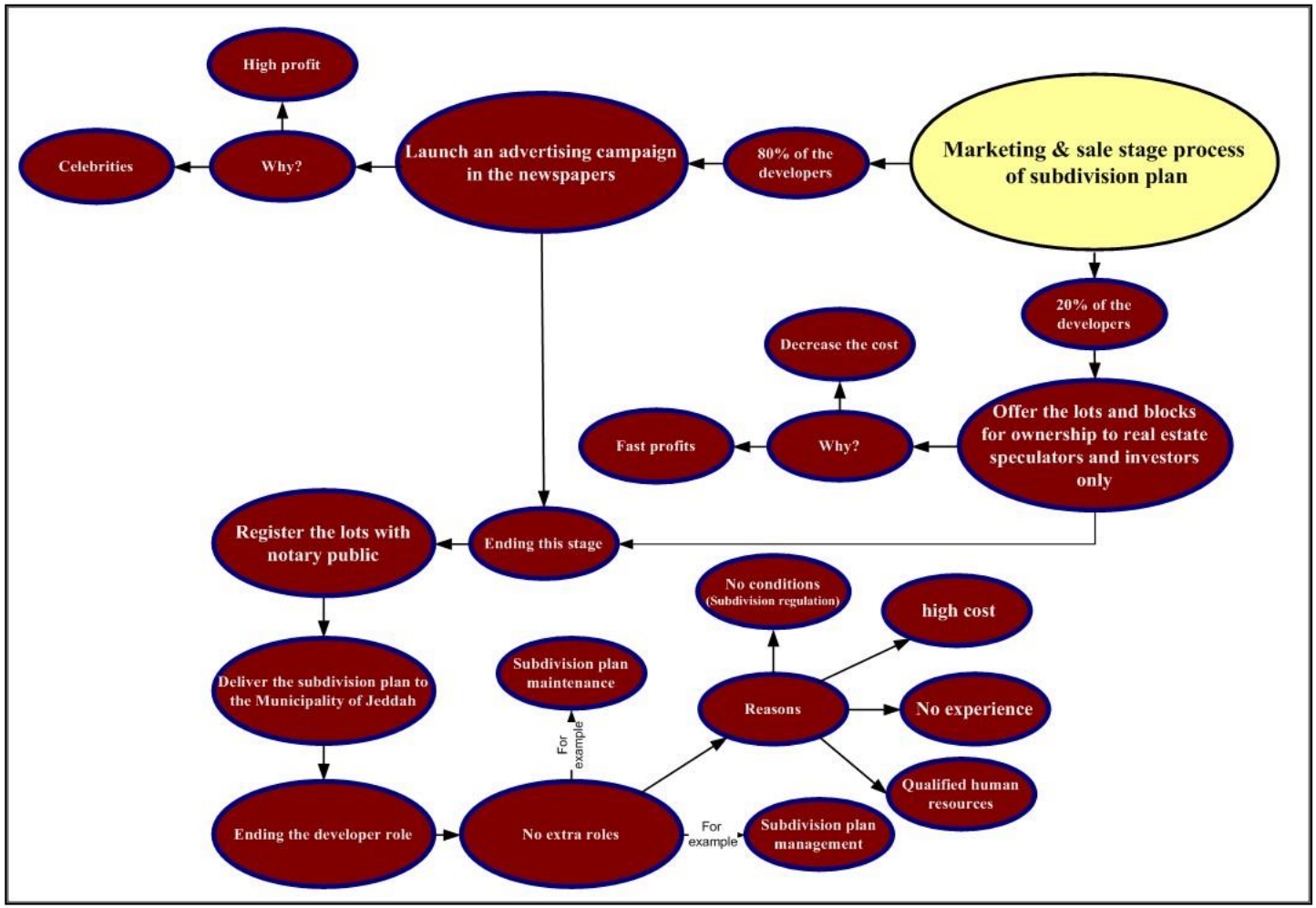


Figure 6.2: After the marketing and sale stage, developers hand the subdivision plan over to Jeddah Municipality and play no further role
Source: Second phase of fieldwork, Jeddah, December 2010 to January 2011

6.4 Conclusion

The first part of the chapter looked at the shortcomings of subdivision regulation in the special context of Jeddah city, as well as the approval, execution and delivery of residential land subdivision plans. The chapter went on to gather regulatory perceptions about a variety of issues such as evaluation of subdivision plans, non-development of regulations, adequacy of existing regulations, the types of developments carried out in Jeddah and the role of the developers. Finally, respondents were asked their opinions about various proposals to improve the SR and approval procedures in future.

Regulators shared a very little concern about the lack of improvement in the regulations over time, as they had become accustomed to the existing situation. However, consultants belonging to the HAC shared distress regarding out-of-date practices and regulations.

Similarly, the trend was observed throughout the perceptions about the key issues in prevailing conditions and proposals to rectify malpractices. A key question, however, remains yet to be answered, about the possibility of MOMRA extending full powers to Jeddah Municipality to study the preferences and needs of the end-users and formulating new SR for their city only.

On the conventional developers' side; none of the developers provided the final residential product to users in Jeddah. All the sample members had significant practical experience in the market, as they had developed several residential subdivision plans in terms of numbers and spatial areas, but all applied the conventional method of development without introducing any innovation or creativity into the process. There was no professionalism in the development of residential subdivision plans. They owned small establishments that managed and executed residential plans in terms of spatial area, with high costs and lucrative profits. They always looked for ways that would help them to reduce costs and reap quick profits, one of the most prominent goals for these developers in the market.

Furthermore, the process of designing and planning the residential subdivision plans was based on one style which was always repeated by developers. One of the most prominent findings that have been conveyed in this chapter is that they relied on survey and engineering offices for the implementation of many services. The land SR helped these developers to adopt this method of development. It also encouraged them to

refrain from conducting many important studies that could have reflected positively on the improvement of the quality of planning and design of the plans. The SR also discouraged these developers from evaluating the residential plans developed by them. In contrast to the unconventional developers, who felt residents' preferences were very important (Chapter 10), the conventional developers sought no direct contact with residents after completion of the developments. On the other hand, this chapter has indicated that the developers tend to throw the responsibility on to the shoulders of regulators and service providers, whom they believe to be well acquainted with the residential plans and preferences of the residents.

Even the period of time that the developers allocate for the development of residential plans has been shown to be cut to the minimum, without any intention of giving the development process due care and attention. This occurred due to the developers' reliance on the survey and engineering offices, which used to copy many of the designs previously implemented and use them as easily replicated models in all new residential subdivision plans. The regulations allowed the developers to reduce the duration of this stage as a result of the limitations of the requirements, which otherwise might potentially oblige the developers to meet certain quality standards in the design of the plans.

The researcher did not anticipate any criticism on the part of the developers regarding the SR and the role of the organisers, since the regulations did not bind the developers to assume responsibility for many tasks. Among such benefits for the developers is the fact that they were not required to extend the sewage and runoff drainage, or to provide the final product to the users; they were not required to prepare numerous technical studies and to present them at the time of the approval process. Nevertheless, and in spite of his expectations, the researcher recorded many instances of criticism of the current regulations by these developers, although they had not been modified for a long period of time. The most prominent of these criticisms is the demand on the part of the developers to reduce the percentage of land that has to be reserved for public facilities and for the benefit of users of the district from the current 33%, as well as to reduce the internal street widths and to provide footpaths on one side of the street only, instead of on both sides. In contrast to non-conventional developers' suggestion of an increase in this allocation (Chapter 10), conventional developers would prefer to be exempted from extending the infrastructure networks, which they said should be taken on by the

companies that provide these services. On the other hand, there were also instances of criticism of the plans' approval mechanism. The most prominent of these revolved around the centralised decision-making at MOMRA, the failure to specify the length of time to finalise the approval of the residential plan, bureaucratic procedures and delay in the approval of the plan.

With respect to the implementation of the residential plan, it was found that the developers usually began development of the residential subdivision plan immediately after final approval was granted. Some of the sample members said that they waited for a certain period of time before starting the implementation for several reasons, including looking for better prices, the conclusion of contracts with implementation companies, and the introduction of other land plots to the market, which could affect the sale of the residential plan's land plots.

Furthermore, it was discovered that some developers delayed the development and implementation of a number of residential plans already approved by the organisers. The nature of the LSPs' approval has allowed many developers to delay the development of a great proportion of their approved plans. This is because there is no specified period of time after which the approval will expire, and thus the developers have no pressure on them to hasten the development, implementation and introduction of the residential land to the real-estate market. Thus, the developers can be said to control all the decisions in the residential subdivision plans' development.

The SR have also helped the developers to avoid involvement in developing the land allocated for public facilities and services (or parts of these). They also aided the developers by making requirements minimal and making it possible for developers to execute only some parts of the residential plans' components, such as the asphalting of the roads and footpaths, and the erection of lamp-posts, which are the most prominent elements that developers are keen to provide during the implementation stage.

The majority of developers preferred not to provide further elements and to develop land without required developing public services and facilities plots or part of them such as park, playground, and mosque.

It was quite clear that the developers did not possess the necessary practical experience or the financial and technical staff that would be required in order to carry out these works. Other reasons included a belief that it was too early to prepare the land allocated

for public facilities and services prior to the development of the land of the residential units.

The phase for marketing and selling plots of land to the consumer is the most important to the developers. To achieve financial returns and deliver the land plots to the buyers and then hand them over to Jeddah Municipality is the developers' target at this stage. It was found that none of the developers was interested in carrying out any maintenance of the residential subdivision plans after the land plots had been sold and delivered to the end-users. Here again, the lack of requirements (i.e. SR) that obliged the developers to carry out any maintenance works was the main reason that the developers had refrained from doing so. This is the exact opposite to the non-conventional developers, who saw the provision of these services as one of the main selling points of their developments.

The results of this part are a strong indicator that the developers have considerable control over the development of residential subdivision plans. The developers are not interested in the process of designing and planning the residential subdivision plans; nor are they interested in developing creative, innovative residential subdivision plans. The SR helped the developers to develop the plans in accordance with the conventional methods that emerged in Saudi cities more than 30 years ago. These regulations also helped the developers to get away with providing the minimum requirements in the plans that were up for approval and development. The developers do not possess a culture or philosophy of evaluation regarding the residential plans they have executed. Furthermore, there are no requirements to oblige them to carry out such tasks, and they are not interested in taking advantage of the evaluation of the development to generate innovative ideas and apply them in the residential subdivision plans for the benefit of the end-user and the city of Jeddah.

This research suggests that the future of residential subdivision plan development in Jeddah will pursue two trends; the first of these is to continue in the same direction as the conventional mode of development of residential subdivision plans, which form the prevailing pattern in the city of Jeddah; the results are very poor (see Chapters 7 and 8). The second trend will consist of a new creative and innovative method or a shift in the way developers design, plan and organise residential subdivision plans (see Chapter 10). It is important that both the SR and the organisers should play a major role in shaping this desired trend, which is preferred by almost all prospective users (see Chapter 9).

CHAPTER SEVEN: MICRO-LEVEL SUBDIVISION REGULATION IMPACT IN JEDDAH: STUDY AND ANALYSIS OF THE AL-MOUHAMADEYAH AND AL-NASEAM DISTRICTS

Chapter 7: Micro-Level Subdivision Regulation Impact in Jeddah: Study and Analysis of the Al-Mouhamadeyah and Al-Naseam Districts

7.1 Introduction

Around the globe many cities such as Jeddah use regulated design standards to ensure a minimum quality for the built environment:

> *Across the globe, communities are shaped by standards and codes that virtually dictate all aspects of urban development. Simple standards for subdivision land, grading, laying streets and utilities, and configuring right-of-way and street widths may seem sensible and insignificant, but because they have been copied and adopted from one place to another, they have an enormous impact on the way our neighborhoods look, feel and work* (Ben-Joseph, 2005:1).

In the case of the research presented here, subdivision regulations' (SR) impact on the form of Jeddah city during the last few years do not reflect the current challenges and needs of Jeddah. The regulations have allowed for one conventional subdivision pattern only for development, which has generated the urban sprawl seen in Jeddah today. This chapter explains the impact of the regulations on the micro level by examining two conventional residential districts in Jeddah. Both districts have some differences in terms of location, area, density and even housing type. The chapter is divided into six main sections. Section 7.2 shows the data collection methods, referring back to studies carried out with the same method on which the preparation of the data collection drew, and the limitations of gathering the data. Section 7.3 discusses general information about each area, including: location, number of subdivision plans in each district, date of adoption, date of development, owner type, plot number, number of implemented housing units, and land-use pattern.

Section 7.4 illustrates the physical characteristics of both areas. The section clarifies a set of physical elements and its quality in terms of: layout pattern, street form, intersection type, sidewalk, tree cover, landscape, shading, and connectivity of streets and sidewalks.

Section 7.5 analyses public services and facilities provision. It shows the location and distribution of sites within the two districts, the approximate date these services emerged as well as their relationship with executed housing units, and service area

analysis for selection services in both districts. Section 7.6 summarises the findings of the chapter and explains the links to later chapters.

7.2 Methodology

In order to analyse the two conventional districts to illustrate the quality of what is provided in subdivision areas, an appropriate set of data needed to be collected. The following sections show the case studies selecting the methods of data collection and analysis.

7.2.1 Selecting the Case Studies

According to the study of the Al-Beeah Counsultancy Office (2004), there are more than 50 residential districts in Jeddah (see Figure 7.1). Based on the *Jeddah Strategic Plan* report issued by Jeddah Municipality (2009a), the districts have been classified into three types of residential density: low, medium and high (see Figure 7.2). In the last three decades, more recent developments have been built to low and medium density. These areas appear predominately to the north of Jeddah (e.g. Al-Hathloul and Mughal, 1991; Qurnfulah, 2005; Mandeli, 2008).

The high-density areas have been eliminated from the selection process because they appeared chronologically before application of the SR and because the higher-density areas represent the historic urban fabric.

During the pilot study, 10% of the total residential areas in Jeddah were considered. There are six randomly selected districts in total. There are three low-density residential areas: Al-Mouhamadeyah, Al-Shatee, Al-Zahraa districts; and three medium-density districts: Al-Naseam, Al-Sulaymanyah, and Al-Safa districts (see Figure 7.2).

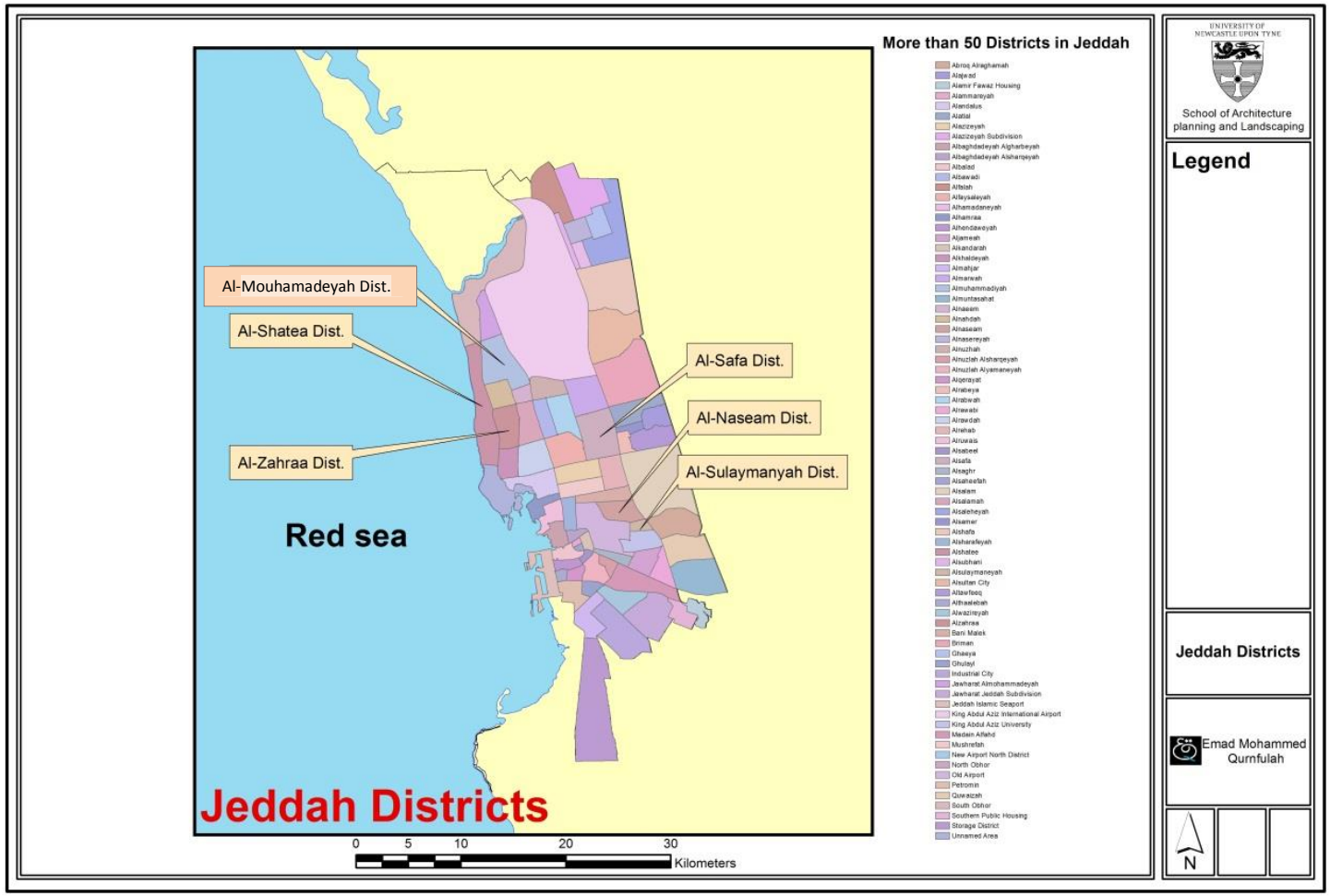


Figure 7.1: Location of six district case study areas in Jeddah
Source: adapted from Jeddah Municipality (2009a)

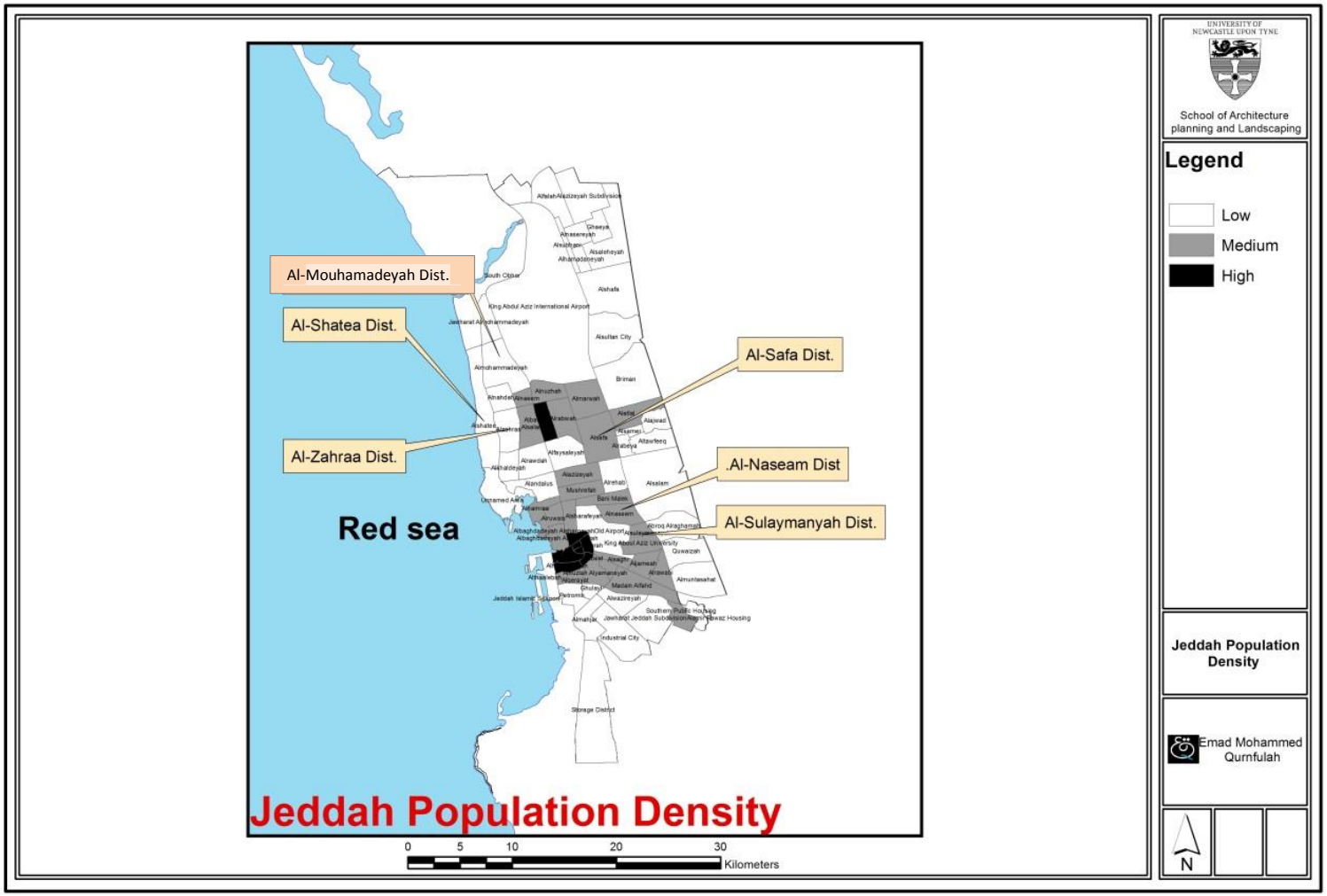


Figure 7.2: In Jeddah there are three types of population density: low, medium and high. Three low-density districts and three medium-density districts were selected.

Due to the data availability, cost, time, and physical effort of gathering the data, and obtaining the permits to collect required data from different government sectors, the scope of selecting the case studies was reduced to two districts.

The first district, selected for residential villas, was Al-Mouhamadeyah (low-density), and the second district, for residential apartments, was Al-Naseam (medium-density). They have similarities in terms of date of emergence, method of development by conventional developers, and in the method of their adoption and the mechanism used to regulate them. In addition, both areas have enough suitable numbers of residents.

Al-Mouhamadeyah district is located to the north of Jeddah (see Figure 7.3). It is just under 2km from King Abdulaziz International Airport (KAAIA), approximately 1km from the Corniche (waterfront) area), and about 20km from Jeddah's Old Town area. The district abuts Jawhart Al-Mouhamadeyah district on the north side, and Al-Nayeam district on the south. To the west runs King's Road and to the east is the Al-Madina Al-Monorah Express Road.

Al-Naseam district is located northeast of the Jeddah Old Town (see Figure 7.4). The district is about 16km from KAAIA, nearly 10km from the Corniche, with an area of approximately 6km^2. The Al-Naseam district abuts the National Guard Residential Compound on the north side, and King Abdulaziz University on the south. To the west is the old airport area, and to the east is the Al-Harmain Express Road.

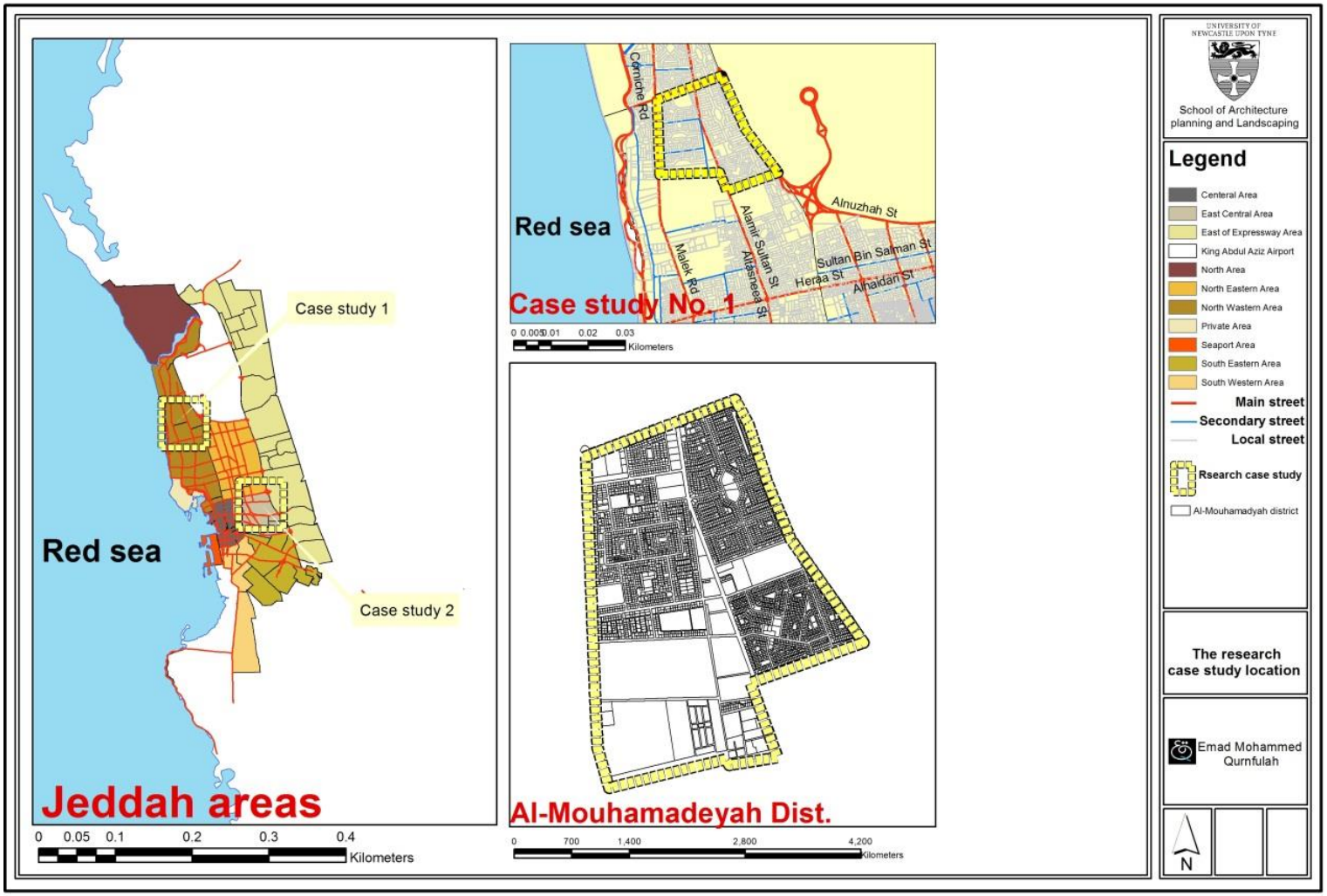


Figure 7.3: Location of the Al-Mouhamadeyah district

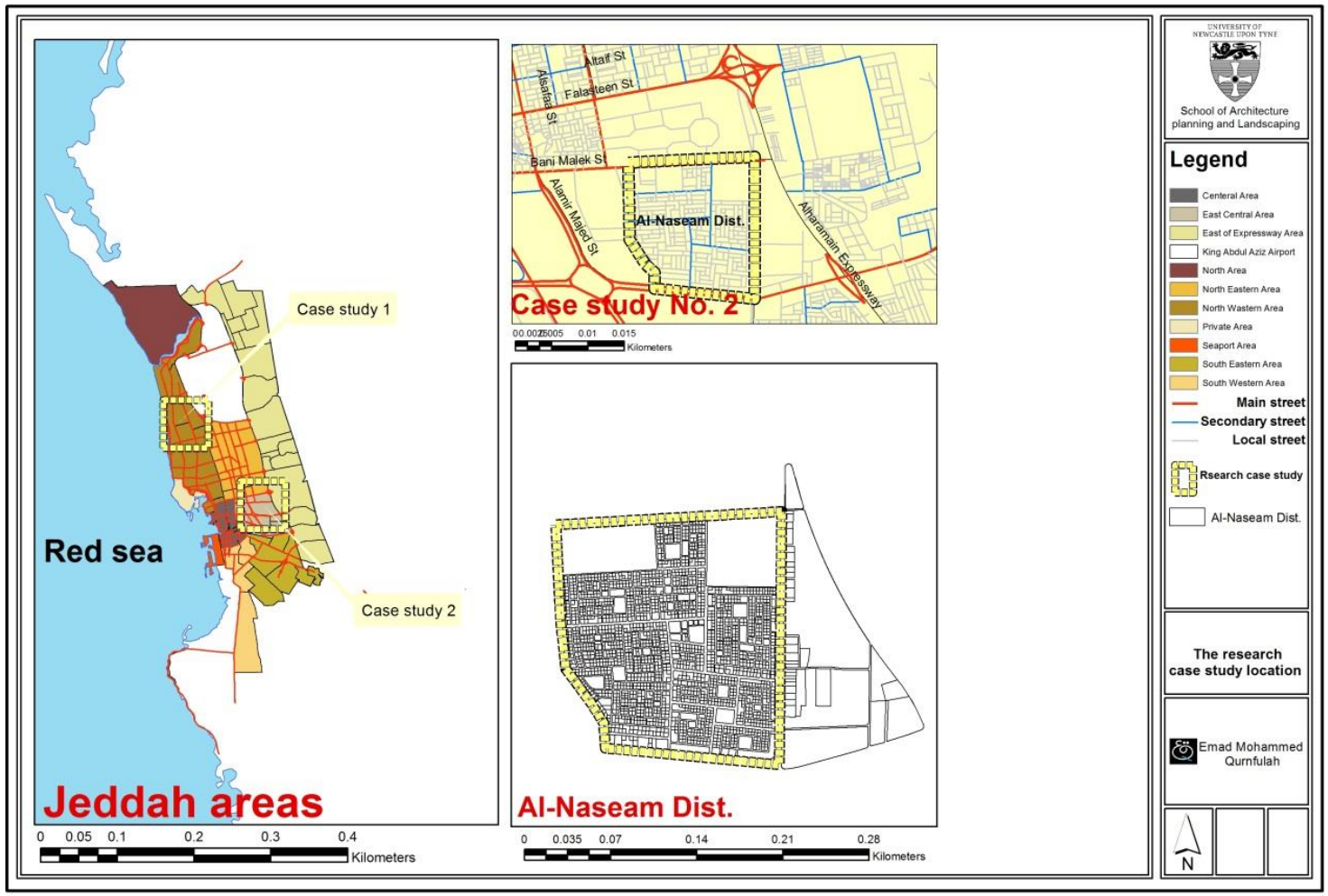


Figure 7.4: Location of the Al-Naseam district

7.2.2 Previous Studies on Subdivision Regulation Impact

This section will explain previous studies that support the determination of the methods of data collection and analysis that will be used within this chapter. A concise set of previous studies discussed the impact of SR at the micro level, and specifically what are known as physical impact studies.

Ben-Joseph's (1995a) study relies on two methods, qualitative and quantitative, to describe and analyse the elements and components of the residential built environment. The qualitative method adopts a close observation method, where the author of this study was keen to visit a sample of residential case study areas and then described them, but did not use photographs. The quantitative method collected and analysed a set of suggested physical elements such as the street-block pattern, the intersection types and numbers, and typical street cross-sections. Other elements included factors such as size, number of housing units, density, total length of streets, average amount of traffic daily and number of access points. In addition, the elements that have been collected were translated into drawings, maps and sketches. For example, the plans of the internal sections of the streets and pavements, and multi-maps, illustrate the pattern of urban planning, intersection types and locations, and last but not least the access point locations for each case study area. This study concluded that residential areas with a cul-de-sac pattern were able to achieve all of the following: a high level of safety, greater liveability and fewer traffic accidents compared with other subdivisions that were organised, approved and implemented based on loop and grid streets patterns. Also, it called upon the planner to add traffic-calming measures to the local SR code to achieve a better liveability level.

Owens' (2005) American study considers physical aspects for several different residential areas in terms of location, density, urban form, and implementation date, the type of housing units and area of plots. Owens organised the method of data gathering according to the following systematic methods:

- field photographs
- field observation
- base mapping

Interestingly, an aspect in this study is the profile file. This file illustrates the physical characteristics of 12 case study areas. It was able, via the above three methods, to

describe the output of zoning and SR by spatial maps, photographs and analytical tables for each area. Also, this study showed similarities and differences between the residential areas in terms of quality and how this quality changed as a result of the different land-use regulations adopted.

Third, studies utilised in this chapter include: e.g. Galster et al., (2001), Song and Knaap (2004), and Betanzo (2011). These studies are interested in criticising urban sprawl, which, according to the above studies, is shaped by implemented specific zoning and subdivision regulations. They focused on assessing many elements of the urban form by using GIS and spatial data, where these elements are divided into the following aspects:

- street design and circulation systems
- density
- land-use mix
- accessibility
- pedestrian access

The studies concluded with the importance of going beyond conventional regulations, and the trend towards the application of the requirements exemplified by the New Urbanism ordinance.

Other study types have been inspired by: e.g. Nicholls (2001), Oh and Jeong (2007), Achuthan et al. (2007), and Andersen and Landex (2009), focusing on measuring service areas or catchment areas. Service areas are the service range of a public facility, which is equivalent to the accessibility to a public facility such as a park, school or bus stop that supplies service via traffic networks (Talen and Anselin, 1998). Using GIS tools to analyse the spatial distribution of some services within the macro or micro level, measurements and descriptions of accessibility to spatially distributed activities are collected. The data collected includes such items as the number of people within 500m, travel time and distance to a destination, and/or the number of jobs within 30 minutes travel time from a specified origin. According to the above studies, there are a number of GIS methods that can be applied to evaluate the service area of public services and facilities, such as:

1. Simple Buffer Method
2. Network Analysis Method:

- service area tool
- location-allocation tool

According to e.g. Achuthan et al. (2007), and Andersen and Landex (2009), the first method is one of the simplest that can be applied. This method has many criticisms, such as being too simple and unrealistic. The radius method does not take into account the geographical surroundings; thus, it is only capable of providing an approximate representation of a park's or school's service area. The method assumes 'as-the-crow-flies' movement, while in reality, potential users cannot travel in a straight line. Instead, users move along predefined public rights of way, and must avoid barriers to travel such as railway lines and rivers. Thus, the real travel distance is almost always greater than the most direct distance. On the other hand, the network analysis tools allow planners, officials and business owners to solve common network problems. For example, finding the best route across a city district or even neighbourhood; finding the closest facility; identifying a service area around a mosque, park or school in a location within the residential areas; or choosing the most appropriate facilities to open or close (ArcGIS Resource Center, 2010a). This approach, according to scholars (e.g. Nicholls, 2001; Andersen and Landex, 2009) is more realistic. This alternative tool is based on the measurement of distance along the roads, pavements and other public rights of way surrounding services so as to emulate, as closely as possible, the actual routes that users are likely to follow between their residences and designated points of access to facilities. Using this method, distances can be measured to or from each access point, whether a school, park or mosque (Figure 7.5). The measurements rely on available data or that which can be easily collected. It is then easily imported into a GIS model, allowing for better visualisation and hence easy comprehension and interpretation by planners and policymakers.

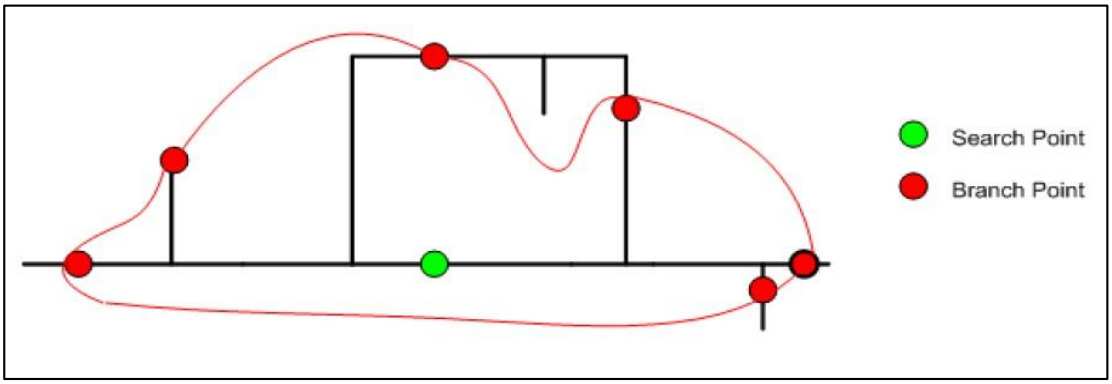


Figure 7.5: Principle of service area approach
Source: Andersen and Landex (2009)

The most prominent products of these studies are spatial maps that have been formed; for example, the spatial distribution of the service in the city, or at district and neighbourhood level, the areas covered by the service area and non-covered areas, a map showing the actual number of housing units covered, or pedestrians/users who can reach the service location. Through these methods of analysis it can be seen that there are many problems related to SR, such as poor services and facilities distribution within the residential neighbourhood, or inadequate walkability to services and facilities. These problems are attributed to lack of appropriate urban studies and of the use of technology such as GIS tools during the design, planning and even the approval process of the residential areas. However, these studies did not consider physical elements surrounding components of the service or facility. Some of the these elements are the street pattern, the street widths, pavement availability and quality, traffic-calming elements, shade and appropriate landscaping, and provision of pedestrian and cycle paths connected to the service, etc.; these elements are important to clarify and link during the process of organising, designing and planning the residential areas.

All these studies have helped to develop the data collection and analytical methods for the case study data. The data has been collected for this chapter and analysed in three ways as follows.

7.2.3 General Information

This section focuses on explaining general and identifiable information about the two selected districts. There are a number of land subdivision plans (LSPs) within their boundaries. Furthermore, during the fieldwork the researcher collected information

regarding registration date, approval date, implementation data, marketing date, population number, total area, number of plots, type of development, owner type and land-use pattern, etc.

The researcher depended on several sources to compile this information, including Jeddah Municipality, in order to: review the application files of these plans; interview some staff from the planning and approval of subdivision plans department; collect digital map information in GIS format containing spatial layer maps for both districts, and similar information from previous reports and studies related to Jeddah. In addition, data was gathered from visits to the offices of the developers who constructed these schemes.

This data has been presented in this chapter in the text description of the two districts, some tables, and a number of maps to illustrate the districts and their subdivision plans.

Maps are considered to be a fundamental source of information for planning and design activities and are extremely useful visual representations of space and place at diverse scales (American Planning Association, 2006; Kelly, 2009; Steiner and Butler, 2007). Planners depend on maps for depictions of fundamental characteristics of sites (e.g. soils, topography, slope); neighbourhoods (e.g. census boundaries, districts, enterprise zones, parcels, parks, bus routes, schools, employment centres, demographics, zoning); and regions (e.g. planning districts, land use, transportation routes, flood zones) (Esnard, 2012).

7.2.4 Form, Physical Elements and Characteristics of LSPs

SR must ensure that the streets, pavements, sewers, water supply, stormwater drainage and other systems in a new development are adequate to serve it and that they integrate easily into the comparable systems of the larger community (Platt, 2004). According to Lynch and Hack, the planning and design process of LSP begins with a conceptual stage that 'consists of imagining patterns of activity, circulation, and physical form, as they will occur in some particular place' (1984:9). The places in question are new development in cities and towns known as 'subdivisions'. Subdivisions are essential to the vitality of a city as they are the places where people will live and work, and experience first-hand all that the city has to offer them (Baily, 2006). Within the process of subdivision planning is the role of SR.

For local SR, there are many regulations/standards relating to streets, pavements, public services, facility and utility networks, etc. SR regulates the process of design, planning and even the development of subdivision plans. In addition, for these standards there are outputs and these have been implemented on the ground within Jeddah residential areas. Chapter 5 explained a brief analysis of the form, elements and characteristics of the LSPs implemented in Jeddah over several periods of time. That chapter relied on general information obtained from Jeddah Municipality archive and particularly on written information and maps which have been saved in files of the approved LSPs. Under this section, quantitative and qualitative methods are adopted to demonstrate the quality of SR. Three main methods have been applied during the process of gathering information, as follows:

- field observation
- field photographs
- base mapping

The observation method identifies the main issues that might distinguish the form of one LSP from another, and has served to provide a consistent protocol for familiarity with each case. The second method utilises photographs to capture the sense of the place as well as to provide a standardised visual reference. Finally, the base maps created provide a consistent graphic and spatial reference and record for each case study area. The maps allow for precise examination of the physical patterns that are not ascertained through photographs and field observation. Gardner (1978) remarks on field observation, stating:

> *observation is also most suitable for studying the physical aspects of a locality, the type of materials used in buildings, distance between houses and from house to street, and the adequacy of footpaths. The physical conditions of supposedly sub-standard areas could hardly be studied without direct observation. The study of traffic conditions, parking facilities for shoppers and pedestrian congestion would also require observation. Rather than interview young children, it would be better to watch them crossing streets and playing in open spaces* (p.32).

Table 7.1 illustrates a number of physical data elements for collection and analysis. Some of the elements are objective; others are subjective. Objective elements were collected from spatial layer maps, which were obtained from Jeddah Municipality for each district and from the GIS maps, which were modified and created by the researcher

for each area. GIS, for example, provides an excellent means for visualising and analysing epidemiological data, revealing trends, dependencies and interrelationships. GIS technologies have become powerful mediators of spatial knowledge in planning. The software acquires, stores, manages and geographically integrates large amounts of information from different sources, programmes and sectors (e.g. Nicholls, 2001; Elwood, 2006; Steiner and Butler, 2007; ArcGIS Resource Center, 2010b), effectively acting as an elaborate database. GIS has many additional benefits at the local level. It reduces costs associated with staffing and the need for physical office space by improving productivity and organisational development, as well as supporting the critical decision-making process (Eason, 1988; Budić, 1994; Esnard, 2012).

Table 7.1: Physical elements collected, observed and analysed within the two districts.

No.	Physical elements	No.	Physical elements
1	Intersection type	11	Length per plot (m)
2	Sidewalk availability	12	Length per housing units (m)
3	Pedestrian path availability	13	No. of access points
4	Cycle path availability	14	No. of plots per access points
5	Street pattern	15	No. of housing units per access point
6	Internal residential right of way width average (m)	16	No. of plots per intersection
7	Residential street way width average (m)	17	No. of housing units per intersection
8	Planting strip width average (m)	18	No. of links
9	Pavement width (single side) (m)	19	No of nodes
10	Length of residential street (m)	20	Internal connectivity

On the other hand the subjective data has been reached by visiting district sites at several different times of the day to observe and record notes and take photos. For example, driving within the areas, as well as walking within the areas in several directions, allows the observer to be in the environment with no barriers between the eyes and what is seen (Jacobs, 1985). The researcher was able to observe and capture several photos relating to the following aspects: layout pattern, access points, streets, sidewalks, tree cover, pavement and street quality, pavement shade, pedestrian and cyclist movement, and car movement, etc.

The data collected has been translated into a number of maps to show comparative results between two areas, for example orthophoto, parcel, and street or block level. In addition, some cross-sections have been produced to illustrate details of local street

networks and many photos have been taken to show how exactly residents use the spaces such as streets, pavements and open spaces.

7.2.5 Public Services and Facilities Sites

The section focuses on some public service and facility sites within the two districts. In the local SR, some standards exist to regulate these services and facilities within the LSP. Through the stages of LSP approval process these regulations/standards are interested in achieving all of the following aspects: requiring 33% of the land development area to be allocated to the provision of public facilities (e.g. streets, pavements, car parking, parks), in addition to 2–3% of the area for other services such as mosques, schools and social activities (i.e. community halls).

To define the public services and facilities provision in the two districts, the researcher worked through two stages:

- **First Stage**: collection of information relating to each of the following aspects: distribution sites of some public services and facilities, and determination of developed and undeveloped services. The information was collected through spatial maps, records of building and construction permits obtained from Jeddah Municipality, and field observation of the public services sites within the two districts. This data has been analysed through GIS to illustrate maps about the distribution of sites of some public services and facilities provided within each district. There is also some quantitative data presented in table format of the provided/non-provided service sites.

- **Second Stage:** some implemented services and facilities sites were chosen from stage one as follows: primary schools (boys' and girls'), parks, mosques, intermediate schools (boys' and girls') within each district. The purpose of selecting the services was to assess the housing units' accessibility to services by using the network analysis tools. The network analysis tool is reliant on spatial maps of public services prepared during the first stage, as well as the street network layer created for each district (Section 6.4.1) (this layer was improved and modified by the researcher to be appropriate for the network analysis). In addition, the services sites within the two districts were visited to collect photos, to observe and define the services' quality and their relationship to surrounding

physical elements such as streets, pavements, housing units, inhabitants' use, and cyclist and vehicle activity.

The significant outcomes of the analysis include several analytical maps describing areas covered/not covered by services such as parks, schools and mosques within the two districts. Statistical information has been extracted from the network analysis describing the number of housing units and the population with access to these services within the residential areas. The analysis shows that there are insufficient park areas, schools, and mosques spatially identified within the boundary of both districts. In addition, the photographs and observation notes have been translated into descriptive text/figures to show the quality of the sites, issues surrounding them, and people's general interactions in both areas.

The following section will first present the analysis of the general information about the two residential areas. This and subsequent sections explain the current place quality of the subdivision areas Jeddah's regulations are achieving using conventional development methods – reflected in the two case studies.

7.3 Total Area, Implementation Date, Subdivision Plans and Land-Use Pattern

7.3.1 Total Area, Implementation Date and Subdivision Plans

The total area of the Al-Mouhamadeyah district is 668 hectares. It is splintered into four LSPs. These emerged at various points in the development of Jeddah. The plans have been codified as Al-Mouhamadeyah 1, 2, 3 and 4 (see Figure 7.6 and Table 7.2). Al-Mouhamadeyah 1 was the first scheme in this district and was implemented in 1981. This was followed by Al-Mouhamadeyah 2 in 1982, then Al-Mouhamadeyah 3 in 1983. The final plan is the largest by area, emerging in 1992 and being advertised in 1993. For the Al-Naseam district, the total area is approximately 252 hectares. It includes two LSPs (see Figure 7.7 and Table 7.3); Al-Naseam 1 was implemented in 1988, and its plots were sold in the same year. Al-Naseam 2 is the larger plan in terms of area, encompassing 194 hectares. It appeared one year after Al-Naseam 1. In terms of population, there are 47,420 inhabitants in Al-Naseam and in Al-Mouhamadeyah there are approximately 13,360 (MOEP, 2010).

Both districts were developed and controlled by a number of conventional developers. Tables 7.2 and 7.3 list the types of developers that constructed the Al-Mouhamadeyah

and Al-Naseam LSPs. A single developer's role includes running a small real-estate institution. The main goal for the developer is to subdivide the land into smaller plots, and then to quickly place the newly divided land parcels on the market for a profit. Abdluaal (1990) remarks on conventional LSP patterns in Madina: 'subdivision activity which trades land for speculative purposes rather than for development has produced inefficient land development patterns which have fostered financial profits rather than having contributed to an efficient pattern growth' (p.737). Developers in Jeddah followed a single method – the conventional method – which eventually spread across the city.

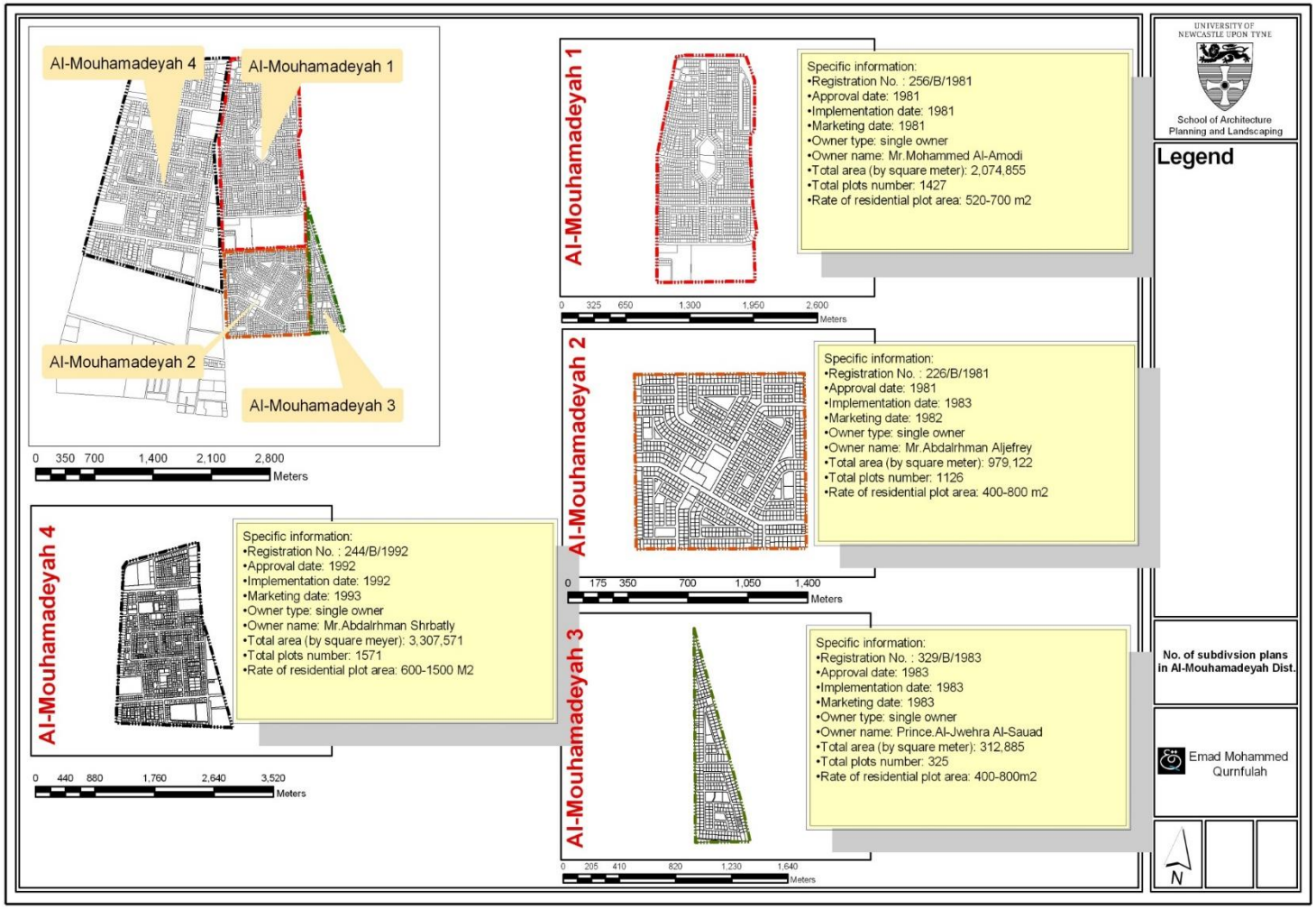


Figure 7.6: Al-Mouhamadeyah district divided into four LSPs

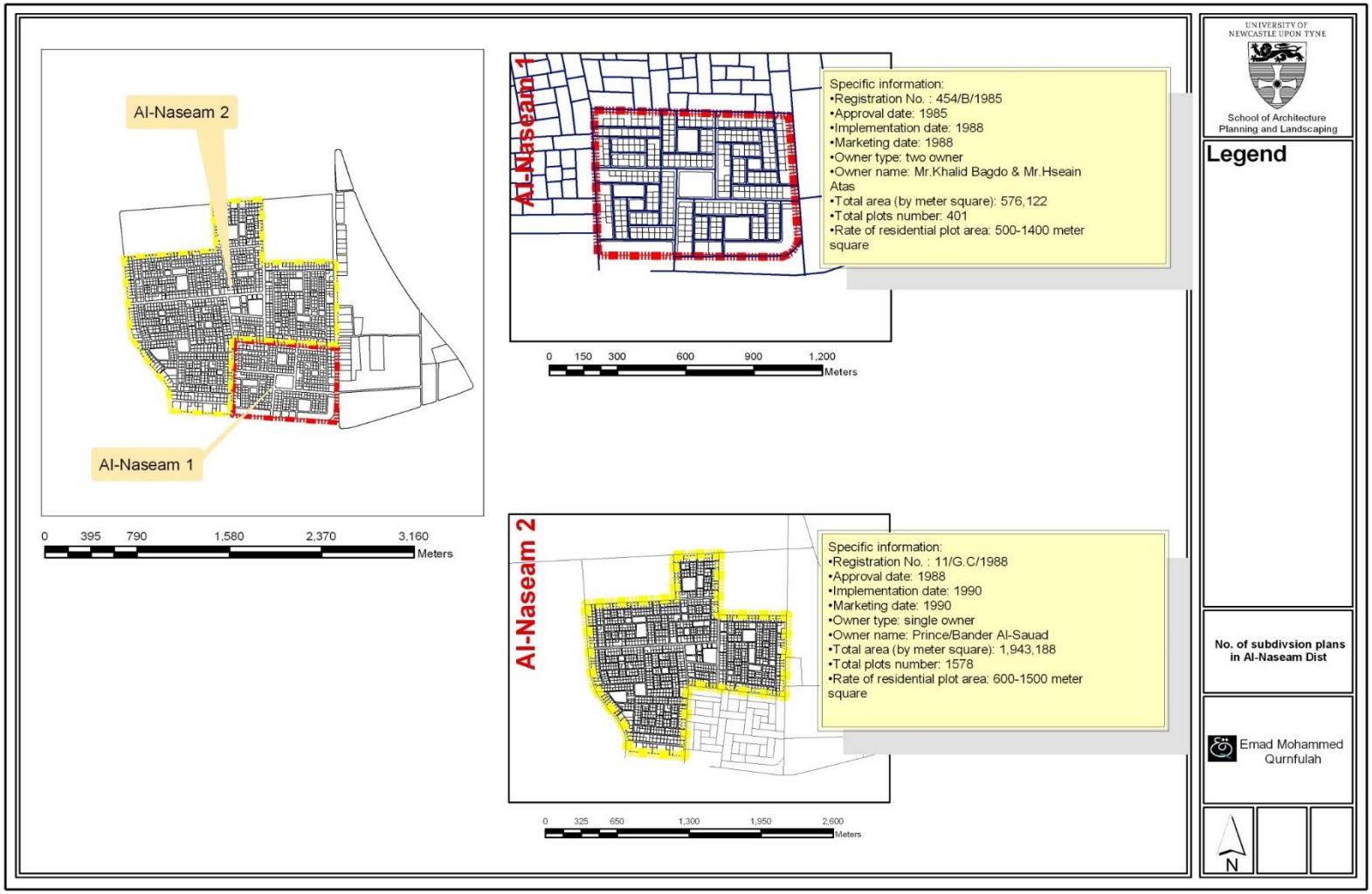


Figure 7.7: Al-Naseam district, which includes two LSPs

Table 7.2: General information about Al-Mouhamadeyah district

Al-Mouhamadeyah District				
General information				
Subdivision plan no.	Al-Mouhamadeyah 1	Al-Mouhamadeyah 2	Al-Mouhamadeyah 3	Al-Mouhamadeyah 4
Registration no.	256/B/1981	226/B/1981	329/B/1983	244/B/1992
Approval date	1981	1981	1983	1992
Implementation date	1981	1981	1983	1992
Marketing date	1981	1982	1983	1993
Owner type	Single owner	Single owner	Single owner	Single owner
Owner name	Mr Mohammed Al-Amodi	Mr Abdalrhman Aljefrey	Mrs Al-Jwehra Al-Sauad	Mr Abdalrahman Shrbatly
Building regulation	Villa type/2nd floor & extension/50%	Villa type/2nd floor & extension/50%	Villa type/2nd floor & extension/50%	Villa type/2nd floor & extension/50%
Density type	Low	Low	Low	Low
Rate of residential plots area (m^2) (min & max)	520–700	400–800	400–800	600–1,500
No. of plots	1,427	1126	325	1,571
No. of implemented housing units	1,065	939	210	463
Total area (m^2)	2,074,855	979,122	312,885	3,307,571
Total area (hectares)	208	98	31	331

Table 7.3: General information about Al-Naseam district

Al-Naseam District		
General information		
Subdivision plan no.	Al-Naseam 1	Al-Naseam 2
Registration no.	454/B/1985	11/GC/1988
Approval date	1985	1988
Implementation date	1988	1990
Marketing date	1988	1990
Owner type	Two owners	Single owner
Owner name	Mr Khalid Bagdo & Mr Hseain Atas	Prince/Bander Al-Sauaid
Building regulation	Apartment units/3–5 floor/60%	Apartment units/3–4 floor/60%
Density type	Medium	Medium
Rate of residential plots area (m^2) (min & max)	500–1400	600–1500
No. of plots	401	1,578
No. of residential apartment buildings	314	1,345
No. of implemented housing units (apartment)	1,884	7,578
Total area (m^2)	576,122	1,943,188
Total area (hectares)	58	194

7.3.2 Land-Use Pattern

Due to the type of land-use information received from Jeddah Municipality, it was found that it did not include data showing every land-use type in detail; for instance, for residential and mixed use, both uses were listed under one category named 'residential & mixed uses' (residential and commercial). From close observation in both areas it was found that the mixed-use locations were on the main roads surrounding the LSP. None of the mixed-use areas were connected to the internal streets of each subdivision plan, which is particularly unhelpful for pedestrians and cyclists. As a result, the car is the only practical means of reaching the mixed-use areas in both districts.

Tables 7.4 and 7.5 show land-use percentages for both districts. In Al-Mouhamadeyah it was found that more than 35% was residential and mixed use (residential and commercial use), while in Al-Naseam the figure was about 50.4%. The percentage was lower in Al-Mouhamadeyah district because there were plenty of plots not yet developed, particularly within Al-Mouhamadeyah 4. Here there was a diversity of villa types, developed individually by the owners or by an independent contractor. In Al-Naseam there were multi-storey residential apartment buildings that had been built in the same manner. The buildings are multi-storey (three to six floors) with approximately two apartments per floor.

According to the SR manual (2003), streets should not cover more than 20% of the land total area developed. However, it was found that there was a high percentage for street networks in Al-Mouhamadeyah 2 (25.6%) and Al-Mouhamadeyah 4 (22%), while it reached 24.4% in Al-Naseam 1, and 26% in Al-Naseam 2. According to scholars (e.g. Seidel, 1978; Girling and Kellett, 2005; Friedman, 2007; Rangwala, 2010) this contributes to the occurrence of negative results, including for instance the following aspects, where the street pattern:

- is in an inefficient use of land and thus consumes large areas;
- increases the cost to the municipal infrastructure budget for installation and maintenance;
- contributes to urban heat, affecting energy demands for cooling;
- impedes walking and cycling, which influence energy use for transport;
- increases rainwater runoff; and
- increases development costs.

Both areas have low percentages of public services and facilities, which in Al-Mouhamadeyah constitute 2.3% and in Al-Naseam 3.9% of the total area. Several plots in both areas have not been developed, remaining vacant (see Section 7.5.2).

Table 7.4: General land-use pattern for Al-Mouhamadeyah district and its LSPs

Al-Mouhamadeyah District Land-Use Information															
	Al-Mouhamadeyah 1			**Al-Mouhamadeyah 2**			**Al-Mouhamadeyah 3**			**Al-Mouhamadeyah 4**			**Al-Mouhamadeyah District**		
	No.	Area (m^2)	%	No.	Area (m^2)	%	No.	Area (m^2)	%	No.	Area (m^2)	%	No.	Area (m^2)	%
Residential + Res. & Com.	1,065	1,099,008	53.0	939	537,268	54.9	210	145,289	46.0	463	575,925	17.5	2,677	2,357,490	35.3
Mosque	5	23,596	1.1	4	26,656	2.8	2	7,581	2.4	4	17,817	0.5	15	75,650	1.2
Primary school, boys	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
Primary school, girls	1	913	0.04	1	3,229	0.3	0	0	0.0	0	0	0.0	2	4,142	0.1
Intermediate school, boys	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
Intermediate school, girls	1	1,611	0.08	1	3,195	0.3	0	0	0.0	0	0	0.0	2	4,806	0.1
High school, boys	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
High school, girls	0	0	0.0	1	3,494	0.4	0	0	0.0	0	0	0.0	1	3,494	0.1
Education compound (K-12), boys	1	23,285	1.12	0	0	0.0	0	0	0.0	0	0	0.0	1	23,285	0.3
Education compound (K-12), girls	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
Health care centre	1	743	0.03	0	0	0.0	0	0	0.0	0	0	0.0	1	743	0.0
Social centre	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
Playground	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
Park	4	16,779	1.0	0	0	0.0	1	4,419	1.4	0	0	0.0	5	21,198	0.3
Parking	1	1,164	0.06	4	3,282	0.3	9	7,058	2.2	0	0	0.0	14	11,504	0.2
Pedestrian route	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
All other uses	21	41,267	2.0	15	23,970	2.4	10	11,257	4.0	15	223,395	7.0	61	299,889	4.5
Empty plot	322	462,246	22.0	152	122,160	12.5	88	76,248	24.3	1,037	1,686,782	50.0	1,599	2,347,436	35.2
Unknown use (under construction)	5	6,898	0.3	9	5,649	0.5	5	5,632	2.0	52	93,255	3.0	71	111,434	1.7
Street total area		397,345	19.0		250,218	25.6		55,401	18.0		710,398	22.0		1,413,362	21.2
Total	1,427	2,074,855	100.0	1,126	979,122	100.0	325	312,885	100.0	1,571	3,307,572	100.0	4,449	6,674,434	100.0

Table 7.5: General land-use pattern for Al-Naseam district and its LSPs

Al-Naseam District Land-Use Information									
	Al-Naseam 1			Al-Naseam 2			Al-Naseam District		
	No.	Area (m^2)	%	No.	Area (m^2)	%	No.	Area (m^2)	%
Residential + Res. & Com.	314	222,304	38.6	1,345	1,048,109	54.0	1,659	1,270,413	50.4
Mosques	3	22,333	4.0	11	50,464	3.0	14	72,797	2.9
Primary school, boys	0	0	0.0	1	1,744	0.0	1	1,744	0.1
Primary school, girls	0	0	0.0	1	1,482	0.32	1	1,482	0.1
Intermediate school, boys	1	1,252	0.2	0	0	0.0	1	1,252	0.0
Intermediate school, girls	0	0	0.0	1	1,266	0.33	1	1,266	0.1
High school, boys	0	0	0.0	1	1,391	0.0	1	1,391	0.1
High school, girls	0	0	0.0	0	0	0.35	0	0	0.0
Education compound (K-12), boys	0	0	0.0	0	0	0.0	0	0	0.0
Education compound (K-12), girls	1	9,036	1.6	0	0	0.0	1	9,036	0.4
Health care centre	0	0	0.0	1	545	0.02	1	545	0.0
Social centre	0	0	0.0	0	0	0.0	0	0	0.0
Playgrounds	0	0	0.0	0	0	0.0	0	0	0.0
Parks	1	1,641	0.0	1	3,174	0.16	2	4,815	0.2
Parking	0	0	0.0	0	0	0.34	0	0	0.0
Pedestrian routs	0	0	0.0	0	0	0.0	0	0	0.0
All other uses	7	12,398	2.2	21	36,688	2.5	28	49,086	1.9
Empty plots	71	164,119	29.2	166	292,911	12.4	237	457,030	18.1
Unknown uses (under construction)	3	2,297	0.4	29	35,081	0.45	32	37,378	1.5
Total street area		140,743	24.4		473,029	26.0		613,772	24.5
Total	403	576,122	100.0	1,578	1,945,884	100.0	1,981	2,522,006	100.0

Table 7.6: Overall plots available for development in the Al-Mouhamadeyah district

Al-Mouhamadeyah District: Developed and Undeveloped Plots															
	Al-Mouhamadeyah 1			**Al-Mouhamadeyah 2**			**Al-Mouhamadeyah 3**			**Al-Mouhamadeyah 4**			**Al-Mouhamadeyah District**		
	No.	Area (m^2)	%	No.	Area (m^2)	%	No.	Area (m^2)	%	No.	Area (m^2)	%	No.	Area (m^2)	%
Developed plots	1,100	1,208,366	77.0	965	601,095	86.0	232	175,604	71.0	482	817,137	30.6	2,779	2,802,202	63.0
Undeveloped plots	322	462,246	22.5	152	122,160	13.0	88	76,248	27.0	1037	1,686,782	66.0	1599	2,347,436	35.0
Unknown uses (under construction)	5	6,898	0.5	9	5,649	1.0	5	5,632	2.0	52	93,255	3.4	71	111,434	2.0
Total	1,427	1,677,510	100.0	1,126	728,904	100.0	325	257,484	100.0	1571	2,597,174	100.0	4,449	5,261,072	100.0

Table 7.7: Overall plots available for development in the Al-Naseam district

Al-Naseam District: Developed and Undeveloped Plots									
	Al-Naseam 1			Al-Naseam 2			Al-Naseam District		
	No.	Area (m^2)	%	No.	Area (m^2)	%	No.	Area (m^2)	%
Developed plots	329	268,964	82.0	1,383	1,144,863	87.6	1,712	1,413,827	86.4
Undeveloped plots	71	164,119	17.0	166	292,911	10.5	237	457,030	12.0
Unknown uses (under construction)	3	2,297	1.0	29	35,081	1.9	32	37,378	1.6
Total	403	435,380	100.0	1,578	1,472,855	100.0	1,981	1,908,235	100.0

Despite the appearance of these two areas a long time ago, there are still many plots as of yet undeveloped by property owners. For example, it was found that 35% (total number of plots: 4,449) of plots are not developed in Al-Mouhamadeyah, while in Al-Naseam, only 12% (total number of plots: 1,981) of plots are not developed (see Tables 7.6 and 7.7). These variances could be attributed to the real-estate market in Jeddah which focuses on selling and renting apartment buildings rather than villas.

There are other reasons for undeveloped plots in both areas, such as:

- The development of single plots is by plot owners or independent contractors, and due to this the development process usually takes years to be completed. Lack of management and financial liquidity are considered as reasons behind the owners building on the plots in both areas.
- Many plots are owned for speculation purposes rather than building. The owners are looking to make a profit on the sale of the land, not develop the property for the benefit of the wider community.
- LSP developers are not held responsible for providing the final product or any part of it, which dramatically hinders the development process.
- Service providers may not have clear information about the service and facilities for plots within the LSP.

Abdulaal (1990) discovered the same issue in Al-Madina north of Jeddah. Abdulaal found that were two irregular development patterns: LSP patterns and individual plot development within the LSP. Many property buyers purchased plots for reasons other than using or developing the land, and have left a number of subdivision plots unused and undeveloped. The subdivision pattern and individual plot development impairs public service systems and makes services more costly to provide and maintain.

The process of plot development takes several years, sometimes decades. According to Alskait (2002), in Riyadh the development process for single plots and the failure of developers to fully develop residential subdivision plans has led to the emergence of settlements without clearly defined district lines, thus leading to the deterioration of the developing environment and a decline in property prices.

In another study, Alskait and Al-Mehemaid (2005) indicates that individual plot development in LSPs is similar to having an open construction site for decades. He described it as a workshop that allows for the development and construction of the

housing units by the plots' owners and by individual contractors in the neighbourhoods. The development process takes extended periods of time to complete, and to fill service gaps in the district. The process of lot of digging and unit construction becomes part of the daily life of the district residents. Pavements, road networks and lamp-posts are constantly susceptible to damage as a result of construction works and the entry of construction transport vehicles within the neighbourhoods. The construction of street networks inside the subdivision plans in many cases is meant to be temporary, and still needs reconstruction to the intended higher standard when the construction of vacant plots starts; thus, maintenance would represent an unnecessary expenditure of resources (Abdulaal, 1990).

7.4 Physical Elements and Characteristics of LSPs

Before explaining this section in detail below, there are a number of figures created to show the general view of the two districts, such as orthophoto (Figure 7.8), parcels (Figure 7.9), street and block level (Figure 7.10), street widths, pavements, street and pavement quality, tree cover and shading availability (Figures 7.11 and 7.12). From these figures we can deduce general perceptions of the form and characterlessness of the two areas and determine the quality of the SR on the ground in more detail.

7.4.1 Layout Pattern, Streets, Pavements and Street Connectivity

The street pattern in residential development directly influences the beauty and function of the subdivision plan (Kone, 2006). A new grid pattern has been used as the street pattern in the two areas (see Figure 7.10). In Al-Naseam it is very easy to identify the use of this pattern. In the Al-Mouhamadeyah district this pattern has been applied with the loop pattern, particularly in Al-Mouhamadeyah 3 and 4. The layout pattern allows cars to pass in the districts without any direct control of traffic movement. This pattern shaped many implemented LSPs in Jeddah, particularly in the last 15 to 20 years.

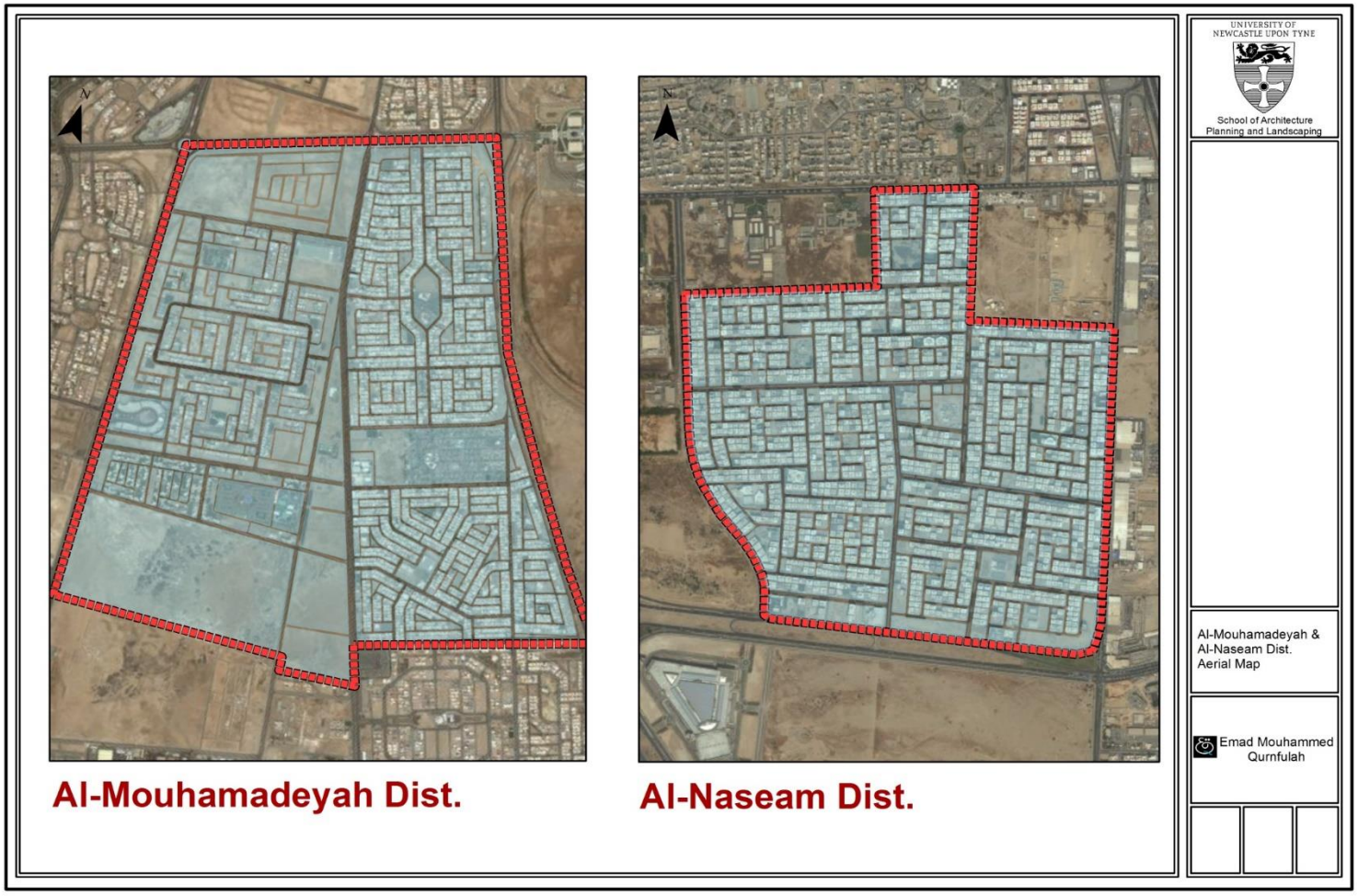


Figure 7.8: Aerial map of Al-Mouhamadeyah and Al-Naseam

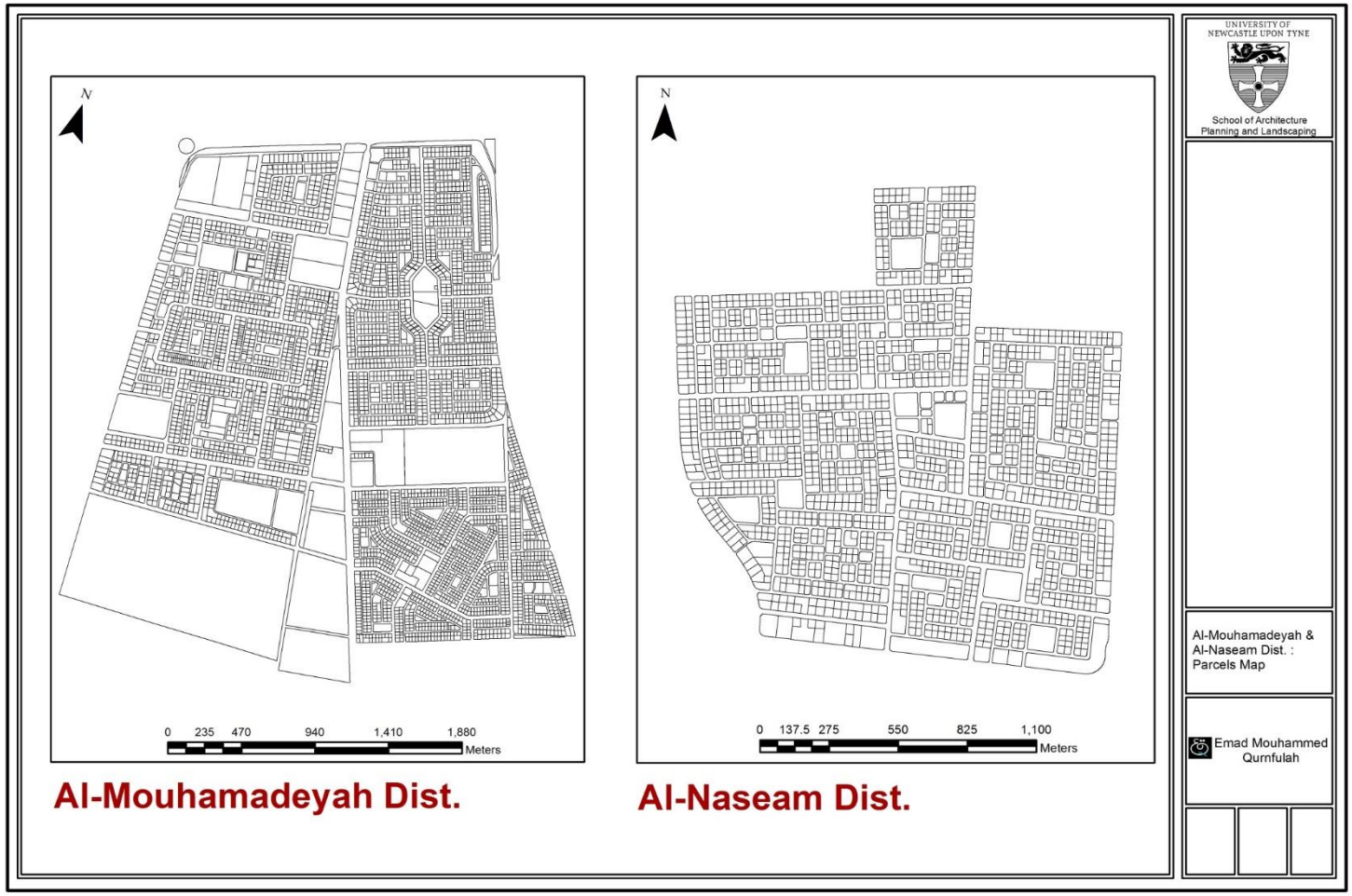


Figure 7.9: Al-Mouhamadeyah and Al-Naseam land parcels

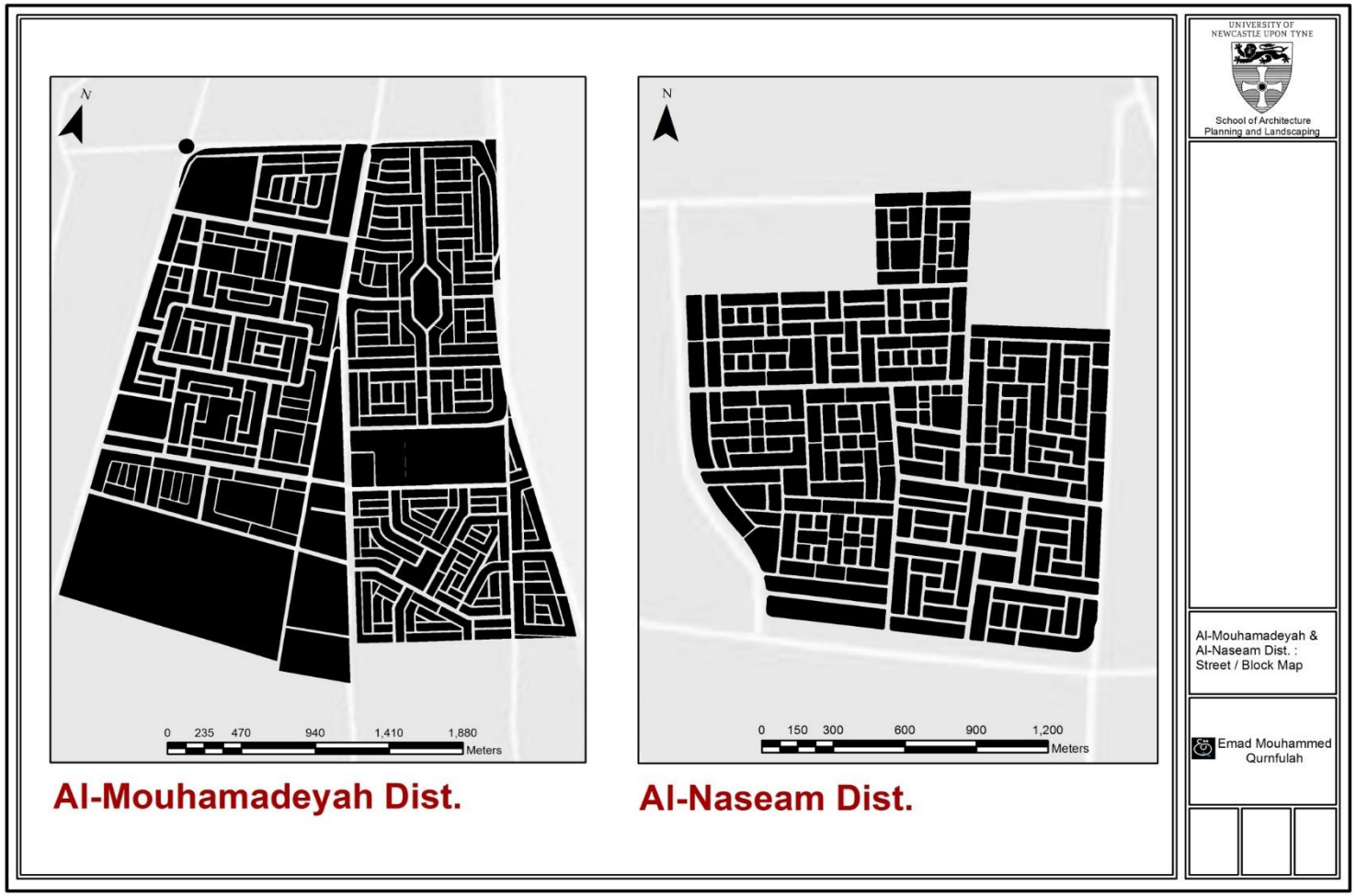


Figure 7.10: Al-Mouhamadeyah and Al-Naseam streets and blocks

Figure 7.11: Typical internal street and pavement patterns in Al-Mouhamadeyah and Al-Naseam. Wide streets are used in both areas with inadequate pavements on the street sides.

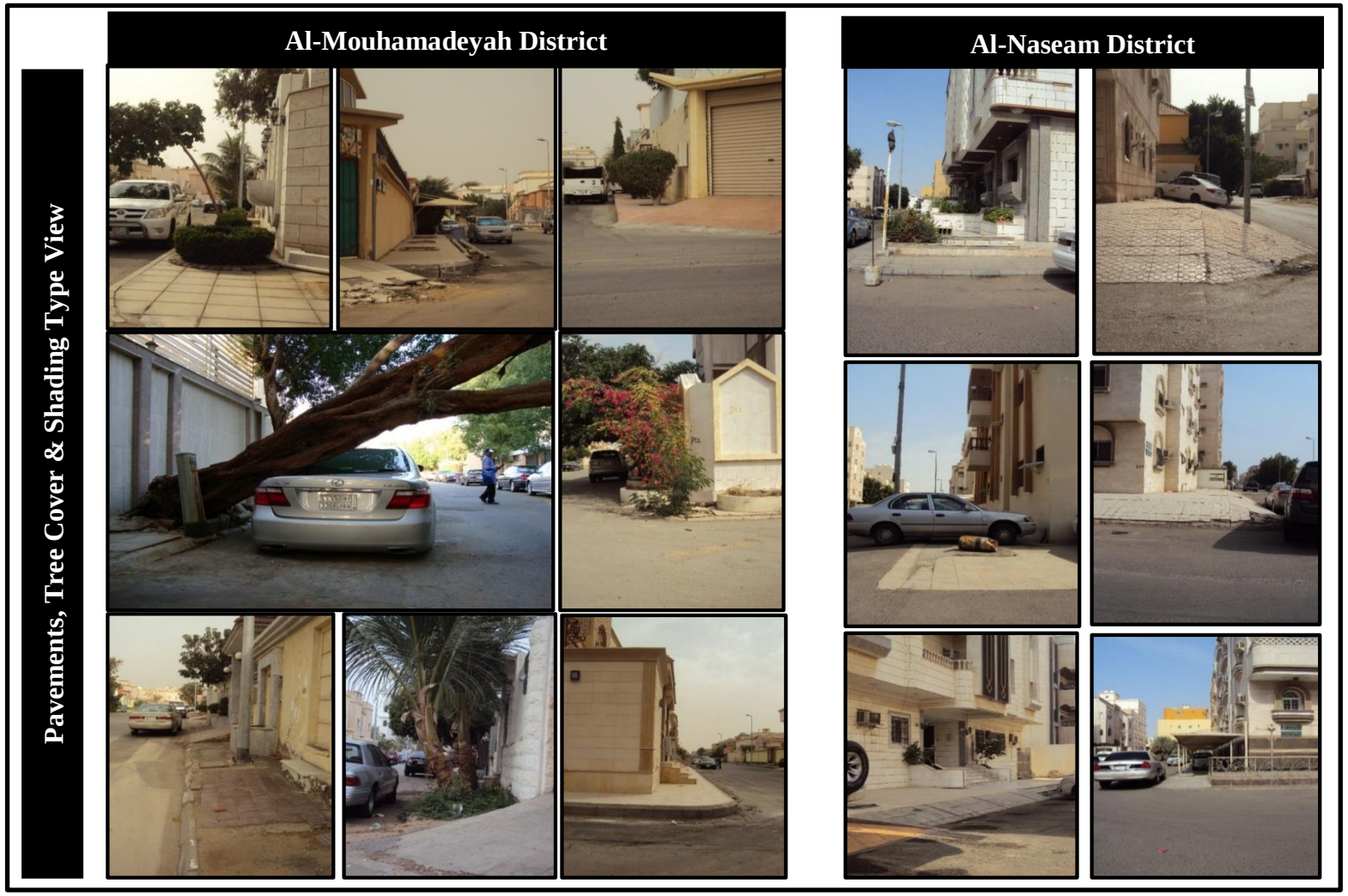


Figure 7.12: Poor pavement quality and tree cover in the Al-Mouhamadeyah and Al-Naseam districts.

The pattern has a number of advantages and disadvantages. There are a number of positives aspects, for example multiple entrances and exits, continuous local streets that encourage through traffic (Kulash, 2001; Grammenos and Tasker-Brown, 2002; Southworth, 2003), wide roads with car parking on both street sides (Southworth and Ben-Joseph, 2003; Filion and Hammond, 2003), many access points, multiple route choices so one is not stuck using the same route day after day (Kulash, 2001; Alskait, 2004; Girling and Kellett, 2005), high connectivity, fewer vehicle miles to travel, and high accessibility for emergency vehicles (Kone, 2006; Kelly, 2009). On the other hand, there are also some disadvantages with this pattern's use. It requires excessive land consumption and consequently promotes environmentally unsustainable practices (Alskait, 2004; Kone, 2006; Girling and Kellett, 2005). Reductions in the tranquillity and safety of residents by ushering in traffic-calming speed bumps, roundabouts and stop signs together impede the traffic flow, increase automobile emissions and noise and reduce the air quality, and lead to driver frustration (Southworth and Ben-Joseph 2003; Filion and Hammond, 2003; Alskait, 2004). The pattern increases infrastructure costs (Filion and Hammond, 2003; Alskait, 2004), encourages higher driving speeds (Kulash, 2001; Southworth and Ben-Joseph 2003; Alskait, 2004) and decreases liveability level for neighbourhood residents (Ben-Joseph, 1995a, b; Southworth and Ben-Joseph, 2003).

It was found that local SR do not provide other alternatives for the LSP layout pattern. For example, no special regulations/standards encourage the developer and designer to adopt different layout patterns, such as cul-de-sac, curvilinear or a hybrid of the two. A hybrid might entail, for instance, a cul-de-sac and curvilinear, or a new grid pattern with cul-de-sacs. In addition, the SR do not provide an optimum pattern for LSPs that the developer can use. This pattern in Jeddah is thus effectively copied and pasted without further design to situate the pattern appropriately within the local context. This is the easiest pattern to implement.

Both case study areas have been designed and approved according to the views of surveying offices and regulators, and are based on SR (not updated yet). The pattern now, from observation, focuses on providing street network channels or grey networks for vehicle movement only, rather than a complete street system serving pedestrians and cyclists also. According to Girling and Kellett:

> *neighborhoods need well-connected, multidimensional networks with purposefully designed streets and paths-some to emphasize vehicular movement, some to cater to*

> *pedestrians and bicycles, some to avoid natural resources, some to clean and store storm water … gray networks need not be universally 'gray', rather, they hold the promise to be diverse, complex, and green* (2005:89).

Southworth and Ben-Joseph (1995, 2003) go further, to argue that the role of the modern street is not just about vehicle mobility but should also be designed for socialising and for children's play.

In Canada, for instance, CMHC's (2008b) study criticises both dominant street patterns: the conventional pattern (such as cul-de-sac, loop and curvilinear) and the neotraditional community design. It suggests that there should be a transition between positive elements of continuous and discontinuous street network patterns during the design and approval process of LSPs. It called this suggested pattern the 'fused grid'. This has the following advantages; it:

- optimises the use of land for streets;
- secures tranquil and safe neighbourhoods;
- increases the potential for social interaction;
- reduces the amount of impermeable surfaces;
- optimises infrastructure;
- assists district and regional traffic flow;
- encourages walking while positively discouraging short driving distances; and
- provides opportunities for rainwater management.

Several LSPs have been approved based on the fused grid by several Canadian municipalities. The fused grid pattern has the following general advantages: it balances the needs of the pedestrian and the motorist, promotes active transportation, which in turn improves health and reduces pollution, and responds to the quest for economic efficiency and the need for environmental stewardship (CMHC, 2008b).

In Jeddah, there are very few cul-de-sac patterns applied. The pattern has many positive aspects. Southworth and Ben-Joseph have indicated a number of advantages to the cul-de-sac pattern use and according to different perspectives (2004). From the developers' perspective, the pattern costs less than the grid or new grid patterns. From the residents' perspective, it provides quiet, safe streets and may promote familiarity with neighbours, thus fostering strong communities. From the home buyers' perspective, the most isolated cul-de-sac plots are the most desirable. Prospective homeowners will often pay

premium prices for these plots. From the ecological perspective the form has distinct values when it dealing with sensitive ecological site character. The last view is related to safety and security aspects within the LSP. The cul-de-sac pattern is safer in terms of the statistical figures of automobile accidents (see Figure 7.13). Also, this pattern has lower burglary rates than the easily travelled street layout, as criminals will avoid this pattern because multiple escape routes are not present.

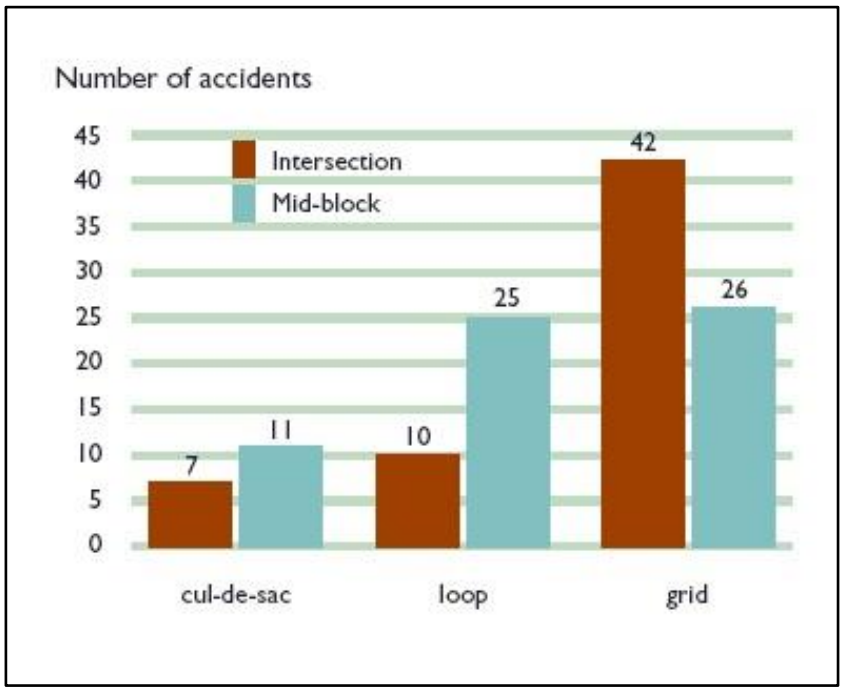


Figure 7.13: Number of accidents by location and within different street patterns
Source: Ben-Joseph (1995)

The LSP pattern layout has a significant impact on residents' liveability. For example, Ben-Joseph (1995a) has examined nine California neighbourhoods (three with cul-de-sacs, three with loops, and three with grid patterns). He looked at the neighbourhoods in terms of safety performance and residents' perception of their street's liveability. The results show that LSPs with a cul-de-sac pattern perform better than those with grid and loop patterns in terms of traffic safety, privacy and play safety. Residents found that the cul-de-sac patterned neighbourhoods were more desirable for liveability. The pattern produced environments that felt safer and quieter because there was no through traffic. However, several scholars (e.g. Grammenos and Tasker-Brown, 2002; Handy, 2003; Kone, 2006; Kelly, 2009) have emphasised the importance of regulating and implementing hybrid street patterns rather than single layout patterns such as the cul-de-sac, curvilinear, loop or grid pattern during the design of subdivision plans.

In both case studies it was observed that there was through traffic flowing through the neighbourhoods. Unfortunately, in both districts there is lack of data related to the number of accidents and their locations.

7.4.1.1 Street Connectivity

The LSPs implemented within Al-Mouhamadeyah and Al-Naseam have high connectivity levels for car traffic only. 'Connectivity' refers to a system of streets with multiple routes and connections serving the same origins and destinations. Connectivity not only relates to the number of intersections along a segment of streets, but how an entire area is connected by the transportation system. According to Benfield et al. (1999), a well-designed, highly-connected network helps to reduce the volume of traffic and traffic delays on major streets. Greater connectivity, the potential for choice and flexibility of movement, can reduce traffic volume and congestion on through streets. Less connectivity typically directs more vehicles onto fewer streets, which in turn can create a number of environment issues such as: speed, noise and decline air quality (Girling and Kellett, 2005).

Connectivity improves liveability in communities by providing parallel routes and alternative route choices. Figure 7.14 shows that residential subdivisions in North America that are dominated by cul-de-sacs provide discontinuous street networks, few alternative travel routes to school and forces all trips onto a limited number of arterial roads. Shorter distances are found with a connected network (DPKTC, 2009).

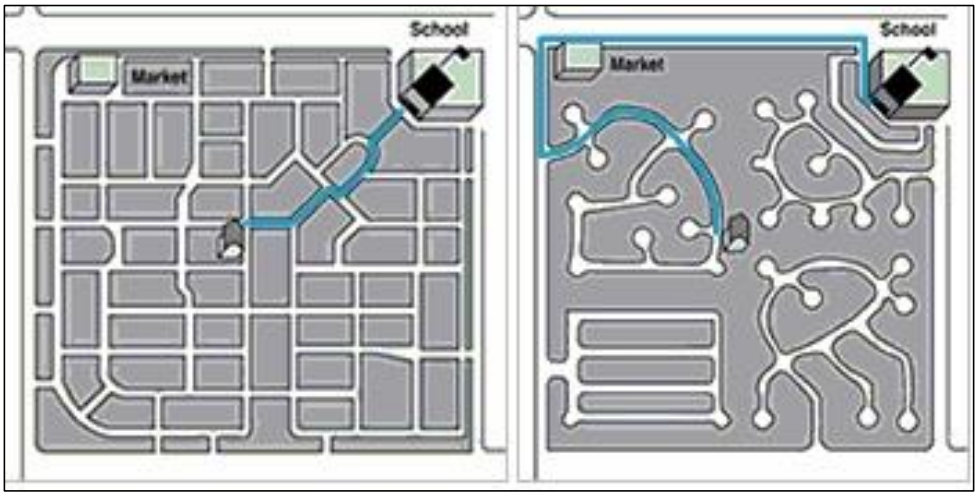


Figure 7.14: Illustrates two different development patterns, connected vs. disconnected. Shorter trip distance with connected network
Source: Oregon Transportation Growth Management Publications, Neighborhood Street Design Guidelines (2000), cited in DPKTC (2009)

To measure street connectivity, three levels of analysis are used. The first level focuses on the number and type of intersections. The second level examines external connectivity. The third is internal connectivity (DPKTC, 2009).

At the first level the greater the intersection frequency with the (T) shape, the higher the connectivity network. Tables 7.8 and 7.9 show the results of the analysis. For example, in Al-Mouhamadeyah 1, 2, 3 and 4 there are plenty of intersection types of (T) shape, but there are a number of hazardous (+)-shape intersections implemented in each subdivision plan within the district boundary. Al-Naseam 1 and 2 have many (T)-shape intersections and use the (+) shape less.

The second level of connectivity measures the number and location of access points connecting directly with the main or secondary roads that surround each LSP were taken. Tables 7.8 and 7.9 show the external connectivity level; it was found in Al-Mouhamadeyah 1 there are 21 access points, while in Al-Mouhamadeyah 2, 3 and 4 there are 19, 8 and 17 respectively. In Al-Naseam 1 there are 14 access points, and 38 in Al-Naseam 2.

The results show a decrease in the car trip distances within each area or between them, which reduces the traffic volume and delays on major streets by providing multiple routes for drivers. There are also negative results observed, such as no control of traffic movement, easier access by strangers, pedestrian movement is restricted by the layout. Many access points encourage drivers on main roads to cut through the residential space to reach a site from a single access point. This has been observed in both areas. This issue was a nuisance for the districts' local residents in both the daytime and night-time.

The third level of the analysis is the internal connectivity. According to studies such as those conducted by e.g. Grammenos and Tasker-Brown, (2002), Lancaster County (2004), and DPKTC (2009), the minimum internal street network connectivity index should be 1.40; the higher the connectivity index, the more connected the road network.

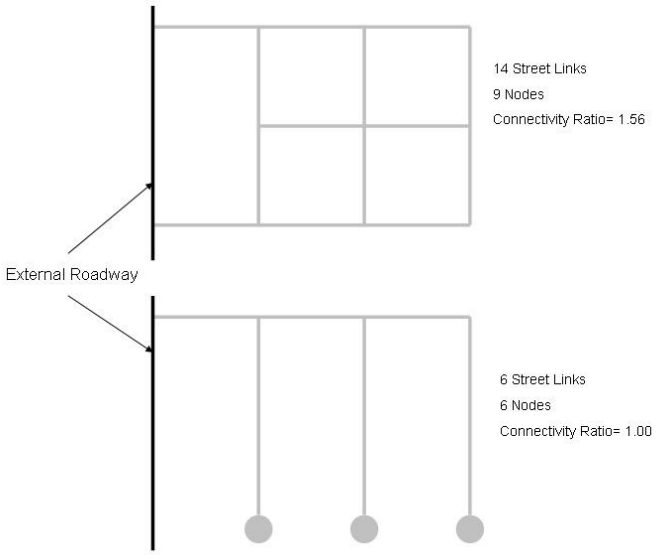


Figure 7.15: An example internal connectivity index calculation
Source: DPKTC (2009).

However, it was found that in some cities such as Cary, North Carolina, SR ordinances require new residential developments to achieve a minimum connectivity index of 1.2 (2012).

To measure the internal connectivity within both areas, the researcher defined the number of street links divided by the number of nodes and link ends (including cul-de-sacs if applicable) (see Figure 7.15 demonstrating how to calculate the connectivity index). Tables 7.8 and 7.9, and Figure 7.16, show there is some similarity in the level of internal connectivity in all the implemented LSP except in one LSP within the Al-Mouhamadeyah district, which has a lower level of internal connectivity. Generally speaking, the two districts have a street connectivity level not less than 1.4 and which has led to a number of advantages for car traffic only such as:

- reduction in travel distance (VMT) for drivers;
- reduction in travel times for drivers;
- better and redundant emergency vehicle access; and
- more efficient access to public services.

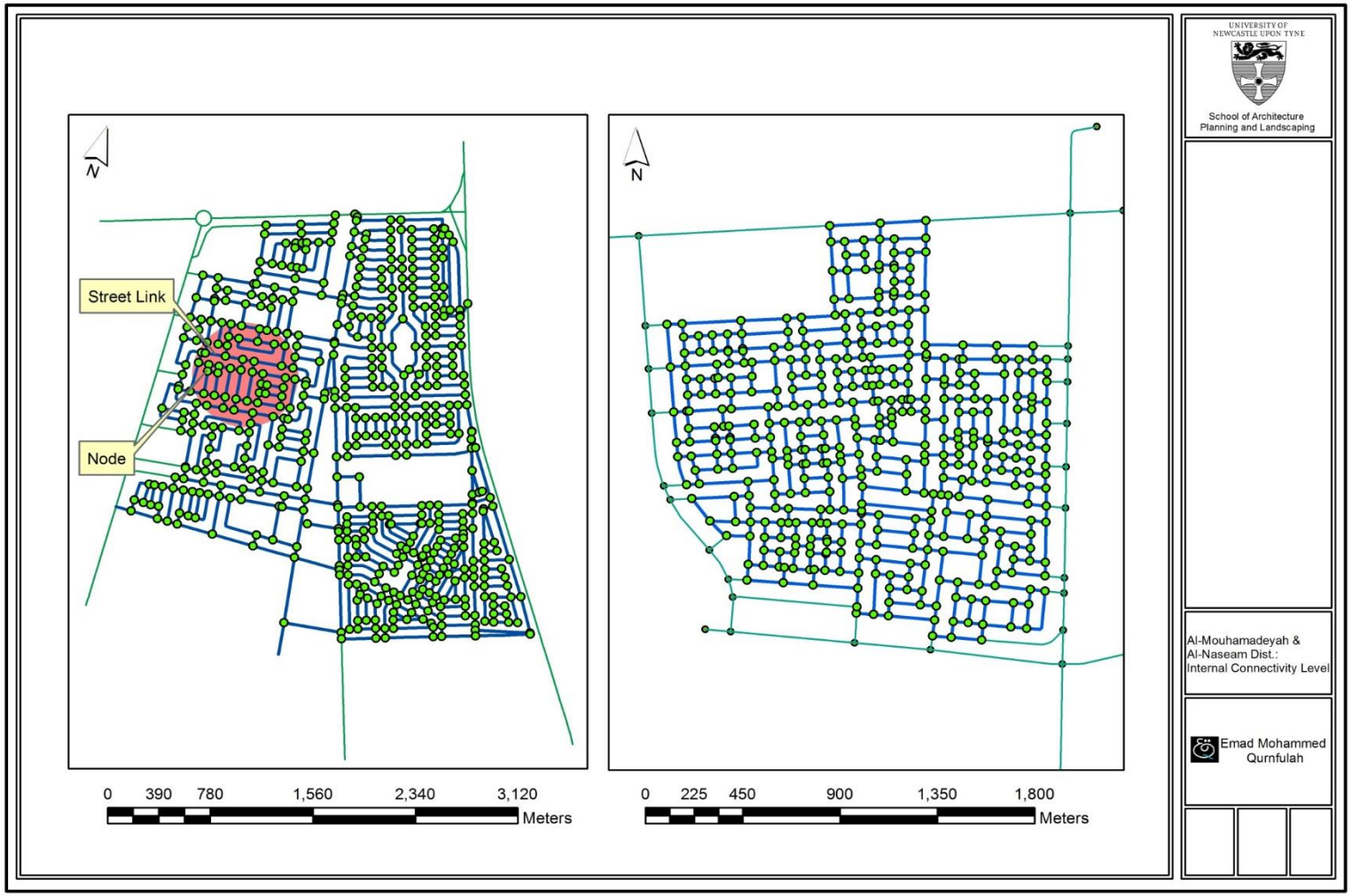


Figure 7.16: Internal connectivity level in Al-Mouhamadeyah and Al-Naseam subdivision plans

Table 7.8: Information on physical elements in the Al-Mouhamadeyah district

Al-Mouhamadeyah District: Physical Information								
	Al-Mouhamadeyah 1		Al-Mouhamadeyah 2		Al-Mouhamadeyah 3		Al-Mouhamadeyah 4	
Intersection type	No.	%	No.	%	No.	%	No.	%
(T)	174	96	146	96	45	96	181	94
(+)	5	4	2	4	2	4	12	6
Total	179	100	148	100	47	100	193	100
Pavements, street pattern, access points etc.								
Pavement availability	Yes/both sides		Yes/both sides		Yes/both sides		Yes/both sides	
Pedestrian path availability	No		No		No		No	
Cycle path availability	No		No		No		No	
Street pattern	New grid pattern (twisted form)		New grid pattern (twisted form)		New grid pattern (twisted form)		New grid pattern and loop pattern	
Internal residential right of way average width (m)	16		16		16		20	
Residential street way average width (m)	+12		+12		+12		+16	
Planting strip average width (m)	No		No		No		No	
Pavement width (on one side of road) (m)	1.2		1.2		1.2		1.2	
Length of residential street (m)	30,720/ mean=337m		18,854/ mean=269m		5,995/ mean=260m		43,434/ mean=391m	
Length per plot (m)	22		17		18		28	
Length per housing units (m)	29		20		29		94	
No. of access points	21		19		8		17	
No. of plots per access points	68		59		41		92	
No. of housing units per access point	51		49		26		27	
No. of plots per intersection	8		7		7		8	
No. of housing units per intersection	6		6		4		2	
No. of links	262		211		34		296	
No. of nodes	179		148		47		193	
Internal connectivity	1.48		1.42		0.7		1.5	

Table 7.9: Information on physical elements in the Al-Naseam district

Al-Naseam District: Physical Information				
	Al-Naseam 1		**Al-Naseam 2**	
Intersection type	No.	%	No.	%
(T)	97	95	347	92
(+)	3	5	26	8
Total	100	100	373	100
Pavements, street pattern, access points etc.				
Sidewalk availability	Yes/both sides		Yes/both sides	
Pedestrian path availability	No		No	
Cycle path availability	No		No	
Street pattern	New grid pattern (twisted form)		New grid pattern (twisted form)	
Internal residential right of way average width(m)	16		16	
Residential street average width (m)	+12		+12	
Planting strip average width (m)	No		No	
Pavement width (on one side of road) (m)	1.2		1.2	
Length of residential street (m)	10,676/mean=266m		43,312/mean=267m	
Length per plot (m)	27		27	
Length per residential apartment building (m)	34		32	
Length per housing units (apartment) (m)	6		6	
No. of access points	14		38	
No. of plots per access points	29		42	
No. of residential apartment buildings per access point	22		35	
No. of housing units per access point	135		199	
No. of plots per intersection	4		4	
No. of residential apartment buildings per intersection	3		4	
No. of housing units per intersection	19		20	
No. of links	137		563	
No. of nodes	100		373	
Internal connectivity	1.4		1.5	

7.4.1.2 Streets and Pavements

According to Jacobs: 'Streets and their sidewalks, the main public places of a city, are its most vital organs. Think of a city and what comes to mind? Its streets. If a city's streets look interesting, the city looks interesting; if they look dull, the city looks dull' ([1961] 2011:29).

In terms of internal street detail, both areas share several similarities, for instance street width, street characteristics, pavement features and connectivity level for pedestrian movement (see Figures 7.11 and 7.12, and Tables 7.8 and 7.9). In both areas the streetscape observed as part of this research lacked interest, with little to commend it for other activities beyond using it to travel by car from one destination to another. This lack of place quality has been caused through the subdivision processes of regulation, planning, design and even development favouring a car-dependent circulation system.

According to Girling and Kellett: 'the best neighborhood networks adequately serve travel, services, and emergency vehicles while also providing beautiful, safe places to play, walk, bike, ride, hang out, and garden' (2005:75). These areas do not provide this (see Figures 7.11 and 7.12).

In the Al-Mouhamadeyah LSPs, the internal street width is between 16 and 20m, but in Al-Naseam the average width is 17m. These streets allow for car parking on both sides of the street and at the same time increase both traffic volume and speed. This is out of step with some of the recent academic and practice thinking. Wider streets generate higher traffic volumes and speeds and lower pedestrian activity, while smaller lane widths efficiently can accommodate automobiles while enhancing safety by reducing traffic speed (e.g. Untermann and Tolley, 1990; Girling and Kellett, 2005; Friedman, 2007). Narrow streets also benefit the community. Not only are funds saved initially, but there are long-term savings on repair and maintenance. Provisions for narrower streets will also decrease the overall area allocated to streets, thereby reducing the rate of sprawl, and in some cases help to retrospectively remedy some cases of sprawl.

Two adult residents hiking: they used the street edge rather than pavements

Father and his two children walking on street edge, no pedestrian path, no calming traffic elements and poor landscape

One older man walks on street edge

One family using the street to walk

One disabled resident put himself in danger as no attention was paid to disabled in the process of regulating, planning and developing subdivision plan

Woman with her child walking on street edge; narrow pavements and poor tree cover

Poor pavements led this woman to use the street to walk

Morning time; poor pavements and no pedestrian pathway led this student to use the street to walk to his school

No cyclist or pedestrian paths led this man and woman to use the street

Figure 7.17: Poor pavement quality and lack of provision for pedestrian or cycle paths in Al-Mouhamadeyah district has led residents to use the same provision as for vehicles

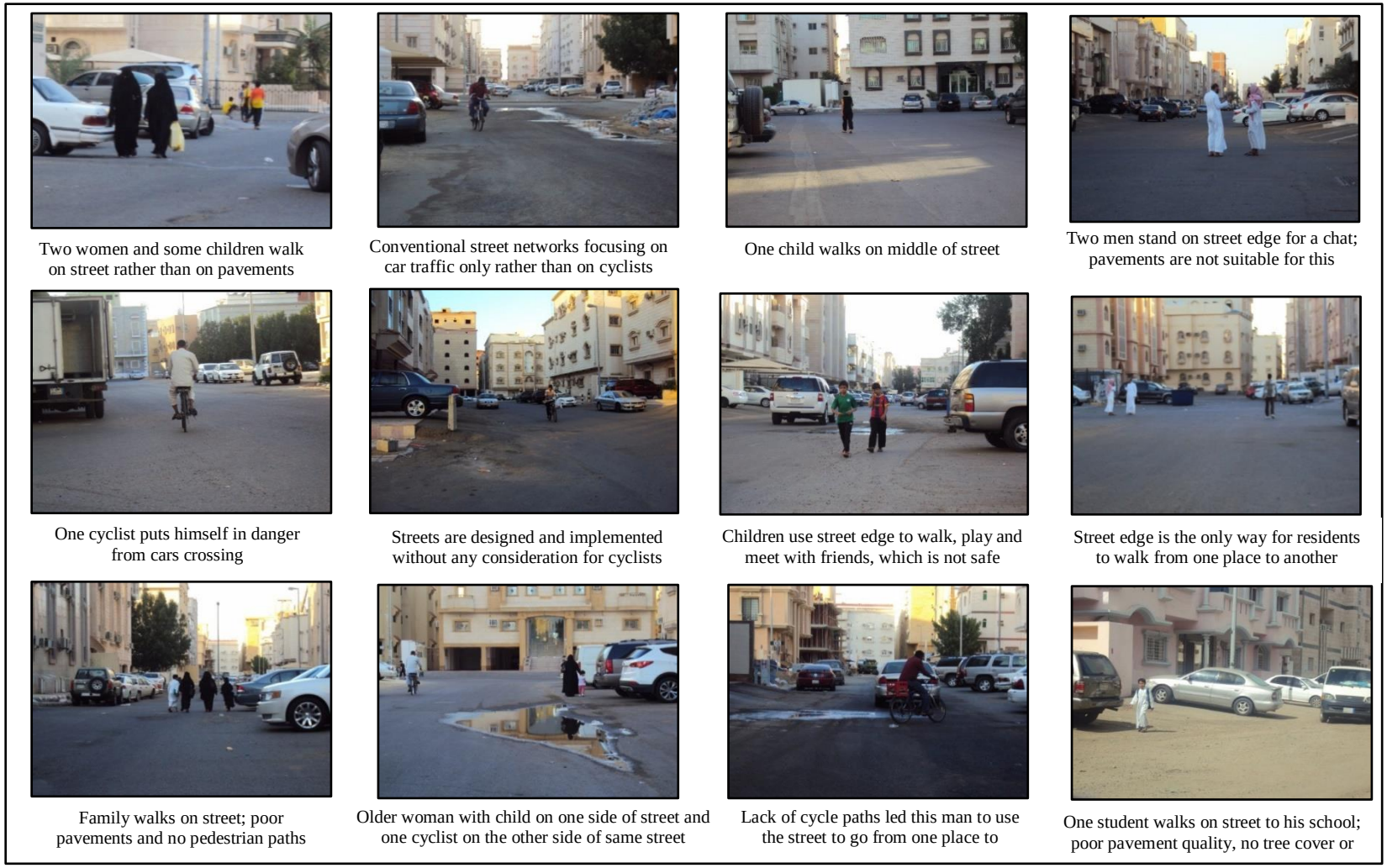


Figure 7.18: Photos taken in the Al-Naseam district; the above photos are evidence of the same road spaces being shared by both vehicles and pedestrians

The New Urbanism movement has been challenging inappropriate practices of SR in terms of street width. For example, in 1991 the city of Portland, Oregon applied the Skinny Street Program. This concept, according to Swift and Associates (2002) and Girling and Kellett (2005), encourages residential streets that are significantly narrower than the prevailing pattern. Streets of conventional width have a range of 34–38 feet, with ample parking on both sides. Narrower streets not only reduce impervious surfaces, storm water runoff, and construction costs, but they have been shown to reduce traffic accidents as well. A 'skinny street' code has been adopted by the Oregon Land Conservation and Development Commission. Similar standards have been approved or are under consideration in more than 30 cities across the US (Ehrenfeucht and Loukaitou-Sideris, 2010).

In terms of pavements, according to Ehrenfeucht and Loukaitou-Sideris (2010) they have become an important part in contemporary planning concerns. Friedman states: 'design of sidewalks and pathways needs to foresee all users: parents pushing strollers, elderly assisted by walkers, and wheelchair users should all be comfortable' (2007:99–100). The new planning concerns require design for health, transportation and economic development. The idea is to revitalise the walkability of designed environments to improve residents' health, provide alternative transportation options, spark economic development, and reduce pollution (Ehrenfeucht and Loukaitou-Sideris, 2010). Walking as a form of transportation and exercise appeals to environmentalists and public health advocates alike. Pavements are also places of vibrant public amenity that attract mobile urbanites and firms into the areas. They can also be sites where markets are placed, jobs are available, and communities are formed. Pavements enable people to move from one place to another and bring people into contact with each other. They form the backbone of the pedestrian transportation network.

In both case areas there are standardised pavement patterns (see Figure 7.12). The pavement width on each side of the road is approximately 1m (less than four feet) which is inconvenient for pedestrians' use. A pavement's width should be at least 1.5m (five feet) wide to allow two people to walk comfortably side by side or for two people to pass each other (Kelly, 2009; Friedman, 2007; Ehrenfeucht and Loukaitou-Sideris, 2010). In a survey, Ben-Joseph (2003) studied SR in 75 local cities in the US; he discovered that 35 local cities applied a width of five feet to pavements, while 22 cities used four feet and eight cities adopted more than five feet (2003). In the same study,

46% of the sample also required an additional planting strip of between four and five feet in width. The use of a planting strip between roadways and pavements is common practice in North American suburban subdivisions. The practice was introduced by Frederick Law Olmsted in 1868 in his design for Riverside, Illinois, as a visual and physical barrier between cars and pedestrians, and to increase the perception of safety for pedestrians (Southworth and Ben-Joseph, 1995; Girling and Kellett, 2005; Friedman, 2007). Furthermore, Kone (2006) has emphasised the importance of planting strip implementation in new developments. A recent study in North America reported that the average pavement width was more than four feet within the SR codes of 469 cities, while more than 150 cities applied planting strips as a compulsory standard within local development codes (NAHB Research Center, 2007).

Pavement networks in both case areas share low connectivity. The connectivity concept for pedestrians is similar to that for vehicles (see above), but there are obvious differences (Freilich et al., 2008; Kelly, 2009). For example, pedestrian journeys are typically shorter than vehicular trips; many people will choose to walk only if distances are reasonable. Therefore, pedestrians need more connections than vehicles. Currently, pavements in both areas have no connections to other pavements or pedestrian paths, serving only limited purposes, allowing pedestrians to sometimes walk to neighbouring homes for visits. Some studies have showed that residential areas with well-connected pavements and pedestrian paths have a great impact on the number of people walking to schools (Schlossberg et al., 2006; Boarnet et al., 2005; Giles-Corti et al., 2009, 2011). In a study of 12 subdivision plans, Hess et al. (1999), found that in neighbourhoods with extensive and completed pavement systems there was a positive association with pedestrian volumes. A continuous system of pavements is normally required in order to accommodate and to encourage pedestrian activity (Freilich et al., 2008). Researchers find that many people would only use such paths if they are attractive, comfortable and safe (Saelens and Handy, 2008; Lee and Moudon, 2008).

In both case areas, pavements became inefficient spaces used for local residents. From site observation, this space has been transformed into a semi-private space for several housing units' owners. Some people use the space for planting trees and others have used it as car parking (see Figure 7.12). In many places the height of the pavement is inconsistent; in some places it is high and in others it is low. Jeddah's local SR played a main role for the lack of detailed standards in relation to pavement quality such as

availability of shade, landscaping (such as tree types and quantity), pavement furniture and even the materials used (see Figure 7.12). Therefore, both areas suffered from lack of pavement quality. In the US experience, one study found that 42% of jurisdictions have landscaping standards specifically for subdivisions and particularly for the pavement network (NAHB Research Center, 2007). One study indicated that planting more trees, shrubs and grass belts within subdivision plans not only helps to keep rain out of the sewers, it also helps capture carbon dioxide, reduces the 'heat island' effect of sun-soaked asphalt, and indeed creates more shade for pedestrians, which results in an increase in walking trips and generally makes a neighbourhood more pleasant (TRB/IoM, 2005). Ehrenfeucht and Loukaitou-Sideris (2010) found that trees lining the streets can make pavements comfortable and neighbourhoods desirable, as well as offering environmental benefits such as cooling, surface water management and carbon absorption.

Lack of quality and ignoring the provision of the aspects of the public realm has affected the residents' use of the pavements in both case study areas. They used the edge of the road rather than the pavements when moving from their home to, for example, neighbours' homes, mosques, and/or schools (see Figures 7.17 and 7.18). Also, there is a lack of care for disabled people in terms of design, planning and development of the pavements and streets (see Figure 7.17).

7.4.1.3 Cycle and Pedestrian Paths

In terms of cycle and pedestrian paths, SR has again not considered the importance of these aspects in either case area. Several female and male residents of different ages exercise, walk and/or cycle (see Figures 7.17 and 7.18). They are putting themselves at risk due to the lack of provision of dedicated paths and because of speeding cars, and due to poor pavement quality. Kulash (2001), Friedman (2007), Girling and Kellett (2005), and Kennedy and Dannenberg (2012) pointed to the importance of providing networks for pedestrians and cycle paths, which could be used for leisure, recreation and even play, and would enable residents ranging in age from very young children to the elderly to travel short or long distances. The paths could link homes with amenities such as sports centres, schools, and parks, and reliance on cars would be reduced, thus contributing to a healthy society. Research shows that providing pedestrian and cycling facilities within the subdivision can increase user numbers and contribute to safety,

possibly because drivers become more aware of and more careful around pedestrians and cyclists as their numbers increase (Jacobsen, 2003).

In the 2000s, many North American cities amended SR to include standards for pedestrian and cycle paths within the subdivision including, for example: Ann Arbor, Michigan; Boulder, Colorado; Cambridge, Massachusetts; Oakland, California; Phoenix, Arizona; Portland, Oregon; Oak Harbor, Whidbey Island in Island County Washington; Knoxville, Knox County; and St. Louis, Missouri, as well as cities in Vermont, Wisconsin, and New Hampshire. However, Jeddah's SR have not been amended since 2003 to consider pedestrian and cycle paths in the same way.

7.5 Analysis of Public Services and Facilities

In both districts, a range of public services and facilities are provided. Most of these have been conventionally developed via the SR for years, and are still accommodated within any new subdivision plan. Local SR do not attempt to provide new services by requiring conventional developers to provide these services, and it is not mandatory for them to contribute to the provision of mosques, schools, parks etc., although they do provide land. Today, Saudi society is changing a lot. Local communities have strong voices calling for changes to the planning and development process of public services sites within subdivision plans (Al-Freadi, 2008; Harefsha, 2008; Mandeli, 2011). According to Friedman (2007), changing the conventional process of regulating and planning of residential areas is very important. He states that once plans are approved by municipalities, they become an absolute point of reference for the duration of the development's construction.

In Saudi communities there is a need to provide new service and facility sites, such as parks for women only, shaded car parking, spaces dedicated to celebrations and ceremonies within the neighbourhood, football fields, basketball fields, public swimming pools, and at the very least, libraries (see Section 9.12). The state school sites in both case areas do not have an organised, designed, planned implementation process as places to be utilised by residents, and are not used for community purposes after working hours. As another example, mosque sites are also organised and implemented as places to carry out the five daily prayers only, rather than as places for residents to gather for community functions such as workshops and seminars.

This section analyses the distribution of public service and facility sites, and whether provided or not within the two districts. Clarification of service delivery dates and their relationship to the emergence of the residential units within the two districts was sought. The service area of selected services and the overall housing unit accessibility, as well as the number of residents served indicate that each district is under-served by these services. The public services and facilities selected for this analysis are parks, mosques, primary and middle schools (boys' and girls'), and educational compounds (boys' and girls').

7.5.1 Public Services and Facilities: Distribution

In North America there is a mechanism in place to strategically identify and select sites for public services and facilities within a subdivision plan. There are a number of national guidelines and parameters for the providing services such as playgrounds, parks and schools (Eisner et al., 1993; Steiner and Butler, 2007; McDonald, 2010).

In terms of parks and open spaces, the National Recreation and Park Association (NRPA) in 1996 provided detailed guidelines for the implementation of parks and recreation spaces. The Urban Land Institute (an organisation funded primarily by large developers) has joined with the Trust for Public Lands to publish research and guidelines on subjects relating to urban parks and open spaces. For example, park standards in both publications include detailed classifications of the park type, location, walking distance, and service area. These standards provide framework for park system planning.

In terms of schools' siting, there are many guidelines published from education, planning, and public health organisations, such as the National Council on Schoolhouse Construction, Council of Educational Facility Planners, Planning Advisory Service, American Public Health Association Committee on the Hygiene of Housing, and Council of Educational Facility Planners International (CEFPI). The guidelines published by these organisations focus on school size and/or travel time. In the US, school sites were placed on main roads, within large areas, and on the outskirts of residential areas. The purpose of this placement was to provide service in more than one residential neighbourhood, allowing also for a larger service breadth.

The broad vehicle-based approach was criticised because it has produced sprawling school campuses. Many issues appeared due to the proliferation of vehicle-oriented communities, including for example increased walking distances for students, lack of provision for walking and cycling, negative effects on health and increasing obesity among students, increased costs of school transport, parental dependence on the car for child transport, increased pollution as a result of excessive use of vehicles, traffic congestion and stunting of community connections (e.g. Beaumont and Pianca, 2002; Chung, 2002; Ewing and Greene, 2003; Tsai and Miller, 2005; Wilson et al., 2007).

In response to these and other concerns about school sprawl, CEFPI issued new guidelines in 2004 without a recommended minimum size standard, allowing more flexibility in school design (Myers and Robertson, 2004). In the same year, CEFPI and the US Environmental Protection Agency (EPA) collaborated together to publish a document providing principles and examples of how localities could 'integrate smart growth principles into the educational facility planning process' to develop 'community-centered schools' (McDonald, 2010). By applying the principles of sustainability and smart growth to schools and coordinating their planning efforts, local governments and school districts may create community-oriented schools that provide good education, while also achieving broader community goals and making better use of tax dollars (Sharp, 2008).

Generally speaking, in US cities and towns, the planning departments collaborate with several service and facility providers during the approval process of each subdivision plan. Each party holds partial responsibility for the distribution of services. For instance, the health department or health agency has a direct role in the planning process regarding siting of services. A Health Impact Assessment (HIA) is a tool that allows public health practitioners to participate in the planning process of service siting within subdivision plan approvals (Schuchter, 2010; CDC, 2014). Indeed, any increases in the number of participants will delay the process of the approval scheme, which leads to negative consequences for developers, such as delays in project implementation, increased development costs and subsequent housing price increases (Ben-Joseph, 2004c). But citizen participation will lead to positive outcomes in the long run, especially for potential end-users of subdivision plans, because convenient locations, increased physical activity, and immediate implementation of service plots are more likely to be incorporated.

Studies in Abu Dhabi of the service areas for schools, parks and playgrounds within implemented subdivision plans found that there were insufficient park areas, and that schools were spatially identified within the city boundary. There is an unequal distribution of service sites and no hierarchy of sites for the allocation of these services. In response to this study, Abu Dhabi City Council has created new guidelines for school and park sites. The guidelines provide clearly articulated details for the regulators, developers and service providers to orchestrate the development of the sites. The orchestration demands organisation on many levels: housing group, neighbourhood, and district (Abu Dhabi Urban Planning Council, 2010c, d).

In contrast, local SR in Jeddah are not concerned with the study and organisation of site distribution for public services within the subdivision plan before approval. The standards of these services are not considered, nor do they specify the required location of each service. It is a simplified process occurring between the developer and Jeddah Municipality only, without consulting with service providers.

Figure 7.19 shows the distribution of some public services and facility sites within the two districts. The absence of a distribution hierarchy for these service sites is clear. The services are fragmented in relation to both the community and to each other. Figure 7.19 shows there are a limited number of sites dedicated as service centres for residential groups. Both districts suffer from a lack of services focused on the district they are intended to serve. The district service centre is supposed to serve the overall population of the district and should be readily accessible either by foot, bicycle or car, but the completed service centres are unconnected to each other by pedestrian or cycle paths. Each centre is surrounded by broad streets with poor pavements, and primarily serve the residential units immediately adjacent rather than those located throughout the district.

The next section also raises another issue related to delays in the completion of service and facility sites within the two case districts.

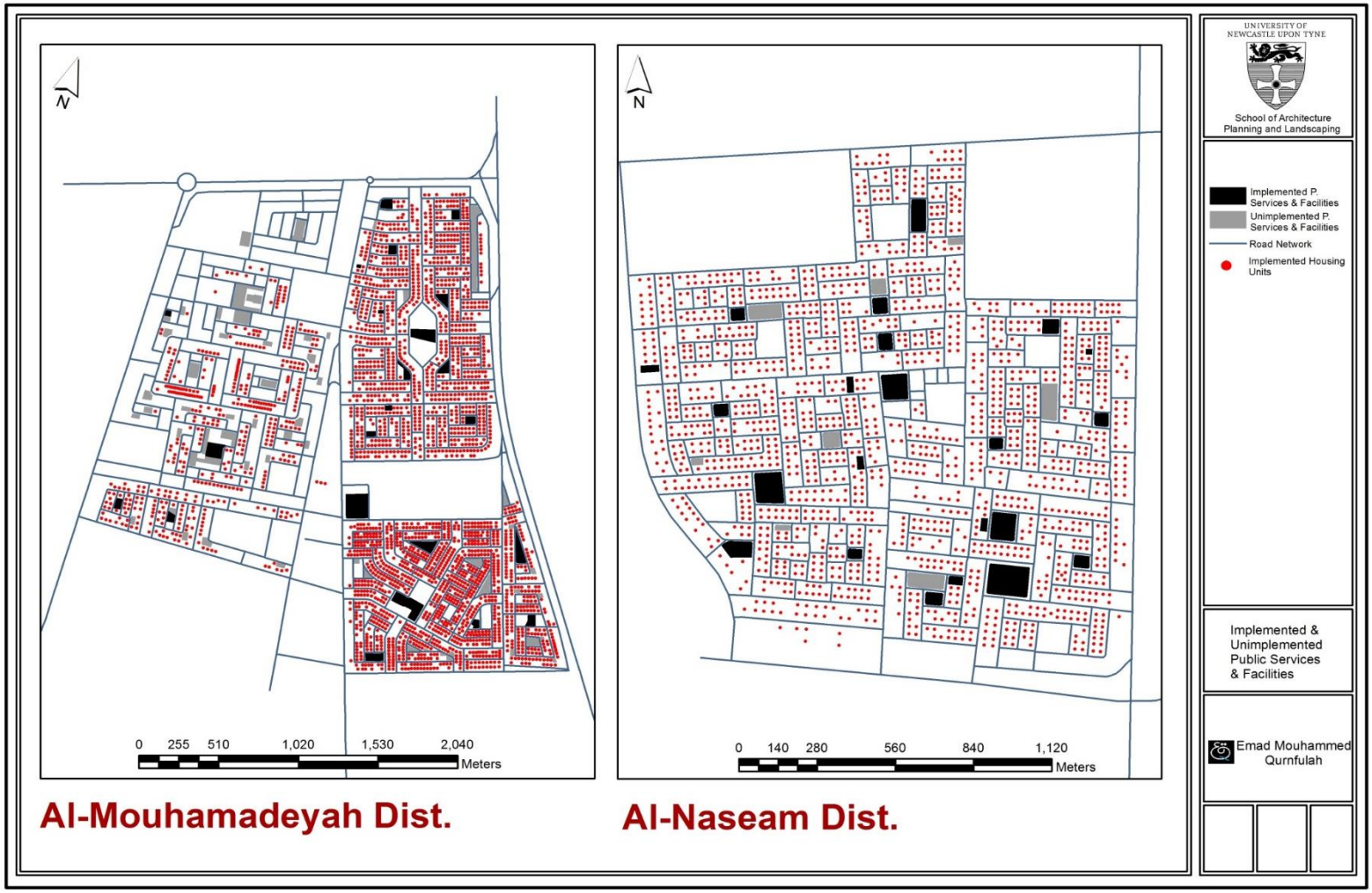


Figure 7.19: Some public services and facilities sited in the Al-Mouhamadeyah and Al-Naseam districts, as well as the implemented and unimplemented service plots

7.5.2 Public Services and Facilities: Implementation

As already shown, unlike the US, the process of subdivision plan approval in Jeddah does not regulate how public services and facilities are provided, or when.

Usually, the planning stages of the subdivision plan are carried out without collaboration with service providers. In addition, there is a lack of regulation and enforcement of developers' responsibility to implement parts of these services such as parks, playgrounds, or mosques within the plan and prepare for use by the end-users. After the subdivision plan approval stage and implementation, Jeddah Municipality usually keeps and reserves copies of the plan within its archive. The archiving is again done without coordination with service providers. For example, there is no communication with the providers to supply them with copies and detailed information about the sites of service plots within the approved and implemented subdivision plans.

The opacity of the process negatively impacts the people of Jeddah. For example, the current inhabitants of Al-Mouhamadeyah and Al-Naseam districts have suffered delays in the completion of services for many years. The provision of services within both districts occurs randomly and is unrelated to a clear implementation timetable. Figure 7.19 and Tables 7.11 and 7.12 illustrate the general perception of executed versus unimplemented service plots within the two districts. The service plots have been chosen as part of a sample in order to define how significant the issue is. The results show that there remain a number of undeveloped service plots; these create four issues within the two areas. Firstly, there are completed housing units surrounded by empty service plots waiting for development (see Figures 7.19 and 7.20). Secondly, some service plots have been developed before the development of the surrounding planned residential plots. Thirdly, some of the unimplemented service plots have informally taken on new uses such as car parking, football fields, and construction waste dumps (see Figure 7.20). Local streets in the Al-Naseam district have become makeshift football fields for the local children (see Figure 7.21). Lastly, unsynchronised development has had negative impacts on the perceptions of residents. Users experience inadequate services, and are dependent on services available outside their area, thereby causing increases in their transportation costs.

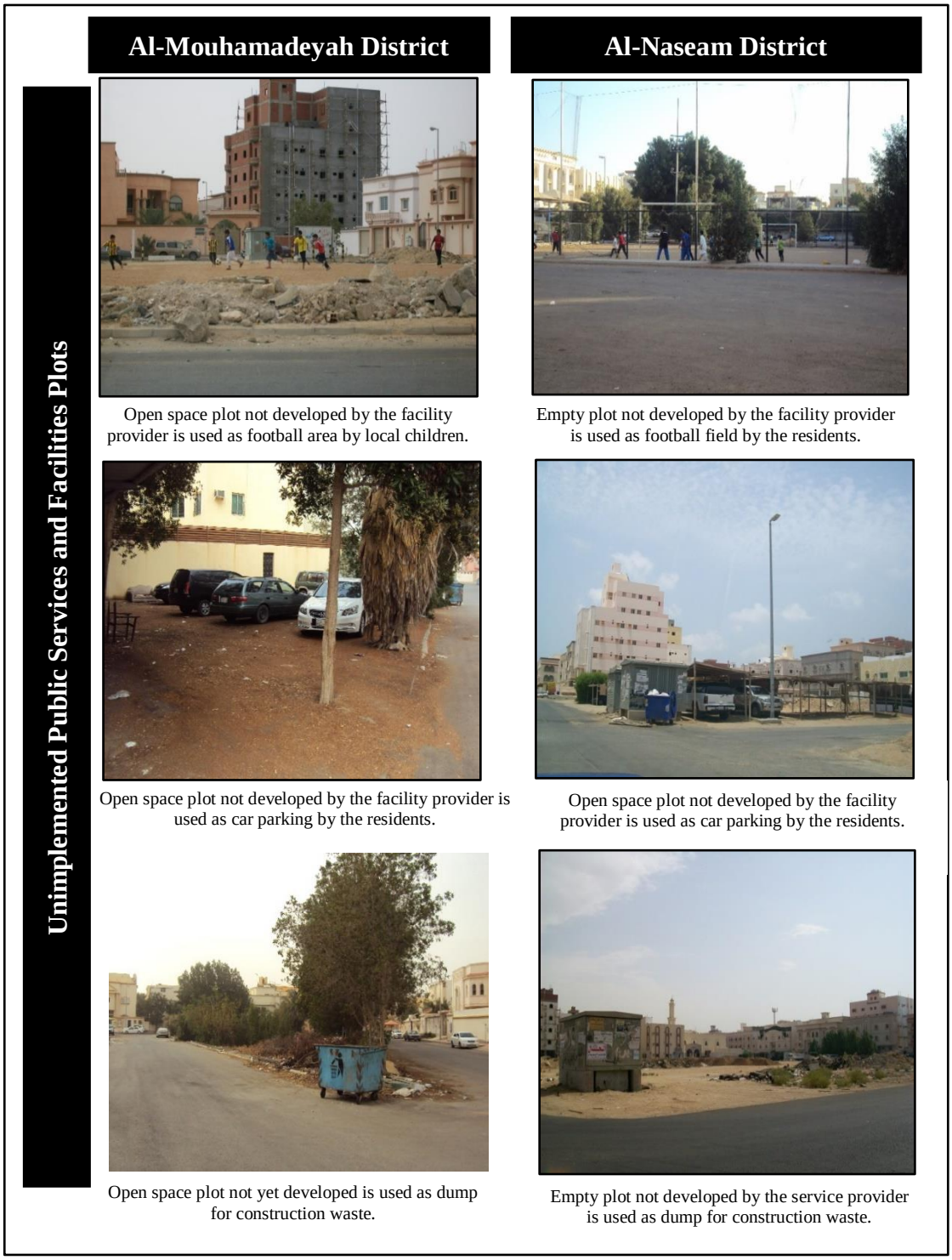


Figure 7.20: Undeveloped public service and facility land in the Al-Mouhamadeyah and Al-Naseam districts and the land's current uses

Figure 7.21: Inadequate service and facility plots and delays in implementation led residents' children to use the streets as places for playing football and gathering in Al-Naseam district.

The sequence in which existing services were implemented and the building permits relating to the building of each service is examined here. First, the oldest subdivision plan from each of the Al-Mouhamadeyah and Al-Naseam districts was selected as an example (see Tables 7.2 and 7.3).

Table 7.10 shows that mosques are the first services implemented within both subdivision plans. In Al-Mouhamadeyah 1, the first mosque site was implemented 11 years after 956 residential units were built within the planned boundary. In Al- Naseam 1, more units were built. The first mosque appeared 14 years after the subdivision plan was implemented containing 272 residential units, because of the reluctance of service providers. Also, there were other services and facilities such as schools and parks within both of the selected plans that needed to be provided but were delayed. Table 7.10 demonstrates how service and facility plots were completed within the two case areas, and how this process was carried out in a haphazard manner without a clear strategic framework for responding to the needs of the residents living in the newly constructed housing units. All the incomplete service plots within the two districts had uses which were unknown to the residents.

Table 7.10: Emergence of some service sites and their relationship with the appearance of housing units in two sample LSPs

Al-Mouhamadeyah 1													
*Year	**No. of B.P.	***No. & type of public services & facilities											
		1	2	3	4	5	6	7	8	9	10	11	12
1981	200												
1982	110												
1983	227												
1984	103												
1985	121												
1986	100												
1987	43												
1988	31												
1989	12												
1990	9												
1991	8	1											
1992	42	1											
1993	10												
1994	6	1											
1995	7												
1996	3	1											
1997	1	1							1				
1998	5			1									
1999	7					1							
2000	9												
2001	2												
2002	3										1		1
2003	1										1		
2004	1										1		
2005	2												
2006	1										1		
2007	1												
2008	0												
2009	0												
Total	1065	5		1		1			1		4		1

Al-Naseam 1													
No. of B. P.	No. & type of public services & facilities												
	1	2	3	4	5	6	7	8	9	10	11	12
29													
21													
10													
9													
8													
129													
19													
7													
10													
7													
5													
11													
7													
9	1												
4	1			1									
6													
8													
7									1				
2													
4										1			
2													
0													
314	2			1					1	1			

- 956 units
- 11 years
- 1 mosque

- 1045 units
- 19 years
- 1 girls' inter-mediate school

- 1059 units
- 22 years
- 1 park

- 1033 units
- 18 years
- 1 girls' primary school

- 1033 units
- 17 years
- 1 boys' education compound

- 1059 units
- 22 years
- 1 health centre

- 272 units
- 14 years
- 1 mosque

- 281 units
- 15 years
- 1 boys' inter-mediate school

- 299 units
- 18 years
- 1 girls' education compound

- 308 units
- 20 years
- 1 park

- * Year the subdivision plan appeared
- ** Number of building permits
- *** Selection of necessary services and facilities that should be provided within subdivision plan

1. Mosque
2. Boys' primary school
3. Girls' primary school
4. Boys' intermediate school

5. Girls' intermediate school
6. Boys' high school
7. Girls' high school
8. Boys' education compound

9. Girls' education compound
10. Park
11. Playground
12. Health centre

7.5.3 Public Services and Facilities: Service Area Analysis

A number of important public services and facilities were chosen for this analysis, including mosques, parks, and schools. First, the regulations relating to their provision was reviewed to explore what regulations were available and what they should be in the local SR guidelines (see Table 7.11). Then, the actual provision of the services was analysed to determine whether it conformed to the regulations and to ascertain the quality of the provision.

Table 7.11: Main public services and facilities selected and SR manual walking standards

Public Service and Facility Types	Service Area Standard According to Local SR	Comments
Mosque	Two types within the subdivision plan: • Local mosque: 200m walking distance • Juma'a mosque: 500m walking distance.	No detailed requirements for location of any mosque type. No urban design elements. No physical study of pedestrian and vehicular traffic considerations for this service during subdivision approval.
Park	No service area standards for this facility; siting location of this service depends on the regulator's view.	No standard walking distances. Location is not considered within the regulation guidelines. They give 350m as an optional standard for this exercise. No physical study of pedestrian or vehicular traffic considerations for this facility during subdivision approval.
Primary School (Boys & Girls)	500m walking distance to school location.	500m is standard distance for both boys and girls. No requirements specify school locations for either gender. No physical study of pedestrian and vehicular traffic for this service during subdivision approval.
Intermediate School (Boys & Girls)	800m walking distance to school location.	800m is a standard for both boys and girls. No requirements specify school locations for either gender. No attention to pedestrians, cyclists and vehicular traffic movement to and from the school location during subdivision approval.
Education Compound (Boys & Girls)	1000m walking distance to compound location.	1000m as standard for both boys and girls. No requirements specify locations of schools for either gender. No attention to or study of the way students to come to school location.

7.5.3.1 Mosques in Case Study Areas

According to the 2003 local land SR, there are two types of mosques. The first is known as a local mosque. This is a place where the five daily prayers are made, except for the main Friday prayer. The local mosque is smaller and within a walk distances of no more than 200m from one's home. The second type of mosque is known as the Friday or Juma'a mosque. The Friday mosque is larger in size, holding all daily prayers. The walking distance to this mosque is upwards of 500m.

Using information obtained by Jeddah Municipality and data collected by visiting mosque sites, and applying network analysis tools, the following findings were observed. In the Al-Mouhamadeyah district, two types of mosques have been built. Table 7.12 and Figures 7.22 and 7.23 illustrate the service areas of the two types. It is clear that there is a lack of this public service in this district, as several residential units are not covered by a mosque's catchment area. The same figure shows that there are a small number of residential units not covered by mosque catchment areas due to the lack of development of the surrounding residential plots, and because there is no timetable to provide services and synchronise their design and implementation with the plots' development. Inconsistent and delayed provision of public services and facilities has kept a large portion of residential areas unserved, especially in Al-Mouhamadeyah; while all the mosques in Al-Naseam district are Juma'a mosques (for special prayers offered on Fridays) while there was no provision of local mosques (for daily prayers). This was revealed through network analysis.

Table 7.12: Service area analysis of implemented mosque sites within case study districts

District Name	Service Type	No. of Imple-mented Services	Network Analysis Method	Number of Housing Units*		% of H.U. with Access	Number of Residents**		% of R. with Access
				With Access	Without Access		With Access***	Without Access	
Al-Mouham-adeyah	Mosque	Local/4 Juma'a/11 Total:15	New Service Area	1,730	942	64.7	8,650	4,710	64.7
			Location Allocation	1,623	1,049	60.7	8,115	5,245	60.7
Al-Naseram	Mosque	Local/0 Juma'a/14 Total:14	New Service Area	1,655/ 9,954	4/30	100	47,103	147	100
			Location Allocation	1,651/ 9,954	8/54	100	46,985	265	100

* In Al-Mouhamadeyah there are 2,672 units – in Al-Naseam there are 1,659 buildings/9,954 apartments.
** Total population: in Al-Mouhamadeyah: 13,360; in Al-Naseam: 47,250.
*** Population with and without access based on a prepared assumption calculation. The total population is divided by the number of housing units, then the average family size in each district is generated. With this result, the housing number covered by services in the area is multiplied, then the number of residents with access is generated for both districts.

Through close observation and visits to mosque sites within the two districts, different circumstances were observed. In the Al-Naseam area, even though the mosque service area covers almost all residential units, it does not reflect the real demand on the service from the wider scope of residents using the site coming from underserviced areas. Two groups of residents visit the sites. The first and largest group come to the mosque by car. The second, significantly smaller group, walks to a mosque site five times per day.

In both areas, most of the mosque sites are surrounded by a network of streets, and the mosque serve the immediately surrounding lots or units better than those in the further reaches of the district (see Figure 7.23). The mosques do not enhance pedestrian walkability because pavements are not connected to other pavements, to pedestrian paths, or mosque sites. The pavements are generally unsuitable for all pedestrian use, as described in Section 7.4.1. In addition, the continuous movement of vehicles in the neighbourhoods as a result of through streets and a lack of traffic-calming measures around the sites forces residents to walk in impractical, unsafe and unpleasant conditions. This demonstrates the necessity of reviewing SR in reference to the quality of pedestrian pathway provisions.

Figure 7.22: Implemented mosque sites in Al-Mouhamadeyah district and the service area analysis. The service area analysis uses the two network analysis methods that generated the location allocation (left) and new service areas (right)

Implemented Mosques Views

Al-Mouhamadeyah District	Al-Naseam District
 Local mosque in Al-Mouhammadeyah 1: poor pavements surround the site.	 Juma'a mosque in Al-Naseam 1: poor pavements surround this site
 Local mosque in Al-Mouhamadeyah 2: the site serves the surrounding units.	 Juma'a mosque in Al-Naseam 1: no pedestrian paths connect this site with back street housing units
 Juma'a mosque in Al-Mouhammadeyah 4: no traffic-calming elements near the site.	 Another Juma'a mosque in Al-Naseam 2: no traffic-calming elements surround this site.
 Local mosque in Al-Mouhamadeyah 4: wide streets and poor pavements surround the site.	 Another Juma'a mosque in Al-Naseam 2: wide street and poor pavements surround this site.

Figure 7.23: Snapshots of implemented mosque sites in the Al-Mouhamadeyah and Al-Naseam districts. They share outputs, mosques surrounded by streets and poor-quality pavements

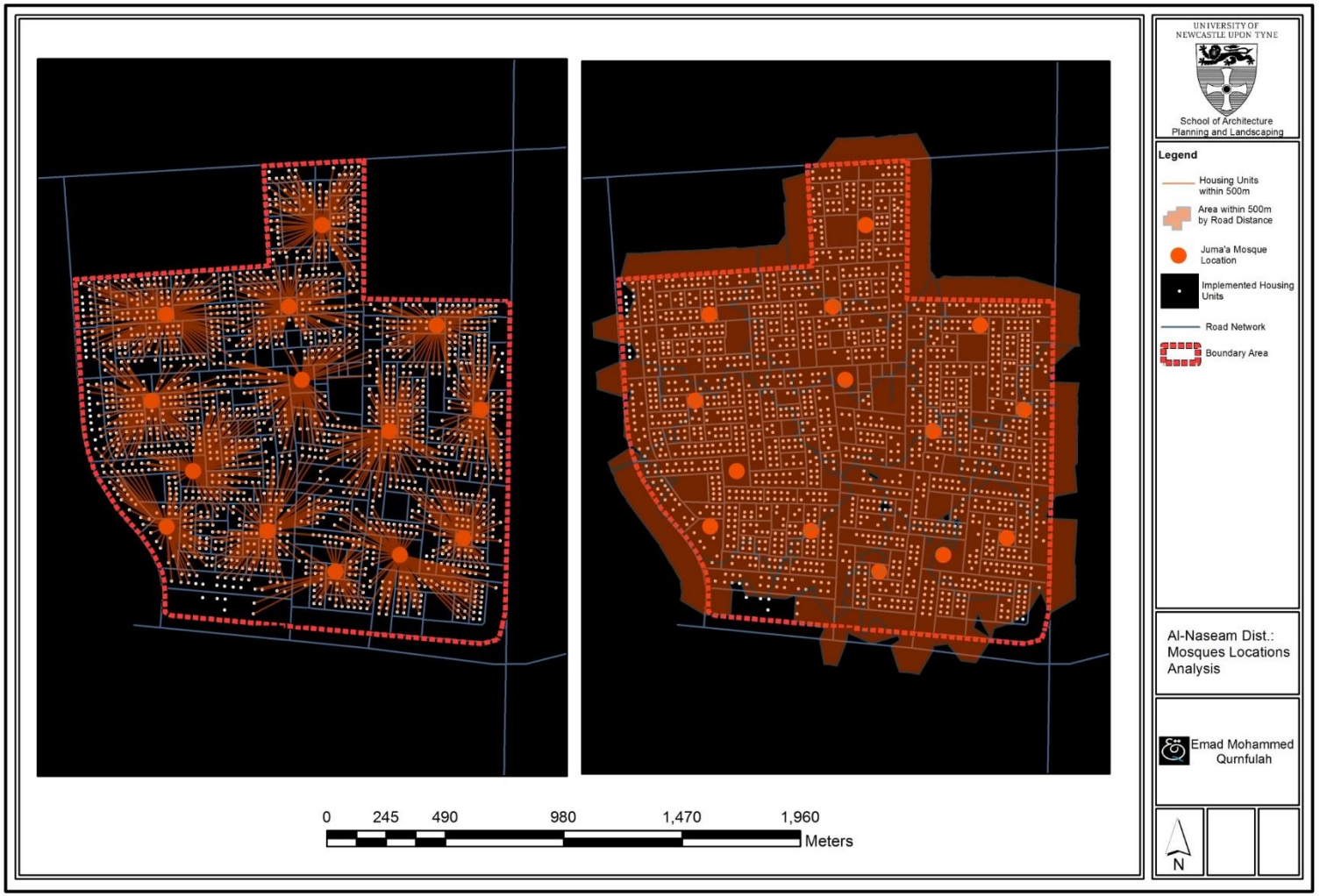


Figure 7.24: Mosque sites in Al-Naseam district and service area analysis. Location allocation (left) and new service areas (right).

7.5.3.2 Parks in Case Study Areas

No detailed standards are supported by local subdivision regulators for the design and regulation of parks. For example, within the regulations, no standards are related to the park service area and neither do they specify a walking distance parameter. To analyse the effects of ad hoc provisions, a standard for the walking distance to parks has been proposed. This suggested standard has been borrowed from experience in Abu Dhabi, because the city's circumstances and culture closely resemble those in Jeddah. Abu Dhabi updated its development regulations in 2010, when in a study urban planners found that there were many housing units in the city with no access to a park at a 350m walking distance standard (Abu Dhabi Urban Planning Council, 2010d). The researcher adopted the same standard to carry out GIS analysis in two districts of Jeddah.

Figures 7.25 and 7.26 and Table 7.13 illustrate that there is a great imbalance in the lack of coverage of the service to populations within the two districts. No hierarchy or framework for park location siting is in place, such as at the cluster level, neighbourhood or even the district level. This lack of order has allowed for implementation and distribution without any concern to the type, age, and gender of the residents. This result shows that park site selection has been done in line with the views and interests of the regulator and developer, as opposed to those of the end-users.

Table 7.13: Service area analysis of implemented park sites within the case study districts

District Name	Service Type	No. of Implemented Services	Network Analysis Method	Number of Housing Units*		% of H.U. with Access	Number of Residents**		% of Population with Access
				With Access	Without Access		With Access***	Without Access	
Al-Mouham-adeyah	Park	5	New Service Area	371	2,301	14	1,855	11,505	14
			Location Allocation	324	2,348	12	1,620	11,740	12
Al-Naseam		2	New Service Area	212B/ 1272A	1,447B/ 8,682A	13	6,445	40,805	14
			Location Allocation	197B/ 1,182A	1,462B/ 8,772A	12	6,022	41,228	13

* In Al-Mouhamadeyah there are 2,672 units – in Al-Naseram there are (1,659 buildings/9,954 apartments).
** Total population number in Al-Mouhamadeyah: 13,360 – In Al-Naseam: 47,250 inhabitants.
*** Population with and without access based on an assumption calculation.

A field survey of parks in the two districts revealed that parks are not well connected with a pedestrian pathway network; the quality of parks is poor, there is a lack of interest in developing the parks, park locations are surrounded by vehicle routes which hampers users' safety, no shade is provisioned in parks (Figure 7.7) and they are not well linked with the other neighbourhoods nearby without parks.

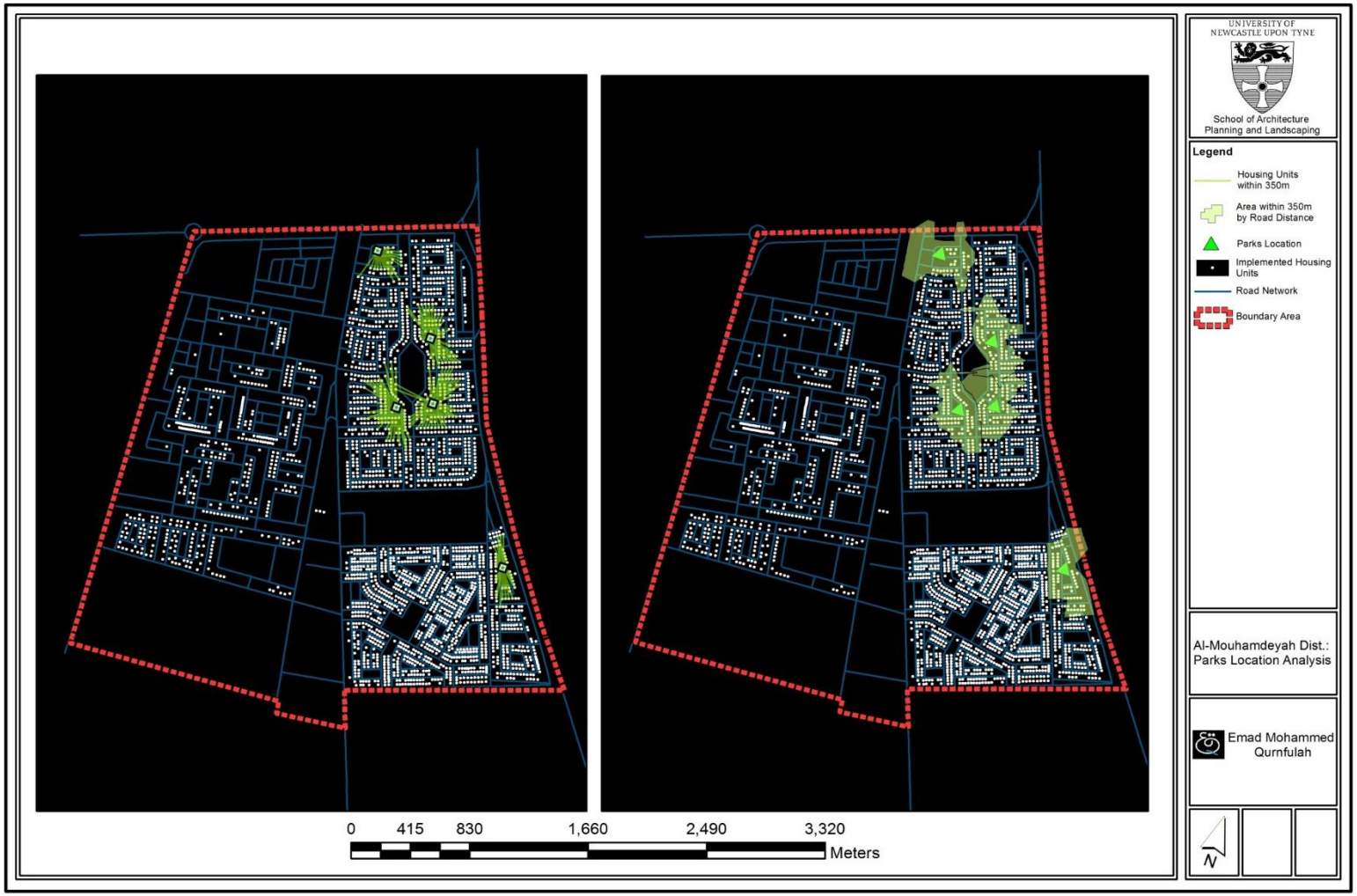


Figure 7.25: Implemented park sites in the Al-Mouhamadeyah district illustrating service area analysis. Location allocations (left) and new service areas (right)

Figure 7.26: Implemented park sites in the Al-Naseam district, illustrating service area analysis. Location allocations (left) and new service areas (right)

Figure 77.27: Snapshots of implemented park sites in the Al-Mouhamadeyah and Al-Naseam districts
Sites share outputs, mosques and are surrounded by streets and poor quality pavements

The lack of regulations requiring park provision has allowed developments to occur with minimum consideration for park facilities. They have occurred haphazardly in both case study districts, with no consideration of any strategic distribution or quality, and are not accessible to non-car users, limiting their availability to women and children, and perhaps older people who have given up driving.

7.5.3.3 Schools in Case Study Areas

As can be seen from Table 7.11 above, there are a considerable number of regulations relating to the provision of education facilities, which can be considered in the analysis of these two cases. Tables 7.14 and 7.15 show that in the Al-Mouhamadeyah district there is one educational complex for boys, two primary schools for girls, and two intermediate schools for girls. In the Al-Naseam district there is one educational complex for girls, and two primary schools (one girls' and one boys') and two intermediate schools (one girls' and one boys'). Two educational complexes contain three education levels instead of two, as stated in the SR (i.e. primary, intermediate and secondary).

In terms of primary schools for boys and girls, in the Al-Mouhamadeyah district there are more than 19% of total housing units with access to the service, but in Al-Naseam only 13%. For girls' primary schools, in Al-Mouhamadeyah there are more than 15% of units with access to the service, but in Al-Naseam there are more than 62%. The discrepancy in accessibility to the school service is caused by two factors described in Table 7.14 and Figures 7.28 and 7.29. First, in Al-Naseam, there are two schools that are built and are providing education services. One of the two schools is within the educational compound within the walking distance standard of 1000m. Second, the two schools are located nearly in the middle of the district. The central location is not utilised as children are either not within walking distance or cannot safely walk to their schools. The parents living within the catchment areas of the Al-Naseam girls' primary schools allow their children to walk to schools more than the parents of Al-Mouhamadeyah district. There were many physical aspects not considered during the process of siting these schools in both districts.

Table 7.14: Service area analysis for boys' and girls' primary schools within case study districts.

District Name	Service Type	No. of Implemented Services	Network Analysis Method	Number of Housing Units*		% of H.U. with Access	Number of Residents**		% of Population with Access
				With Access	Without Access		With Access ***	Without Access	
Al-Mouhamadeyah	PSB	1 within Education Compound (EC)	New Service Area	531	2,141	19.8	2,655	10,705	19.8
			Location Allocation	551	2,121	20.6	2,755	10,605	20.6
	PSG	2 schools in single building	New Service Area	408	2,264	15.3	2,040	11,320	15.3
			Location Allocation	401	2,271	15	2,005	11,355	15
Al-Naseam	PSB	1 in single building	New Service Area	217/1,302	1,442/ 8,652	13	6,586	40,664	14
			Location Allocation	181/1,086	1,478/ 8,868	10.9	5,570	41,680	12
	PSG	2 schools: 1 within EC 1 in single building.	New Service Area	1,026/ 6,156	633/3,798	61.8	29,399	17,851	62.2
			Location Allocation	1,040/ 6,240	619/3,714	62.7	29,794	17,456	63

* In Al-Mouhamadeyah there are 2,672 units – in Al-Naseam there are 1,659 buildings/9,954 apartments.
** Total population: in Al-Mouhamadeyah: 13,360; in Al-Naseam: 47,250.
*** Populations with and without access are based on an assumption calculation.
PSB: Primary school for boys
PSG: Primary school for girls

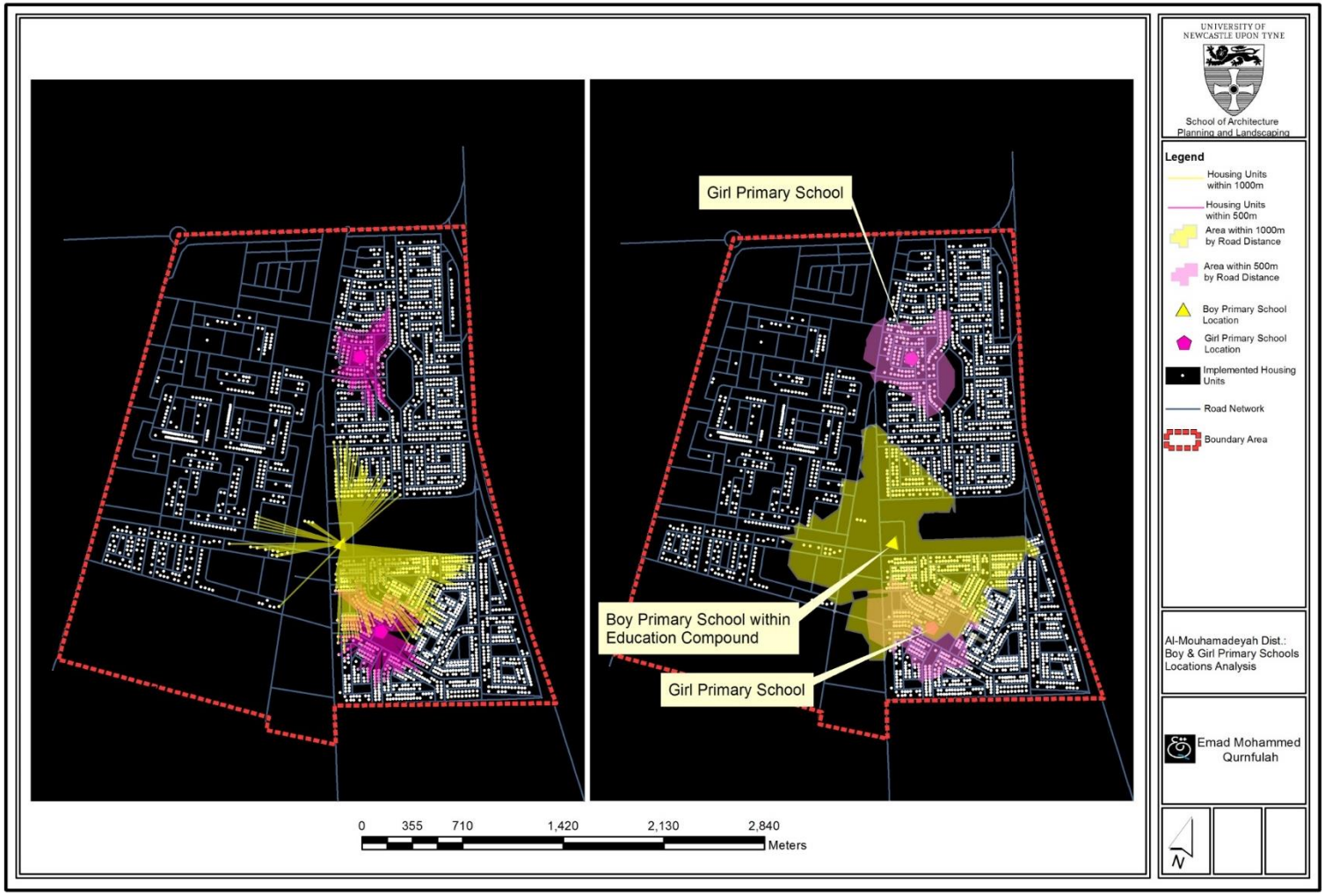


Figure 7.28: Sites of implemented boys' and girls' primary schools in the Al-Mouhamadeyah district. Location allocations (left) and new service areas (right)

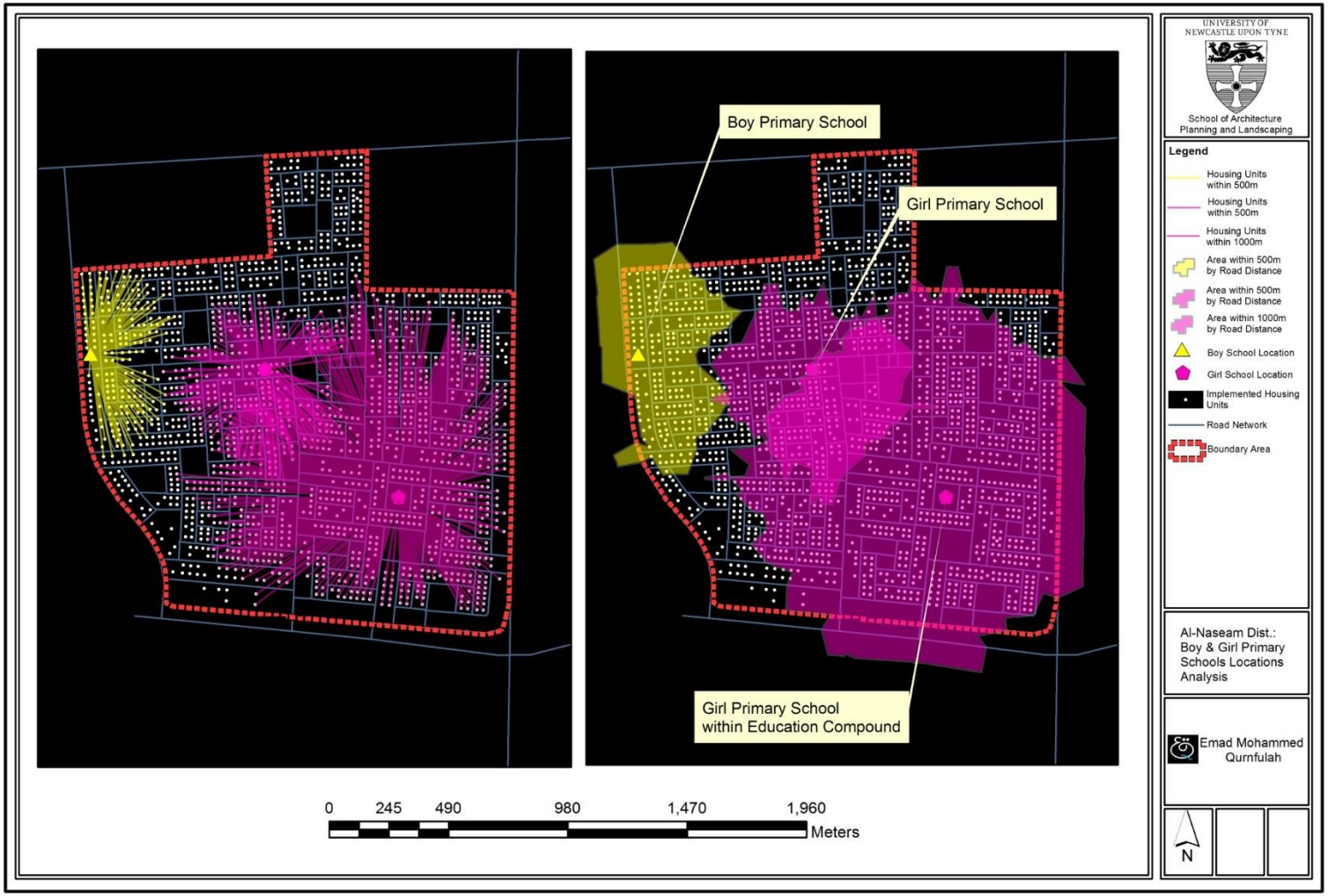


Figure 7.29: Sites of implemented boys' and girls' primary schools in the Al-Naseam district. Location allocations (left) and new service areas (right)

As shown in Table 7.15 and Appendix B (see maps), intermediate schools in both areas have many housing units inaccessible to the boys' and girls' school locations. In Al-Mouhamadeyah, more than 19% of housing units are serviced by boys' schools, and more than 20% of dwellings are accessible to girls' schools. This indicates that school provision of school in the district is not adequate; even in Al-Naseam there is more than 36% of units with access to boys' intermediate schools, but more than 70% of the total housing units can access girls' schools. This result is again higher for girls' schools in Al-Naseam due to two implemented schools. One school is built within an educational compound and services a standard area of 1000m. Both school locations are nearly in the middle of the district, locations of school more or less comply with the SR (see Appendix B).

Table 7.15: Service area analysis of boys' and girls' intermediate schools within case study districts

District Name	Service Type	No. of Imple-mented Services	Network Analysis Method	Number of Housing Units*		% of H.U. with Access	Number of Residents**		% of Popu-lation with Access
				With Access	Without Access		With Access***	Without Access	
Al-Mouham-adeyah	ISB	1 within Education Compound (EC)	New Service Area	19.8	2,141	19.8	2,655	10,705	19.9
			Location Allocation	20.6	2,121	20.6	2,755	10,605	20.6
	ISG	2 schools in single buildings	New Service Area	42.1	1,545	42.1	5,635	7,725	42.1
			Location Allocation	43.1	1,520	43.1	5,760	7,600	43.1
Al-Naseam	ISB	1 school in single building	New Service Area	36.1	1,059/ 6,354	36.1	17,386	29,864	37
			Location Allocation	37.5	1,037/ 6,221	37.5	18,011	29,239	38
	ISG .	2 schools: 1 within EC, 1 in single building	New Service Area	70.1	496/2,976	70.1	33,263	13,987	70.3
			Location Allocation	70.1	496/2,976	70.1	33,263	13,987	70.3

* In Al-Mouhamadeyah there are 2,672 units – in Al-Naseam there are 1,659 buildings/9,954 apartments.
** Total population: in Al-Mouhamadeyah: 13,360; in Al-Naseam: 47,250.
*** Populations with and without access are based on an assumption calculation.
ISB: Intermediate school for boys
ISG: Intermediate school for girls

All school sites observed indicate that sites are not linked to pedestrian and cycle paths, because insufficient traffic studies are conducted before siting services within the approved subdivision plans. The inappropriate siting has caused traffic jams, car

accidents, and lack of car parking, air pollution, and increased noise pollution. Moreover, there are no traffic-calming measures and lack of adequate pavements surrounding school sites in both areas (see Figure 7.30). This lack of provision has affected residents, restricting the walkability to services such as schools. Less physical activity at school age has been observed in both districts. The majority of students come to school by car. This result defines not only the walking distance standard for schools types that are important to allow residents the option to walk, but there are many aspects that are important which must be considered by SR, such as: location of the service (whether it is on a cluster level or neighbourhood or district level), pavement quality, shading, tree cover, street width, and traffic-calming measures, and pedestrian and cycle paths. Indeed, all of the above aspects and their relation to the housing units in any subdivision plan must be considered.

On the other hand, there are specific issues related to the location of the sites of a number of schools near to each other. Within Al-Naseam 1, there is an intermediate school for boys near the girls' education compound. Both locations cause traffic jams especially at the beginning and end of the school day. Both sites increase the demand for car parking and increase the difficulty of finding a parking spot for local residents. The police use their time to organise traffic movement (see Figure 7.31). In the Al-Mouhamadeyah district, an educational compound for boys was implemented on the south-west side of Al-Mouhamadeyah 1. The site was chosen for its proximity to the main road as well as being a central location in the district. The proximity of the site to the main road has encouraged most parents to reach it by car, but does not promote walking or cycling by students. Some students walk to the site every day and they use the edges of the road as informal pathways, putting themselves at risk of injury from the passing cars. The location also causes traffic jams and increases demand for car parking, and is an increased source of irritation for local residents (see Figure 7.31).

Implemented Schools Site Views

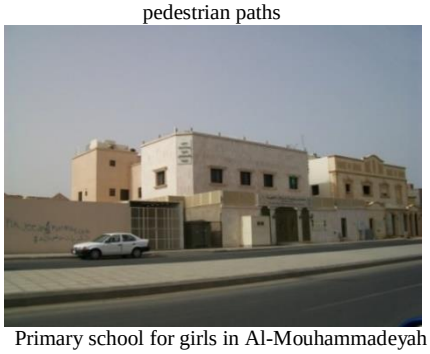
Al-Mouhamadeyah District	Al-Naseam District
 Education compound for boys in Al-Mouhamadeyah 1: wide streets surround site, no traffic-calming elements, unconnected to pedestrian paths	 Girls' education compound in the Al-Naseam 1 district inside residential block: no car parking, no pedestrian paths, and no traffic-calming elements near this site.
 Primary school for girls in Al-Mouhammadeyah 1: wide streets near this site, and no pedestrian path connects this site with housing units.	 Intermediate school for boys in Al-Naseam 1: no car parking, no pedestrian paths, and no traffic-calming elements near the site.
 Intermediate school for girl in in Al-Mouhammadeyah 1: students reach this site by the parent's cars.	 Primary school for girls in Al-Naseam 2: no car parking, no pedestrian paths, and poor pavements. Students arrive at the site by parents' cars.
 Another primary and intermediate school for girls in Al-Mouhammadeyah 2: no car parking and poor pavements surround this site	 Primary school for boys in Al-Naseam 2: no car parking and poor pavements near the site.

Figure 7.30: Snapshots of implemented school sites in the Al-Mouhamadeyah and Al-Naseam districts
The sites share the same outputs. The schools are surrounded by wide streets and poor quality pavements. No encouragement is made for the students to walk or cycle to the sites

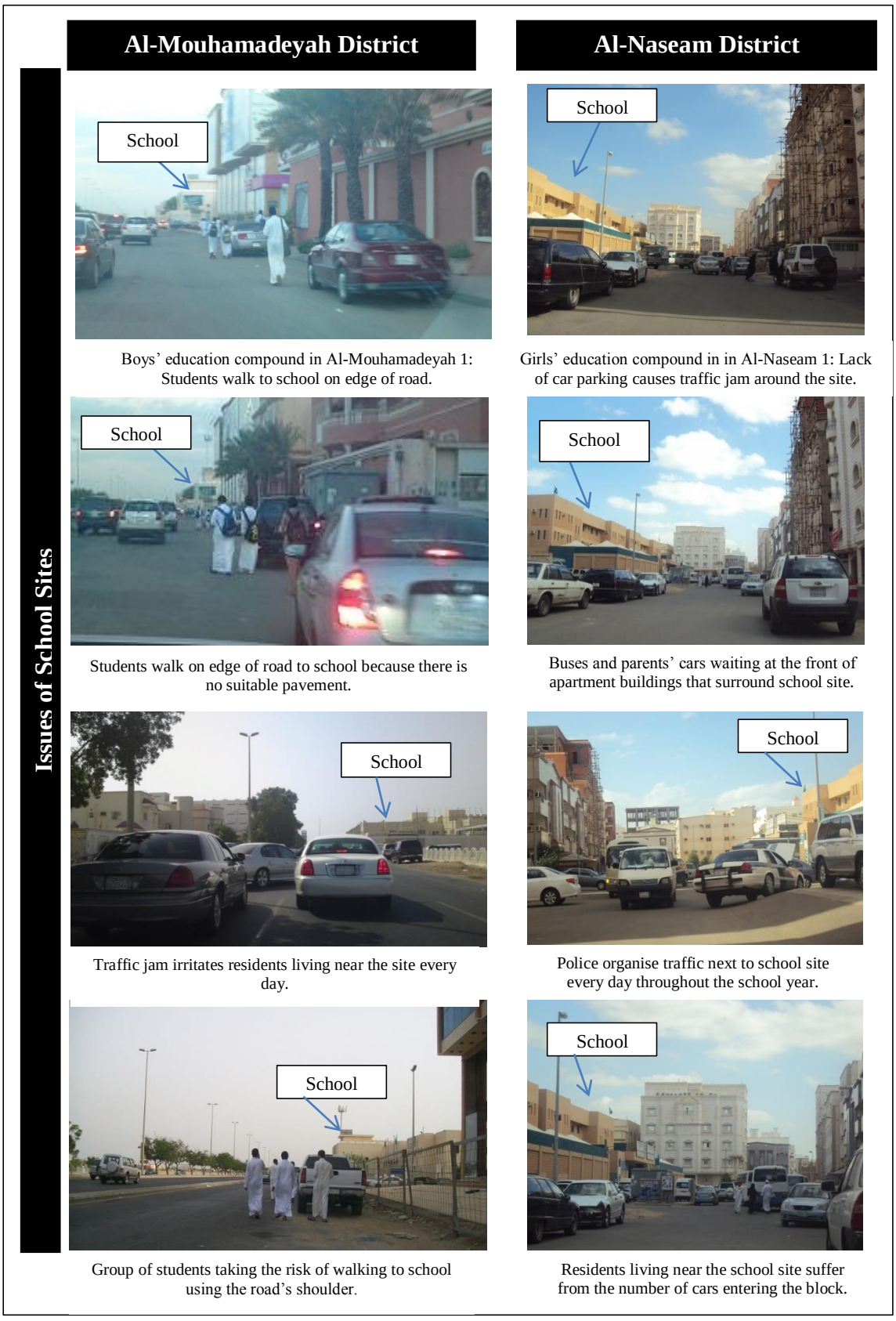


Figure 7.31: Snapshots of two school sites in the Al-Mouhamadeyah and Al-Naseam districts The sites share the same issues: traffic jams, inadequate car parking, students using the road's shoulder to walk to school. Local residents are irritated by the congestion

7.6 Conclusion

This chapter has clarified the impact of local SR at the micro level in Jeddah.

The analysis was divided into three sections. The first section explained the identification of information about the Al-Mouhamadeyah and Al-Naseam districts. This part profiled both districts, and has served as a gateway for researchers unfamiliar with Jeddah's subdivision plans. It is an opportunity to learn general information about the conventional residential areas in Jeddah. From the profile data, it became clear that both districts contain a number of subdivision plans. The plans have been implemented by conventional developers, who do not provide final service products such as parks, playgrounds or mosques to residents. Al-Mouhamadeyah district, for example, is a low-density area, dedicated to residential villas, and is splintered into four subdivision plans that have been developed over different periods of time. In contrast, the Al-Naseam district is a medium-density subdivision district, which allows for apartment buildings and includes two subdivision plans: Al-Naseam 1 and 2.

The second section has analysed the development quality that this SR has produced in the two districts. Planning and design of both neighbourhood districts depended on the new grid pattern. This pattern appeared in Jeddah in the mid-1980s, and then became a favoured form by developers and regulators. The pattern is easily copied and pasted, creating cookie cutter development in several places in Jeddah. SR has not encouraged developers to apply different layout patterns, such as cul-de-sacs or mixed patterns, in the subdivision planning process.

Both districts are similar in terms of internal streets and pavements. Local SR do not pay attention to the needs of pedestrians and cyclists; rather they seem to continue to favour motorists. The overlooking of different uses has led to the restriction of internal street systems to car traffic only. Yet, there is no comprehensive vision or concept of a complete street system within these areas. This issue was revealed through the results of the analysis, where both districts are characterised by high levels of street connectivity, but only for cars. In contrast, it has been observed that there is a low connectivity level for pavements. When there are pavements, the quality suffers. The residents reflected the low quality in their behaviour. They used the streets for walking and cycling when they moved from one place to another. For example, there are no pedestrian paths

connected with a network of pavements to encourage people to walk or cycle within both areas.

The last section of this chapter revealed how the SR did not provide the services that may be needed – perhaps because of the ad hoc way in which services were provided. It found that services were being completed/provided late (to the detriment of residents) – and questioned whether this was due to poor coordination or any other reason. The ad hoc approach to service provision has led to a number of issues in two districts.

There is no clear hierarchy for service site distribution in the residential cluster centres. In addition, there is no clear district centre for public services in either area which serves the entire district population by car, and the results are even worse when analysed in relation to their accessibility by foot.

The analysis shows that there are considerable delays in implementing public service and facility plots within both the districts. It discovered that the process of constructing service sites is done in a haphazard manner without any relation to the appearance of housing units. From this, it is evident that the gaps in the SR have allowed a lack of provision of key services (notably parks) and permitted vacant service plots; partially provided services reflect an ad hoc approach to the delivery of key services on the part of the planning system. There is little evidence on the ground of a coordinated approach with service providers, either by the developers or by planners, resulting in the poor quality of provision. This suggests that not only are the SR lacking but so might be the system itself, with conventional developers being allowed to sell for profit and move on without proper contributions to services, and service providers being unable or unwilling to provide services to such ad hoc individual plot development.

CHAPTER EIGHT: RESIDENTS' PERCEPTIONS ABOUT THE EFFECT OF SUBDIVISION REGULATION ON MODERN RESIDENTIAL AREAS IN JEDDAH

Chapter 8: Residents' Perceptions about the Effect of Subdivision Regulation on Modern Residential Areas in Jeddah

8.1 Introduction

Planning is a process concerned with social change and community development as a whole. Therefore, the planning of a district plays a pivotal role in the development of the way society lives there, and any reluctance to develop a district in an integrated manner not only reduces the return on investment, but also prevents the communities from building the vital socio-economic and spatial units necessary for a high living standard in a residential district and the city as a whole (Rukwaro and Olima, 2003).

Previous studies in North America have indicated that the method of developing and planning of a district has the pivotal importance of increasing the financial value of a housing unit (Bryan and Colwell, 1982; Case and Shiller, 1987; Kiel and Carson, 1990). Besides the financial value, the development of these areas helps to create a sense of belonging as well. Mesch and Manor (1998) have argued that the creation of an emotional bond with a certain neighbourhood depends upon the kind of people residing there and their subjective perceptions about various features of physical and social environment, such as proximity of parks and playgrounds, walkability, lack of pollution, etc.

However, studies in KSA have clearly indicated that the implementation of residential subdivision plans in Saudi cities have lacked this type of comprehensive development. Confining itself to subdivision of land into a number of plots, the process has remained focused on the provision of a few primary services such as electricity, water, telephone networks, road asphalting, street lighting and pedestrian footpaths (Abdulaal, 1997; Alskait, 2002, 2003a; Alskait and Al-Mehemaid, 2005). Highlighting the fact that the land subdivision process was the most common means by which individuals purchased land units to build their homes, these studies criticised the ways developers negatively affected the process of circulation and speculation of real estate, leaving many land plots undeveloped for long periods of time. For example, Alskait (2002, 2003a), in his critique of current subdivision practices, stated that the development of individual residential units in the new neighbourhoods took such a long time that the daily life of an entire generation might be disrupted. He noted that the lengthy process of development of single plots and the failure of developers to fully develop the residential

subdivision plans had led to the emergence of settlements without a clearly defined district, leading to the deterioration of the developing environment and decline in property values.

Specific investigations related to housing developments in Jeddah have indicated that an increasing number of Jeddah residents were choosing to live away from the traditional city-centre residential areas to enjoy the ownership of private properties in various residential districts of modern Jeddah. These studies have also reported a preference by the majority of the population to live and invest in the real-estate development in the northern areas of the city (e.g. Aziz-Alrahman, 1985; Alharbi, 1989; Al-Otabi, 2006; Mandeli, 2011).

The chapter looks at the development of residential conditions in Jeddah: more specifically, in Al-Mouhamadeyah district, which contains low-density residential villas, and Al-Naseam district, consisting of middle- to high-density residential apartments. It investigates the residents' relationship with their respective residential environments and compares their views on the quality of the place they live in. From the preliminary review of relevant literature, two major groups of research can be identified: the first group assessed the influences of developmental history on individuals' behaviour and preferences, while the second group viewed the effects of physical environmental factors on residents' preferences for transportation choices and walkability issues. Due to the specific focus of the present research involving elements from both types of studies, the research objective for this chapter involved an assessment of the historical development of both districts and the availability of various services and facilities. This focused on the residents' perceptions of these services' location, distribution, proximity, accessibility and safety, and the effect these had on their usage of these services. The research also ascertained how these facilities and their use have affected the development of social networks through the respondents' knowledge of their neighbours.

The chapter is organised into seven main sections. Section 8.2 sets out the data collection processes and the study limitations. Section 8.3 discusses the socio-economic profile of respondents in the selected districts. Section 8.4 deals with the development trends of individual residential units by owners. Section 8.5 details residents' perceptions about the availability and adequacy of public services and facilities and related issues such as their location, distribution proximity, safety and accessibility.

Section 8.6 examines the nature of social relationships between the sampled residents and their neighbours, highlighting the reasons for positive and/or negative aspects of such relationships. Section 8.7 concludes with the main findings of this chapter.

8.2 Data Collection and Analysis

The information relevant to this chapter was collected in a survey carried out from December 2009 to the end of February 2010 with the help of trained enumerators conducting face-to-face interviews. A pilot study in summer 2009 demonstrated that distributing questionnaires and recovering them later resulted in incomplete and inaccurate information. However, carrying out face-to-face interviews proved to be much more effective, with a 100% return rate, by enabling the interviewers to explain the questions properly and record the responses in an accurate manner (see Appendix C: face-to-face interview form).[20]

The actual data collection was completed with the help of a team of enumerators who conducted, in total, 319 interviews: 159 interviews in Al-Mouhamadeyah and 160 in Al-Naseam district. All the interviews were carried out with the male head of the family, as according to Saudi culture, it would have been inappropriate to survey women.

Data collected from the sampled respondents was analysed through the Statistical Package for Social Scientists (v.19). Descriptive statistics (measures of central tendencies, frequency distribution) were employed to describe the basic trends, whereas inferential statistics (χ^2 and *t*-test) highlighted the key analyses depicting similarities and differences between the two sample districts. The comparative analysis decided whether or not the null hypothesis applied (no differences between the districts).

8.2.1 Study Limitations

Despite multiple data collection tools, a significantly large sample size and careful choice of indicators, the research presented has certain issues, especially related to causality and generalisation, as explained below:

[20] The interview form contains four sections. Section 1: residents' perceptions of these localities (Chapter 8); Section 2: clarifies the knowledge of residents about current SR, conventional developers, and the preferred places to live in Jeddah (Chapter 10, Sections 10.2 to 10.4); Section 3: for residents' preferences in relation to what they want from the public realm and services (Chapter 9); and Section 4: general information about the residents in both areas (Chapter 8, Section 8.3).

- Many of the selected themes such as proximity, walkability and safety have logical associations with possibly overlapping influences on public perceptions. Hence, conclusions about the relative importance or independent contribution of different factors cannot be ascertained easily.
- Self-reported perceptions are sometimes not geo-referenced, so these do not always conform with GIS evidence.
- Effects of different social statuses, economic conditions and personal preferences cannot be ruled out from shaping perceptions about the adequacy of various services. However, measuring the influences of these factors or allowing for their effect statistically was beyond the scope of the stated research objectives.
- Indeed, the evidence presented through use of strong methodological approaches has confirmed the relationships between the built environment and the lifestyle of the residents. Also, the adequate sample size and consistency of findings with other studies have provided enough grounds to claim reliability and validity of the research findings and policy recommendations.

8.3 Respondents' Profile

8.3.1 Age, Gender and Nationality

Almost 70% of respondents fell within the age categories of 41–50 or over 50, while the rest belonged to the age group 31–40. The concentration of the sample in the higher age categories was due to the research choice to select the head of the family as the respondent. This also meant that 100% of respondents were men, as the head of the family would usually be a man in Saudi culture with few exceptions.

As shown in Table 8.1, more than 87% of respondents were Saudi nationals; of 13% non-Saudis, almost all resided in the Al-Naseam district, accounting for 25% of the respondents from the location. The high presence of non-Saudis in Al-Naseam district was related to the type of the residential buildings (rented apartments) as well as their location in proximity to business areas and the city centre. This concentration could have also been favoured by the reluctance of non-Saudi residents to buy relatively high-priced property in other districts of Jeddah. In contrast to Al-Naseam, residents in Al-Mouhamadeyah were mostly local Saudis (99.4%), owning residential villas.

8.3.2 Marital Status and Household Size

Over 99% of sampled respondents in both districts were married and living with family, while divorced men made up the rest. In terms of family size, medium-sized families consisting of five to eight members had the largest proportion, i.e. about 62%, followed by 20% of respondents having large families consisting of 9 to 12 members; the remaining 18% had small families of one to four members. The average family size was just under six, comparable with the overall average family size of the last Jeddah Master Plan Report which indicated just fewer than five family members (Al-Beeah Consultancy Office, 2004).

8.3.3 Educational and Occupational Status

The majority of sampled respondents were well-educated; more than 50% of respondents held Bachelors' degrees and over 13% had postgraduate qualifications. On the other hand, 18% finished their education at secondary school level and less than 2% obtained education in primary schools only. Because of the high level of education, most of the respondents were able to understand the questions posed to them and provided logical interpretations for their answers.

With reference to occupational status, the majority of respondents in both case districts worked in the private sector (i.e. 43%) followed by 39% employed in the public sector, while less than 12% had their own businesses, and the remaining 8% had retired.

Respondents' distribution across the four income categories showed wide dispersion as households falling within the highest income category, i.e. more than SR 18,000 per month exclusively resided in Al-Mouhamadeyah district (59% of the respondents in that area; 32% of the total sample). Less than 24% of respondents across both districts had a monthly income ranging from SR 14,000 to 18,000, while 14.7% had incomes between SR 10,001 and 14,000. Respondents earning between SR 6,001 and 10,000 per month made up 30% of the total sample. Respondents having the lowest levels of income were most common in Al-Naseam, representing 68% in that district.

Table 8.1: Comparative profile of respondents from Al-Mouhamadeyah and Al-Naseam districts (percentage analysis)

		Al-Mouhamadeyah [N=159]	Al-Naseam [N=160]	Total [N=319]
Age (years)	Less than 31	3.1	1.3	2.2
	31-40	17.0	44.7	29.7
	41-50	53.4	49.4	51.5
	50 +	26.4	7.0	16.6
Nationality	Saudi	99.4	75.0	87.1
	Non-Saudi	0.6	25.0	12.9
Marital status	Married	98.1	100.0	99.1
	Divorced	1.9	0.0	0.9
Educational level	Elementary	0.6	0.6	1.2
	Intermediate	0.6	1.3	0.9
	Secondary	22.0	14.4	18.2
	Technical school	1.9	1.3	1.6
	University degree	49.1	52.5	50.8
	Postgraduate	13.8	13.8	13.8
Occupation	Public sector employee	34.2	42.5	38.4
	Private sector employee	39.9	45	42.5
	Self-employed	11.4	11.9	11.6
	Retired	14.6	1.2	8.1
Household size (No. of people)	Small (1-4)	4.4	31.3	17.9
	Medium (5-8)	54.0	68.8	61.6
	Large (9-12)	41.5	0.0	20.5
Dwelling type	Detached villa	77.2	0.0	38.3
	Semi-detached villa	21.5	0.0	10.7
	Apartment	1.2	100.0	51.0
Ownership	Owner of the dwelling	88.0	53.8	70.8

		Al-Mouhamadeyah [N=159]	Al-Naseam [N=160]	Total [N=319]
	Tenant	12.0	46.3	29.2
Length of residency	0-4 years	11.3	26.3	18.8
	5-9 years	19.4	30.0	24.8
	10-14 years	25.2	39.4	31.8
	15-18 years	31.0	4.4	18.0
	18 + years	13.1	0.0	6.6
Income	Less than 6000 SR	0.0	0.8	0.4
	6000-10000 SR	3.3	68.2	30.1
	10001-14000 SR	8.6	21.9	14.7
	14001-18000 SR	29.7	16.6	23.6
	18000 SR +	58.5	0.0	31.2

Source: Fieldwork, Jeddah, December 2009 to February 2010

8.3.4 Housing Type and Ownership

As explained earlier, Al-Naseam is made up of various sized apartments, most of which are rented and scattered across the district. In contrast, the Al-Mouhamadeyah district consists of mainly detached villas, with some semi-detached. Over half (51%) of all respondents were living in apartments; this accounted for 100% of the respondents from the Al-Naseam district. Nearly two-fifths (38.3%) of the total sample lived in detached villas, all of which were from the Al-Mouhamadeyah district, corresponding to 77.2% of the respondents from the district; while 10.7% of the total sample resided in semi-detached villas, accounting for 21.5% of the respondents from Al-Mouhamadeyah district.

Overall, more than 70% of the total respondents owned their homes, while 29.2% lived in rented accommodation. Taking each district separately, it was found that more than 53% of respondents in the Al-Naseam district owned their homes. This can be explained by the fact that the larger sections of the population lack the financial means to own residential villas but can afford to own apartments, with payments in instalments spread over a period of 10–15 years plus an initial deposit of 15%–20% of the apartment's total

value. Around 46% of Al-Naseam respondents lived in rented accommodation owing to lack of finances available to buy houses; also, there were a number of non-Saudi expatriates working in Jeddah who preferred to rent houses close to their workplace. The Al-Naseam district is a popular destination for such expatriate families due to its proximity to Jeddah City Centre, Jeddah University and Hospital, the business district, etc.

In the case of Al-Mouhamadeyah, 88% of respondents lived in houses owned by them. Most of these families bought the residential plot first and then built and developed their home over a period of time. As a consequence, Al-Mouhamadeyah district primarily consists of privately-owned residential villas. Only 12% of respondents from Al-Mouhamadeyah reported living in rented accommodation, as renting costs for villas are fairly high.

8.3.5 Length of Residency

Overall, the majority of respondents (56%) had been living in their respective districts for more than ten years. For the rest, 18.8% had been living in their homes for less than four years, while more than 24% of the sample had moved in five to nine years previously. However, the trends in the two districts were contrasting.

In Al-Mouhamadeyah residential district, the residents may be divided into three groups based on the length of their residency.

The first group consisted of 45% of respondents who had moved into the area 15 or more years previously and owned their residential plots at a time when subdivision plans for the district appeared in the real-estate market. As a matter of fact, the appearance of their villas marked the district coming into existence.

The second group of respondents had moved into Al-Mouhamadeyah 10 to 14 years previously and accounted for more than 25% of the sample. Most of these households owned their residential units at the building/construction stage, but did not initiate the development immediately; they were waiting for the availability of public services and facilities in the district, as the survey results confirm.

The third group consisted of those residents who had moved to the district relatively recently, i.e. nine years ago or fewer. This group accounted for 30% of the sample with

19% arriving five to nine years previously and 11% living in the district for less than five years. This group moved into fully developed housing units.

Since the largest proportion of the sampled respondents interviewed settled in the district in the more distant past, it would be reasonable to argue that such households possessed sufficient experience and knowledge of problems in the district. Having such informants in study increased the validity and accuracy of the samples.

In contrast to Al-Mouhamadeyah, the majority of Al-Naseam district's respondents moved more recently: 56% of the total moved to the district in the last nine years, with 30% moving between five and nine years previously, and 26% moving less than five years previously. Nearly half (44%) of the sampled households from Al-Naseam district had moved there between 10 and 14 years (39.4%) or 14 and 18 years previously (4.4%). The higher percentage of recent acquisitions was in line with the development of residential buildings in the district in the recent past. Despite having a lower percentage of long-settled residents, the adequate mix of residency duration extracted valid information about the realities of life in the district.

8.4 Analysis of Ownership and Development of Residential Dwellings: Comparison of Trends in Al-Mouhamadeyah and Al-Naseam Districts

In Al-Mouhamadeyah district, more than 55% of respondents purchased their land from the subdivision plan developers and developed it according to their residential needs and financial capabilities. Another 15% purchased their units under construction from the contractors and completed the housing units themselves. Nearly one-third (29%) of respondents reported purchase of their residences after completion. In contrast, in Al-Naseam district all of the housing units were built by the landowners over varying periods of time. The residents checked the residential unit in its final stages or after completion followed by acquisition. This trend was in line with the majority of middle- to high-density newly built neighbourhoods in Jeddah (based on personal knowledge and observations through survey of the area).

Table 8.2 illustrates the amount of time taken to complete the development of the villas in Al-Mouhamadeyah (N=99). 32% of residents spent three to six years on the development of their residential units, while another 30% took a longer period of time (six to nine years). In contrast, only 17% took one to three years to complete.

Table 8.2: Trends in the ownership and development of properties in Al-Mouhamadeyah

Ownership and Development of Properties in Al-Mouhamadeyah		**%**
If you own the dwelling, did you… [N=139]	First buy the plot then build the dwelling from scratch?	55.3
	Buy the dwelling when under construction and then complete it?	15.8
	Buy the dwelling in a completed state?	28.7
How long did the development process take to complete? [N=99]	Under 1 year	4.9
	1-3 years	16.5
	3-6 years	32
	6-9 years	30.1
	9-12 years	14.6
	Over 12 years	1.9

* To gauge the time taken for completion of residential units, the number of respondents was decreased from 139 to 99, in response to 28.7% of the sampled households buying completed units in Al-Mouhamadeyah. There has been no analysis of responses from Al-Naseam respondents as all of them rented the accommodations after completion.

The reasons for such variation in the development and completion of the residential units were diverse. The prime concern of a large number of respondents was the money and time needed for the completion of the residential units they own; while the situation of locality, public amenities in the neighbourhoods was secondary for them.

The following comment by one of the residents can be taken as representative of their attitude:

> I took possession of the land plot around 20 years ago, and [initially] I did not develop it for lack of financial liquidity and the failure of the land subdivision developer to play his role to develop the residential lot and transform it into housing units. The development of the housing unit took 6 years. During that time, the district was not much populated and large pieces of land were undeveloped and left as such. There were little facilities or services but I was mostly concerned about the development of my own unit so that I could move to the district and settle down (respondent 123, Al-Mouhamadeyah).

8.5 Public Services and Facilities

8.5.1 Availability and Adequacy of Public Services and Facilities

By means of a list of proposals with respect to public services and facilities necessary for and/or important to the residents of the district, the researcher attempted to identify which services were available and adequate (represented by a score of 3), which were available but inadequate (scoring 2), and which were not available at all (represented by a score of 1). The results of people's rankings have been presented in Table 8.3 and described in detail as follows.

Table 8.3: Perceptions about the availability and adequacy of public services and facilities

	Al-Mouhamadeyah N=159			Al-Naseam N=160			Total N=319			
	1	2	3	1	2	3	1	2	3	
Boys' primary school	8.8	67.3	23.9	6.3	67.5	26.3	7.5	67.4	25.1	NS
Girls' primary school	4.4	71.1	24.5	1.3	72.5	26.3	2.8	71.8	25.4	NS
Boys' intermediate school	9.4	66.0	24.5	7.5	75.6	16.9	8.5	70.8	20.7	NS
Girls' intermediate school	4.4	78.0	17.6	1.9	75.0	23.1	3.1	76.5	20.4	NS
Mosques	0.0	44.7	55.3	0.0	44.4	55.6	0.0	44.5	55.5	NS
Health centres	18.9	69.2	11.9	9.4	65.6	25.0	14.1	67.5	18.4	.002
Public parks	8.2	85.5	6.3	12.5	78.8	8.8	10.3	82.1	7.5	NS
Playground	24.5	67.9	7.5	19.4	78.8	2.0	21.9	73.4	4.7	NS

Difference significant at $p < 0.05$; NS = not significant

8.5.1.1 Mosques

As shown in the table above, the number of mosques was considered adequate by more than 55% of respondents; the remaining 45% of responses stated that the available mosques were inadequate. Given the sensitivity of the issue, the researcher did not explore these inadequacies further, but recognised that they are important, especially as the numbers highlighting their dissatisfaction with what is provided are relatively high.

8.5.1.2 Parks and Playgrounds

The majority of the respondents pointed to the availability yet inadequacy of parks and playgrounds in both districts; a small proportion of the sampled residents also indicated that such facilities were unavailable. However, such responses could have been due to their recent settlement in the districts, leading to such erroneous responses, as park and playground services in the districts of Al-Mouhamadeyah and Al-Naseam were limited in number and spatially scattered. The quality of the parks and playgrounds was poor; some parks contained playgrounds while others lacked them. Also, certain sites allocated for parks and playgrounds were not developed, despite the fact that the technical requirements of the SR dictated that there should be a playground for every 20 housing units in the approved residential plan. Certain areas within both districts did not fulfil this requirement.

Due to the limited number of parks and playgrounds in the districts, the residents complained about the lack of adequate space for children to engage in sporting activities as well as unreasonable gathering of young people in the streets, as reflected in the following statements:

> I and my family suffer a lot from the [noisy] gathering of young ones who come to use the park adjacent to my house. I am facing these get-togethers affecting my privacy due to the insufficient number of parks and playgrounds in the district (respondent 64, Al-Mouhamadeyah).

> [The] behaviour of the park users near my house and the age difference has prevented me from allowing my children to visit the park and mingle with them (respondent 223, Al-Naseam).

Some residents also pointed out the issues related to health and safety, for example:

> The scarcity of parks and playgrounds in the district has compelled my children and others from the neighbourhood to use the streets as alternative socialisation and playing areas, something that has exposed them to the hazards from accidents from passing traffic (respondent 116, Al-Mouhamadeyah).

> Fewer parks and playgrounds in the Al-Naseam district, prompted children to use streets and a non-developed residential plot as a football playground exposing themselves to health risks on a daily basis (respondent 317, Al-Naseam).

8.5.1.3 Educational Services

Educational facilities were available at primary and intermediate levels but considered insufficient by almost 70% of respondents in both districts. Inadequacy of educational services has caused certain problems for families seeking enrolment of their children in local schools, as reflected in the following statements:

> Due to the limited number of primary schools, there is a shortage of spaces available on a yearly basis; many residents including myself find it impossible to get all of my children in one school (respondent 122, Al-Mouhamadeyah).

> It is inconceivable that a residential district such as Al-Naseam has just one primary school for boys. My son could not get admission and I had to register him in a school outside the district (respondent 182, Al-Naseam).

8.5.2 Delays in Delivering Public Services and Facilities and its Impacts

In line with results related to the availability and adequacy of services, a large proportion of the resident communities in both districts reported delays in the provision of essential services and their negative impacts as presented in Table 8.4.

Table 8.4: Perceptions about negative impacts of delays in the provision of public services and facilities

Services and Facilities	Al-Mouhamadeyah N=159	Al-Naseam N=160	Total N=319	χ^2 Sig
Boys' primary school	71.1	63.8	67.4	NS
Girls' primary school	65.4	56.9	61.1	NS
Boys' intermediate school	66.7	60.0	63.3	NS
Girls' intermediate school	59.1	59.4	59.2	NS
Mosques	42.1	35.6	38.9	NS
Health centres*	51.9	78.8	65.2	.000
Public parks	79.9	78.1	79.0	NS
Playgrounds	83.0	77.5	80.3	NS

Difference significant at $p < 0.05$; NS = not significant

Almost 80% of respondents reported delays in the playgrounds and the parks, while approximately 60% of households referred to delays in the delivery of educational services (a lower proportion for girls' schools at both primary and intermediate levels in both districts). Delays in the provision of playgrounds and parks impacted negatively on many; a typical response highlighted one of the effects as:

> Delay in the development of the parks and playgrounds in our district made my children stay at home which led to their isolation from their neighbours in the district (respondent 194, Al-Naseam).

The delays in the delivery of the educational services have also led to considerable disappointment for the residents in both districts, as reflected in the following statements:

> Delay in the provision of educational facilities of all types had a negative impact on my sons. It took so long for the schools to be developed that my children had reached universities. For our family, these schools have come too late (respondent 41, Al-Mouhamadeyah).

> Our children had to study in a different district due to the absence of schools here. By the time schools became functional here; my children had joined higher educational stages (respondent 313, Al-Naseam).

Delays in the provision of prayer facilities were reported in 38% of cases. Health services represented the only area where delay in provision of facilities differed across the districts: 52% in Al-Mouhamadeyah compared to 78% in Al-Naseam. The lower numbers of complaint from Al-Mouhamadeyah district could be related to the higher income of the households enabling them to use private health facilities, an option not available to the low-income workers residing in Al-Naseam apartments.

Overall, some residents even felt that the lack of essential services and facilities had resulted in the loss of belonging to their home districts, as they had to resort to facilities in the other residential districts:

> I had never faced the non-availability of public services and facilities, until I moved to live in this district after the construction of my home. The delays in the provision of many public services and facilities led to a lack of belonging to the district as all of the

facilities that we used on a daily basis were outside our residential area (respondent 138, Al-Mouhamadeyah).

8.5.3 Location and Spatial Distribution of Public Services and Facilities

According to Alfonzo (2005), spatial accessibility is one of the most important aspects of a residential environment, as it may affect individuals' decisions to walk from place to place within the area surrounding their home. Alfonzo (2005) also notes the importance of proximity in connection with other factors such as safety and security, comfort and pleasure. Moreover, she indicates that accessibility measures include the presence of environmental aspects such as public spaces and pedestrian networks (Boarnet et al., 2005). Also, Cohen et al. (2007) have asserted that the frequency of visits to open spaces within a district depended on their proximity to the residential units.

Proximity of public services and facilities to residents' homes has serious indirect impacts as well. According to *Shms* (2010a), up to 35% of female students in KSA were overweight, because distant schools discouraged them from walking and increased the reliance on 'pick-n-drop' services offered by private companies. *Shms* (2010b) has also predicted that the number of diabetic Saudis would double within the next 20 years, from 3.5 million in 2010 to seven million in 2030. Such worrying escalation would be the outcome of poor nutritional habits, lack of physical activity and overdependence on travelling by car. The latter two causes can be linked directly to the remoteness of services and facilities from people's homes.

Okaz (2011c) published research related to the extent and causes of obesity in Jeddah, finding that 29% of men and 27% of women were overweight, with 16% and 24% classed as obese, respectively. *Okaz* also reported that remoteness of services and facilities in residential districts, and lack of physical activities and overdependence on travelling by car, were the key reasons behind the obesity.

In the light of these observations, this section will look at the proximity of public services and facilities in the Al-Mouhamadeyah and Al-Naseam residential districts in Jeddah, and the effect of this on residents. The same list of services and facilities indicated in the previous sections will be considered here, including girls' and boys'

primary and intermediate schools, mosques, health centres, parks and playgrounds, as shown below in Table 8.5.

Having asked residents about how close or far away they perceive these services and facilities to be, the researcher uses the results to try to explain certain issues that have arisen within residential districts in KSA, including overdependence on the car, obesity and related health problems, and reduced social cohesion.

Table 8.5: Positive perceptions about the location and distribution of public services and facilities

Services and Facilities	Al-Mouhamadeyah N=159	Al-Naseam N=160	Total N=319	χ^2 Sig
Boys' primary school*	30.2	16.3	23.2	0.02
Girls' primary school	28.9	25.6	27.3	NS
Boys' intermediate school*	27.7	10.0	18.8	0.00
Girls' intermediate school	27.0	21.3	24.1	NS
Mosques	56.6	48.8	52.7	NS
Health centres	9.4	15.0	12.5	NS
Public parks	16.4	9.4	12.9	NS
Playground	9.4	6.3	7.8	NS

Difference significant at $p < 0.05$; NS = not significant

As evident from Table 8.5 above, the majority of sampled residents in both districts considered the distribution of the services and public facilities inappropriate for themselves and their family members. Mosques were the only exceptions, whose locations were considered appropriate by over 52% of respondents. This could be explained by the fact that all of the mosques in both districts were situated at central locations with easy access to them.

Differences in the respondents' opinions across the districts were non-significant, except for the boys' primary and intermediate schools, where a lower number of respondents from Al-Naseam (16 (10%)) indicated that the locations of the schools in

the district were appropriate, compared to 30 (28%) from Al-Mouhamadeyah, respectively. It is relevant to point out that the schools in Al-Naseam were situated on the far western edge of the district while those in Al-Mouhamadeyah district were located almost in the middle of the district, allowing easier access. This is reflected in the following statements:

> All educational services in the district are far from my home, specifically the primary school. This affects my children and specifically the possibility of walking to reach this school easily (respondent 32, Al-Mouhamadeyah).

> It is difficult to reach the boys' and girls' primary schools in the district. They are distant from the residential area and due to proximity of the school to the main road my sons cannot walk to or from the school. We use a privately hired cars as a pick-n-drop arrangements to ensure they reach school on time with safety (respondent 244, Al-Naseam).

Several residents from both districts point out that primary schools in both districts were located near the main road, causing the parents to have additional concerns about the safety of their children:

> The primary school in the district is not located at an appropriate location. It is near Prince Sultan main road where running over accidents have taken place in recent years. There are serious concerns about the safety of children especially at the rush hours with so much passing traffic (respondent 77, Al-Mouhamadeyah).

> One of the primary schools in the district is located near the edge of the district and a major road, compromising the safety and comfort of my children. I fail to understand how the planners could put this school so close to the main road surrounding the district? (respondent 265, Al-Naseam).

> I have to hire a private car to take my children to the school. I think it is somewhat strange that most of the people cannot access school on foot (respondent 150, Al-Mouhamadeyah).

> I have to set aside a significant budget for dropping off my kids to school by renting a private car with a driver; I believe this is an additional monthly expense (respondent 282, Al-Naseam).

Respondents from Al-Nassem districts were comparatively more unhappy than those in Al-Mouhamadeyah regarding intermediate schools, as firstly the location of the boys'

school was in a residential area rather than in an institutional area; secondly, it was close to the girls' school, so both these factors caused problems such as congregation of students near the girls' school, which is unacceptable in Saudi society, and traffic congestion during rush hours. The following comment confirms the above finding:

> The location of the boys' intermediate school has caused us and other households of our district several problems. The unacceptable behaviour of school students occurs on a daily basis. Many complaints have been made to the government authorities requesting to move this school to another location (respondent 307, Al-Naseam).

Sample residents were also asked their opinion about the proximity of each service on a five-point scale from very close to very far. As shown in Table 8.6, the majority of the respondents considered that mosques were located within reasonable distances from their homes, and just over 9% of respondents indicated that the mosque was far away from their houses. However, the trend was reversed in the case of educational services, where more than 60% of respondents stated that the boys' primary and intermediate schools were far from their homes. Around 50% of sampled households considered the same for girls' primary and intermediate schools also. Similarly, both the recreational and health services were considered to be far from residential areas by the majority of respondents across the districts: 68%, 63% and 67% of residents for parks, playgrounds and clinics respectively.

Table 8.6: Perceptions about proximity of public services and facilities from respondents' homes

Services and Facilities	Al-Mouhamadeyah Dist.	Al-Naseam Dist.	Total N =319	χ^2 Sig
	N=159 [%]	N=160 [%]	[%]*	
Boys' primary school	56.6	68.6	62.7	0.01
Girls' primary school	52.4	49.0	50.5	0.02
Boys' intermediate school	55.0	67.6	61.1	0.00
Girls' intermediate school	50.3	44.4	48.9	0.01
Mosques	10.7	7.5	9.1	NS
Health centres	69.1	66.3	67.7	0.03
Public parks	60.4	76.3	68.3	0.00
Playgrounds	57.2	69.4	63.3	NS

Difference significant at $p < 0.05$; NS = not significant; % for **far** plus **very far**

A comparison of residents' perceptions from the Al-Mouhamadeyah and Al-Naseam residential districts about the proximity of services showed that other than mosques and playgrounds, there was a significant difference of opinions for the other facilities. Such an outcome can be easily explained through trends detailed earlier in Section 8.5.3.

Regarding recreational services, the majority of respondents in both districts considered parks and playgrounds as located far away from their houses. From GIS mapping (see Section 7.5), it was evident that a limited number of services existed in both districts; however, fragmented spatial distribution, a lack of hierarchy of parks and playgrounds, and the absence of pedestrian routes that linked to these services discouraged local communities from using them.

To sum up, the proximity or remoteness of services and facilities has many direct and indirect influences on local residents. A related issue of walkability highlighted such impacts further, as explained in the next section.

8.5.4 Nexus between Proximity, Walkability and Health Issues

Research examining the role of the residential environment in promoting car reliance or discouraging physical activity has been fairly recent; especially during the last decade, a large number of studies in the developed world have examined these relationships, led by concerns for obesity and public health (CABE, 2006; Williams, 2007).

The issues of proximity and walkability have a direct influence on the levels of physical activity, which in turn has important health, economic, environmental and social repercussions. Several studies have identified these links and evaluated their significance. For example, Handy (1996) described various characteristics of poor walking environments as long blocks having low density with little mixing of land use, incomplete pavements and other hallmarks of sprawl. Such environments ultimately lead to automobile dependence in the general population and discourage walking and cycling practices (Ewing and Cervero, 2001; Saelens, Sallis et al., 2003). In contrast, some favourable factors have also been highlighted; for example, McMillan's (2002) study of chosen modes of transportation to school in California found that walking and cycling to school were more preferred by students living within a mile of the school. Furthermore, Ewing et al. (2003) highlighted that certain pedestrian-friendly design features, such as the presence of trees within 0.25 mile of the school, short blocks and mixed land use encouraged students to walk or cycle to school. Another study by Ewing et al. (2005) has also pointed out that schools serving nearby residential areas and linked to networks of pedestrian pavements were more likely to be reached by walking or cycling by children and young people.

It has been argued that the methods used in regulating and designing the residential suburbs of US cities have often failed to focus on the physical health of the children, adolescents and adults. Accordingly, the road network, zoning and subdivision regulations have increased the walking distance to various facilities, often resulting in a generally negative effect on the overall levels of physical activity, especially in children (Sturm and Cohen, 2004; Hume et al., 2005; Gordon et al., 2006). Holt et al. (2008) have suggested that the organisation, planning and design of residential districts should aim to integrate elements of the cul-de-sac street type and grid network systems to allow high walkability. The cul-de-sac type would encourage physical activities in young children away from traffic and under the direct supervision of their parents, while the

provision of grid network systems would encourage older children to move around with ease, thus increasing their physical activity.

In a similar fashion, Grow et al. (2008) studied walkability among youth in the Boston, Cincinnati and San Diego metropolitan areas. The presence of recreational sites and their proximity to residential areas, street connectivity, pedestrian infrastructure and safety from traffic affected physical activity in youth.

Besides children and youth, several studies have also investigated the relationships between proximity of parks, walkability and related benefits to all age groups. Indeed, parks and playgrounds have often been considered the centrepiece of communal areas, providing a venue for sports, exercise, relaxation and social gatherings. Olmsted (1870), the 'father' of urban parks, stated that they should be built as places where city residents could experience the beauty of nature, breathe fresh air, and have a place for 'receptive' recreation (music and art appreciation) as well as 'exertive' activities like sports (cited in Cohen et al., 2006:2). Bedimo-Rung et al. (2005) showed that people with better access to parks were less stressed, became ill less often and were less likely to be overweight or obese. A survey of Los Angeles neighbourhoods pointed out that residents considered access to parks as an important factor in determining the levels of physical activities. Adolescent girls who lived within 0.5 mile of parks with playgrounds, basketball courts, gymnasiums, footpaths, swimming pools and tracks had higher levels of non-school physical activity as compared to those not living near such facilities (Cohen et al., 2007). Other studies, e.g. Floyd et al. (2008) and Santana et al. (2009) have also shown that good access to parks and other kinds of green space promotes wellbeing and health.

Contrary to these trends, Hillsdon et al. (2006) found no relationship between access to urban green spaces and recreational physical activity among middle-aged adults in the UK. However, Giles-Corti et al. (2005) reported that access to large, attractive public open spaces led to an increased probability of walking among Australian communities. Li et al. (2005) found that perceptions of safety for walking and the number of nearby recreational facilities were positively related to high levels of walking activity among adults living in Portland, Oregon, while neighbourhood streets were most frequently used for walking and other recreational physical activities by Australian (Giles-Corti and Donovan, 2002; Sugiyama et al. 2009) and American adults (Huston et al., 2003).

Humpel et al. (2002) reviewed 19 studies and highlighted accessibility of services, presence of pavements or footpaths, aesthetic attributes, weather and safety as the most important factors affecting walkability. Two years later, Owen et al. (2004), based on a review of 18 studies, also concluded that walking for particular purposes was affected by aesthetic attributes, presence of pavements and trails, accessibility of facilities and safety concerns about traffic/busy roads. A recent review, summarising the research findings of 103 papers published prior to 2010, again supported the relationship between residential environment and physical activity by highlighting strong correlations between walkability, traffic speed/volume, access/proximity to recreation facilities, land-use mix and residential density for both children and adults (Ding et al., 2011).

Sallis et al. (2009) identified specific neighbourhood attributes in the major cities around the world, supporting walkability and physical activities. Accordingly, the proximity of shops, the presence of transit stops, pavements, cycle lanes and low-cost recreational facilities were found to favour health-enhancing activities. In a comparative study, Dyck et al. (2012) assessed public perception in the US, Australia and Belgium about neighbourhood environmental attributes shaping the use of motorised transport. They reported that proximity of destinations, fewer cul-de-sacs, the presence of pedestrian and cycling lanes and traffic safety reduced the dependence on such transport.

In a recent study, Chaudhury et al. (2012) tested the effect of population, income differences, physical environment and social relationships between two metropolitan areas in the US on levels of physical activity and walkability. Four key themes – safety and security, accessibility of services, comfort of movement on streets and intersections, as well as peer support (social relationships) – were found significantly important for walkability. High-density areas had more safety concerns compared to low-density ones, whereas lack of accessibility was identified as a major barrier against walking in parks. Comfort of movement was a greater issue for older people and the presence of allocated space for social activities was considered a facilitator of better community relationships.

Corseuil et al. (2011) reported the absence of parks, the presence of garbage and inadequate street lighting as key factors associated with low physical activity in Brazilian elderly persons, while Tsunoda et al. (2012) highlighted the positive effects of

high traffic safety, good access to recreational facilities, the presence of pavements, the absence of hills and aesthetically pleasing surroundings on the high levels of physical activity and walking in older Japanese adults. Similarly, Huang et al. (2010) found accessibility as a significant factor affecting walkability among Taiwanese children, while a study by Cerin et al. (2007) concluded that neighbourhoods with residential density, better land-use mixes (proximity), street connectivity, infrastructure and safety attributes were considered more conducive to walking by residents of Hong Kong.

In KSA, however, there has been little interest in measuring the effects of residential planning on levels of physical activity of people living in residential areas. Such negligence could have resulted in the approval and construction of residential subdivision plans that do not encourage walking or cycling. The land SR manual (2003) contains certain conditions related to the scope of public services, including walking distance. However, these conditions are somewhat incomplete and inadequate; even the amenities offered do not fit with the privacy required, especially for women and girls, which is requisite as per Saudi societal values; nor are they suitable for hot weather conditions which discourage people from walking. Furthermore, the absence of tree shade along the footpaths, and unsuitable pavements, inadequate footpath connectivity and the lack of traffic-calming measures for pedestrians (like zebra crossings) hamper the possibilities for walkability. All these problems and shortcomings in the residential subdivision plans have shown that the residential districts executed in Jeddah were not well designed for the use of pedestrians and cyclists.

In order to determine the proportion of the sampled respondents accessing various services and facilities on foot, they were questioned about whether or not they would walk to certain facilities in their residential districts. Residents preferring not to walk were further asked about their reasons for not doing so.

Table 8.7: Positive responses about walkability to public services and facilities

Services and Facilities	Al-Mouhamadeyah N=159	Al-Naseam N=160	Total N=319	χ^2 Sig
Boys' primary school	10.1	13.8	11.9	NS
Girls' primary school	19.5	25.6	22.6	NS
Boys' intermediate school	23.3	26.9	25.1	NS
Girls' intermediate school	18.9	25.0	21.9	NS
Mosques	45.3	47.5	46.4	NS
Health centres	17.6	22.5	20.1	NS
Public parks	32.1	27.5	29.8	NS
Playgrounds	27.0	25.0	26.0	NS

Difference significant at $p < 0.05$; NS = not significant

As shown in Table 8.7, a lower proportion of sampled respondents and their families accessed services and facilities on foot, even in the case of centrally located mosques (53% used cars). Factors preventing the respondents from walking to mosques include the location of mosques being surrounded by main roads, a lack of pedestrian footpaths connecting directly to the mosques, inadequate pavements and a lack of appropriate landscaping to offer shade during harsh sunny days, as reflected in the respondents' comments below:

> There is nothing to encourage access to any facility in the district on foot. Lack of safe passages and the speed of the passing cars are the key factors preventing me from walking to the mosques (respondent 143, Al-Mouhamadeyah).

> Though the mosque is not far from our home, I and my family use a car to go there five times a day. The main reason for such practice is the high temperature during the day.

> It's strange that nobody paid any attention to the absence of pedestrian pavements and shading during the landscape designs (respondent 200, Al-Naseam).

In the case of children walking to their schools, the proportion of boys walking to primary schools in both Al-Mouhamadeyah and Al-Naseam districts was lower than girls: 10% and 14% compared to 20% and 25% respectively. Such differences have no gender biases: instead, this was merely because of the fact that each district had two primary schools for girls compared to the boys. In the case of intermediate schools, the percentage of boys and girls walking to schools in the Al-Mouhamadeyah was 23% and 18% respectively; in Al-Naseam district, these figures were slightly higher at 26% and 25%.

The main factor behind children not walking to schools was the schools' remoteness from residential areas and their proximity to main roads. Coupled with an inadequate number of pavements as well as a lack of adequate landscaping, these factors prevented the majority of parents from sending their children to school on foot, feeling it was unsafe, as shown from the quotes below:

> The remoteness of locations and the lack of safe pedestrian routes having enough shady trees have forced us to send our children to their schools using the family car (respondent 116, Al-Mouhamadeyah).

> Both the large distance from home and the school's proximity to the main roads full of traffic are among the factors that prevent me from allowing my sons and daughters to walk to their schools (respondent 213, Al-Naseam).

The proportion of people walking to the parks and playgrounds in Al-Mouhamadeyah was slightly higher than Al-Naseam: 32% and 27% compared to 27% and 25% respectively. However, in the case of clinics, the trend was reversed: 18% in Al-Mouhamadeyah and 22.5% of Al-Naseam residents reported walking to medical centres. The reasons given by the majority for not walking to these facilities were similar to those given for the other services mentioned above.

Lack of safe pedestrian footpaths was cited as the most common reason as shown in the following comments:

> Despite the availability of a park two blocks away from my home, I do not encourage my children to go there because of a lack of safe footpaths for pedestrians (respondent 216, Al-Naseam).

> Frankly speaking, I go out with my children to the parks in the Corniche area because of the safe, comfortable and enjoyable environment but this is not the case for the whole district; in fact most of the parks and playgrounds are far from residential areas with few linking footpaths (respondent 100, Al-Mouhamadeyah).

Taken together, there are a lot of similarities between the two districts in terms of walkability; however, the percentages of households from Al-Mouhamadeyah walking to the local educational, recreational and health services remained lower than the comparable Al-Naseam figures. This could be related to the relatively higher economic wellbeing in Al-Mouhamadeyah district, reflected through a comparatively higher number of vehicles per household (as shown in Table 8.8), leading the residents to prefer motorised movement over walking on foot.

8.5.5 Safety Issues

Development planning plays an important role in regulating traffic, and pedestrian safety, by regulating the widths of roads and pavements, as well as by determining the numbers and types of intersections, entrances and exits. Such influences have direct implications for the safety of residents and for the liveability of these residential districts. In highlighting the impact of subdivision plans and the standards on roads and safety affecting the quality of life of local residents, Southworth and Ben-Joseph (1995) noted:

> *It is now time to go back and look at what has been created with a fresh eye. There is a need to look at streets as complex community settings that serve a variety of needs – not merely channels for moving traffic and emergency vehicles. They are also environments used for walking, bicycling, jogging, for socializing, and for children's play. They are the staging space for community interaction and neighbourhood development* (p.78).

Many town and city planners worldwide have attempted to address safety issues in residential areas. For example, in San Antonio, Texas, the city council responded to concerns about the safety of pedestrians from passing traffic by forming a committee of local residents and developers to study the problem and recommend solutions for it. The committee studied 66 residential streets, focusing on the nature of the streets, the traffic volume and speed. It was found that the speed limit of 30 miles per hour was often exceeded due to the extra width of streets. The committee's recommendation for the

revision of standards resulted in the rewriting of standards related to the length and width of roads within the residential districts (Ballard and Haldeman, 2002).

Retting et al. (2003) have advocated a three-pronged approach in tackling the issues of pedestrian safety in residential districts; firstly, by controlling the speed of passing vehicles; secondly, by separating pedestrians and traffic; and thirdly, by facilitating visibility for pedestrians. All of these objectives can be achieved by narrowing interior roads, broadening pedestrian pavements, and using traffic-calming methods such as speed bumps and roundabouts. They cited European examples where the use of roundabouts reduced vehicle–pedestrian accidents by 75%.

In concurrence with these findings, Pucher and Dijkstra (2003) have noted that the likelihood of pedestrians and cyclists being run over was much lower in the Netherlands and Germany compared to the US. They emphasised that several urban planning and development criteria have contributed to that achievement. These criteria include the introduction of regulations regarding the use of cars, ensuring that the urban design is in line with the needs of pedestrians, cyclists and drivers; the use of traffic-calming techniques in residential areas; development of educational programmes for motorists and pedestrians and strict application of traffic regulations for the protection of pedestrians.

Safety in the neighbourhoods was also considered to be one of the pivotal factors affecting the mobility of residents and the extent to which children and adults engaged in physical activities. Several studies have pointed out such preferences; for example, Lumeng et al. (2006) found that perceptions of lower levels of safety in a district resulted in the decline of physical activity, leading to obesity in many residents. Similarly, Doyle et al. (2006) also reported low safety among the key factors reducing the physical activity of women relative to men.

In KSA, however, the subdivision plans take into account the movement of vehicles, but not that of pedestrians. The networks of internal streets within the residential districts are also planned to facilitate the movement of motorists without consideration for the needs of pedestrians or cyclists. The residents were asked to define their perceived level of safety on a five-point scale (where 5 meant 'very safe').

As shown in Table 8.8, sampled respondents felt most safe while walking to mosques, with a perceived level of safety of 3.25 out of 5, reflecting a sense of the lowest levels of satisfaction, as shown by the following representative statements:

> I walk to the mosque every day with my sons but we feel unsafe because of the many cars passing by at high speeds. I would never let my sons go alone (respondent 130, Al-Mouhamadeyah).

> Although we walk to the mosque, we do not feel safe as the surrounding streets have too much traffic at high speeds (respondent 177, Al-Naseam).

Table 8.8: Perceptions about safety when accessing public services and facilities on foot

Services and Facilities	Al-Mouhamadeyah		Al-Naseam		Total		χ^2 Sig
	Mean	f	Mean	f	Mean	f	
Boys' primary school	2.1	16	2.2	22	2.1	38	NS
Girls' primary school	2.4	31	2.5	41	2.4	72	NS
Boys' intermediate school	2.3	37	2.3	43	2.3	80	NS
Girls' intermediate school	2.5	30	2.6	40	2.52	70	NS
Mosques	3.2	72	3.3	76	3.25	148	NS
Health centres	2.2	28	2.4	36	2.3	64	0.01
Public parks	2.4	51	2.4	44	2.4	95	NS
Playgrounds	2.5	43	2.4	40	2.45	83	NS

Difference significant at $p < 0.05$; NS = not significant; f = frequency of number of respondents

Regarding the educational, recreational and health services, larger proportions of the sampled residents shared a limited sense of safety. Some of these services were situated near the main roads, while others lacked safe routes for pedestrians as shown in the following comments:

> My children can't be safe going to their schools on foot. The schools are located near the main roads and have lots of traffic. The wide internal roads allow the vehicles to speed up reducing the safety of children even further; whether they go on foot or by car, I have to accompany them all the time (respondent 200, Al-Naseam).

Similar findings were reported from the US, citing danger from traffic as the second most important barrier to walking and cycling to school (Dellinger and Staunton, 2002). The Consumer Styles Survey (2004) and re-contact surveys also describe barriers to children walking to or from school as reported by parents. The surveys show that traffic-related danger is the second most commonly reported barrier after distance (Martin and Carlson, 2005; Centers for Disease Control Prevention, 2005).

8.5.6 Accessibility to Pedestrian Routes

Relative to pedestrian safety, certain studies conducted in the US have pointed to the importance of providing safe routes for pedestrians in order to separate them from traffic. Cohen et al. (1997) and McCann and DeLille (2000) have argued that the provision of such routes helps to reduce the number of cars passing through residential districts, which in turn reduces the number of accidents, as well as harmful emissions, improving safety and environmental conditions for local residents.

The SR manual (2003) contains standards related to walking distance for a number of services and facilities; however, the road crossings used by the residents to reach the service locations (mosques, schools or parks in the district) are not well marked, resulting in a lack of special requirements for pedestrian routes separating the public from vehicular traffic. Table 8.9 shows the routes used by respondents from the Al-Mouhamadeyah and Al-Naseam districts to reach the services and facilities within their districts.

More than 65% of the sampled residents walk on the roads to access the public services and facilities within their district, exposing themselves to the risk of passing traffic. In contrast, 29% of respondents used both the pavements and the roads and a minority of 4% used specially designed pedestrian lanes. This trend clearly reflects the scarcity of pedestrian routes in both districts. In fact, pedestrians need a sufficient reliable network that does not leave them in a dangerous spot at exactly the moment they need it most (e.g. at a main road intersection) to feel confident about using pedestrian routes; otherwise the likelihood is that they will not use it. Unfortunately, the apparent non-usability could send the wrong message to both the developers and the local council, resulting in resulting in them continuing not to prioritise and finance the provision and maintenance of adequate pedestrian networks, further undermining residents' willingness to choose to walk.

Table 8.9: Routes used by respondents for walking to public services and facilities

Routes	Al-Mouhamadeyah N=87	Al-Naseam N=79	Total N=166	χ^2 Sig
Roads only	66.7	64.6	65.7	NS
Specific routes for pedestrians only	4.6	5.1	4.8	
Pedestrian pavements and roads	28.7	30.4	29.5	

Typical concerns of respondents relating to the lack of pedestrian routes can be seen from the following comments:

> The inadequate number of pavements and the lack of pedestrian footpaths has forced us to use the internal road network to walk to and from the mosque (respondent 309, Al-Naseam).

> My son is confined to a wheelchair and I have to struggle hard to take him with me for prayers in the mosque as the pavements are not suitable for the average individual let alone my son who is disabled (respondent 95, Al-Mouhamadeyah).

8.6 The Presence of Social Networks and Their Positive/Negative Aspects

A social network is a set-up leading to development of mutual understanding and trust between people living in the same society. Arguably, certain elements such as work pressure, problems in daily life, financial needs, demands of family life, levels of watching TV, intergenerational changes, and differences in beliefs and opinions lead to the isolation of individuals from each other (Putnam, 2000). However, the lack of social relationships has also been attributed to SR. Duany et al. (2000) and Calthorpe and Fulton (2001) have noted that modern residential neighbourhoods in the US suburbs have been built specifically with car users in mind. Prominent components of residential plans include low-density residential areas, internal streets with cul-de-sacs and sparse spatial distribution of services and facilities. These designs lack elements that encourage walking and cycling, or the utilisation of communal outdoor space, yet they have been strongly supported by subdivision regulators and developers. Consequently, such practices have resulted in limited interaction between the people living in those areas. In

contrast, an empirical study shows how the availability of green spaces within residential areas allows the residents to strengthen their social relationships (Kuo et al., 1998).

Indeed, the development of social relationships within local communities requires an environment encouraging walking, cycling and other possibilities for socialisation to improve mutual trust between residents, and which stimulates their participation in the successful building of this community, and perhaps society as a whole (Leyden, 2003). The importance of schools in promoting association between the residents and strengthening their social relationships has been noted in a technical report for Oregon Transportation and Growth Management Program, as follows:

> *In addition to educating young ones, schools provide physical places for the communities to gather for cultural or sporting events, walk their pets, or play in the playgrounds. Their locations affect the social, economic and physical characteristics of a city* (Community Planning Workshop (CPW), 2005:4).

Unfortunately, in KSA, SR and the developers implementing them currently play a major role in shaping residential districts in such a way that encourages the use of cars and discourages residents from both walking or getting acquainted with each other. In contrast, a recent study in Jeddah found that young Saudi women were keen to have their own space within residential areas suited to female sporting and socialising activities (*Shms*, 2011:25). Table 8.10 demonstrates the extent of social relationships among the local residents of Al-Mouhamadeyah and Al-Naseam districts.

Table 8.10: Positive perceptions about knowing the neighbours

Level of Knowledge	Al-Mouhamadeyah N=159	Al-Naseam N=160	Total N=319	χ^2 Sig
Not at all	20.8	21.3	21	
Just a little	54.1	58.8	56.4	
Moderately well	19.5	18.1	18.8	NS
Extremely well	5.7	1.9	3.8	
Total	100.0	100.0	100.0	

NS = not significant

The majority of respondents either did not know their neighbours at all (56.4%) or only to a limited extent (21%). Just fewer than 5% reported knowing their neighbours extremely well. This was surprising, given that a large proportion of the sampled respondents moved to the area 15 to 20 years ago, as shown in Table 8.2.

While the differences between the districts were statistically non-significant, the results shown in Table 8.10 indicate that residents of Al-Naseam district knew their neighbours slightly better as compared to those living in Al-Mouhamadeyah. Such differences could be safely attributed to the higher number of vehicles in Al-Mouhamadeyah, leading its residents to walk less to various services and facilities as compared to Al-Naseam, and to the difference in housing design – detached and semi-detached housing with some private outdoor space encourages householders to spend their time in their property. Higher-density housing increases the opportunity to meet people (as more interactions are possible) and also, as people do not have any private space, they utilise public centres/spaces which generate opportunities for interaction.

However, face-to-face discussions conducted during the completion of questionnaires suggested that lack of social relationships resulted from a combination of personal choices as well as residential environment. Such personal choices were related to the residents' living patterns and attitudes such as lack of time due to work, a preference for engaging with family members, watching TV, and sometimes a desire to avoid strangers. On the other hand, elements of the residential environment, such as the fragmented distribution of services and facilities, did not encourage the residents to

walk or ride bicycles; rather it promoted dependence on cars to access services and facilities. Finally, the lack of certain services and facilities not stipulated by the SR, such as cafes, sports clubs, libraries and women-only parks, reduced opportunities for more cohesive interaction within the neighbourhood.

A representation of residents' frustrations can be seen from the following comments:

> The remoteness of public facilities and opportunities to interact locally has limited our knowledge of the neighbouring residents to a great extent (respondent 105, Al-Mouhamadeyah).

> We have to use our cars to reach our work place, schools, parks and mosques. There is nothing to encourage people to walk around or get together to know each other in the district. I think all these factors have contributed to such a dismal situation of social relationships (respondent 270, Al-Naseam).

8.7 Conclusion

The demographics of the respondents have many characteristics in common with other large cities in KSA; the important aspects are the rapid growth of population, high fertility rates and high rates of internal and external migration from Arab and Asian countries. Such demographic features are closely related to the economic prosperity of the country; the rapid growth of the Saudi economy during the past two decades has played a significant role in attracting migrants, acceleration of population growth and expansion of many Saudi cities, including Jeddah. The resulting rise in population with increased diversity in needs and tastes has affected the manner in which facilities and services are provided within the residential areas located in Jeddah. However, changing needs and lifestyle trends have not been reflected in planning in the newer residential districts, as explained in subsequent sections.

The researcher also found that some of the respondents acquired their residential plots a long time before these were fully developed. Hence, the absence or partial provision of public services and facilities became a common feature leading to an unsafe and uncomfortable atmosphere in both of the districts studied.

These situations may prevail in many other districts in Jeddah. The conventional development of the district has become one of the most serious problems affecting residents and their sense of belonging to a particular residential district. Furthermore,

the authorities responsible for the application of regulations and the approval of subdivision plans often neither enforce the regulations nor compel the developers to deliver the complete subdivision plan (the final product).

The process of developing residential plots for housing as part of the subdivision plans that are approved by the municipality and then carried out by the developers is an incomplete process and varies in terms of duration. The failure to persuade the developers to develop and execute comprehensive subdivision plans has contributed significantly to the emergence and persistence of unilateral development of land plots within neighbourhoods built in Jeddah. This, in turn, has led to the emergence of differences in the development process of land plots, contrary to the time periods allocated for development, though it is guided significantly by residents' choices and preferences: if fully built houses on a plot were available, they might not be affordable, or residents might not be willing to be locked into developers' housing designs; all these issues may be debated further.

However, the authorities concerned are often unable to apply the regulations that require the developers to fully and appropriately develop the subdivision plans (subdivide the land, make provision for and develop some services and facilities, provide infrastructure and develop residential units). The current SR and the manner of approval of subdivision plans play a major role in encouraging the developers to follow this conventional method of development (subdivide the land, make provision for some infrastructure, sell the residential plots to the end-users, and deliver the subdivision plan to Jeddah Municipality). The developers also play an important role in this respect, either due to their lack of knowledge of people's needs and desires, or because they do not wish to carry out the full process of development of the residential district because of the risks, or due to the structure and nature of the residential subdivision plan market (for more details about conventional subdivision developers, see Chapter 6).

During the review and approval of the subdivision plan by the municipal authorities, the developers usually commit to cater for the minimum amount of services required by the SR. Initially, the expected population density of the residential district is estimated, and then the total area to be set aside for these public services is calculated. The most important of these requirements is to dedicate 33% of the total available land for public facilities, i.e. roads, pavements, parks and playgrounds. The bulk of this allocation would be to roads and pavements, as the space allocated for parks and playgrounds

would be calculated on a case-by-case basis in order to meet the needs of the residents effectively. Areas for mosques, schools, clinics and other services would also be calculated separately, based on the unique criteria for each service. However, after approval, it is common that the sites intended for these services are left undeveloped for long periods of time. In the worst case scenarios, residential districts do not contain adequate services and facilities.

There are many factors leading to such lack of facilities, such as inaccurate allocation of the areas required for these services, mainly due to inadequate use of modern technology (Geographic Information Systems (GIS)), unwillingness of local municipalities to involve the relevant government departments, such as education and health, in the approval process, insufficient time assigned for the development of these services, and failure of the authorities to compel the developers to carry out their responsibilities in this regard.

Other than availability and adequacy of services, the researcher also tried to determine which of these services were delayed and what effects such delay had on the sampled residents. The reasons for such delays were not investigated when interviewing the residents, as the prime responsibility for the provision of such facilities rested with the relevant departments. However, it was discovered that Jeddah Municipality was not very interested in seeking the inputs of such key stakeholders. Instead, copies of the plans were merely sent as a formality, without involving other departments in the approval process (the process and its flaws are discussed in detail in Chapters 3 and 6). Arguably, the involvement of developers in the development and the provision of public services and facilities could have reflected positively on the construction of public services and facilities on time.

The process of deciding the distribution of services and facilities within residential areas is one of the most important aspects of subdivision planning that takes place between the developer and the local authorities. The procedure is guided by the SR manual regarding the design standards and policies associated with various services. This sets out some standards by means of which the location of services and facilities can be determined; however, it fails to take into account the location of such facilities within residential areas and other neighbouring locations, as well as the details regarding the layout of each public facility. Also, the residential subdivision plans generally contain two-dimensional paper maps with little or no use of modern technology (GIS) to assist

in the analysis of components of the residential plan. The situation is further exacerbated due to the absence of research into the movement of vehicles and pedestrians in the district, which has significant relevance for the location of future services and facilities. Despite the shortcomings mentioned above, the residential subdivision plan contains a wide range of information which is usually considered by the regulators during the approval stage.

To sum up, the findings described in this chapter are generally consistent with the results discussed in the previous chapter. Despite the differences between the Al-Mouhamadeyah and Al-Naseam districts in terms of population density, types of residential units and socio-economic characteristics of the households, similar problems were encountered by the residents living in each district. The key issues highlighted by the respondents included the absence or late availability of key services and public facilities, as well as their inappropriate distribution, leading to overdependence on travel by car. Also, the lack of footpaths to separate pedestrians from motor traffic, pedestrian pavements and inadequate landscaping had a negative influence on walkability within the districts. Such unsafe and unhealthy environments result in lack of physical activity and contribute to diminished social relationships.

Overall, there appears to be a huge gap between the residents' wishes and the actions of the authorities and developers responsible for regulating, approving and implementing residential subdivision plans. This gap resulted, in part, from the non-involvement of local residents in the planning processes, as well as poorly delivered residential plans by the developers. These findings present the dilemma of using a top-down approach in the planning and development of residential districts in KSA. To improve the situation, regulators need to identify existing shortcomings and rectify them according to the wishes of the residents. They would also need to revise both the SR and the approval process for future subdivision plans, paying due attention to the needs and wishes of the users. Indeed, it is only through the participation of the local population and the knowledge of their perceptions about the existing residential environment that would enable the developers to improve the types, forms and components of residential subdivision plans in Jeddah and elsewhere.

CHAPTER NINE: PROVIDING FOR THE NEEDS AND PREFERENCES OF RESIDENTS (GUIDELINES FOR REGULATORS AND PROVIDER ACTORS)

Chapter 9: Providing for the Needs and Preferences of Residents (Guidelines for Regulators and Provider Actors)

9.1 Introduction

> *What is being built today is very much the product of the limits and instructions written into codes. If we don't like what is happening, we need to adjust the regulations* (Barnett, 2008:247)

Having asked residents from two residential districts (Al-Mouhamadeyah and Al-Naseam) about their opinions regarding the subdivision regulations (SR) in force, the process of development and what they expect from their residential areas, the researcher aims in this chapter to present the residents' voices to the regulators and developers in Jeddah. From these comments, and the non-conventional developers' comments (see Chapter 10) and the researcher's own analysis of the regulations (Chapter 7) and the quality of the environment they tend to produce (Chapter 8), it was possible to offer some brief guidelines regarding how to regulate, design, plan and develop subdivided residential land in Jeddah, and to encourage the rewriting of outdated SR.

This chapter is divided into five main sections. Section 9.2 offers a brief overview of the topics covered by the neighbourhood residents' questionnaire, particularly in the third section of that form. Sections 9.3 to 9.6 discuss matters linked to certain public services and facilities within the districts, including the following: the importance of each service/facility to the neighbourhood residents, the walking distance to each of these, and their distribution and accessibility within the districts. Sections 9.7 to 9.8 look at elements of the planning and design of land subdivision. They present the opinions of the residents regarding the following matters: design policies within the districts, their layout, the types and widths of streets, footpaths and the addition of planted verges. In Sections 9.9 to 9.12 the researcher presents the preferences of the residents regarding the following: the role of developers, methods used in developing LSPs, the time taken to develop public services and facilities, public participation and the evaluation phase within the approval process of subdivision plans in Jeddah, as well as a range of other diverse needs and wishes. Section 9.13 concludes the main findings of the residents' interviews on the above matters.

9.2 What Do Residents Want?

Sample respondents were asked for their individual choices regarding preferred public services and facilities, proximity and locations of services, accessibility to services, design policies in the district, planning suitability of the district layout, suitable designs and widths for internal streets, and suitable widths for pedestrian footpaths; and also on general needs like the time required for developing public services and facilities, the developer's potential role and the method of developing the residential subdivision plan, plan evaluations, residents' participation prior to plan approvals and implementations, and any other issue of serious concern.

9.3 Public Services and Facilities Preferred

Table 9.1 shows the needs and preferences of the respondents regarding the services and public facilities that need to be provided in residential districts. A four-point scale of choices was used to indicate their preferences: '1' represented 'very important' and '4' represented 'not important'. The interviewees' preferences have been collated as shown in Table 9.1.

Table 9.1: Residents' ratings of the importance of public services and facilities within their neighbourhood

	Al-Mouhamadeyah dist. n=159		**Al-Naseam dist. n=160**		**Total=319**	
	(%)	Rank	(%)	Rank	(%)	Rank
Boys' primary school	91.9	5	96.2	1	94.0	4
Girls' primary school	94.3	4	93.7	4	94.0	4
Boys' intermediate school	96.2	2	89.3	6	92.8	6
Girls' intermediate school	91.7	6	94.4	3	93.0	5
Mosques	95.6	3	93.2	5	94.3	3
Health centres	85.6	7	88.0	7	86.8	7
Public parks	97.1	1	95.0	2	95.5	1
Playground	95.6	3	94.4	3	95.0	2

Note: The percentage represents the overall response in favour of the facility (**strongly like this** plus **would quite like this**)

This table shows that playgrounds, girls' primary schools and health centres are ranked third, fourth and seventh respectively in both districts, while the importance of other services and facilities varied across the districts. Accordingly, public parks were considered to be one of the most important facilities, ranked first and second by Al-Mouhamadeyah and Al-Naseam respondents respectively. This could be related to the

current situation where recreational services are either absent or poorly developed in both districts. In fact, these findings reflects residents' attitudes in so far as that they want to have recreational facilities in close vicinity but for educational facilities they think that it is less preferable and they can manage if these facilities are slightly further away.

Mosques were ranked third and fifth in Al-Mouhamadeyah and Al-Naseam districts respectively. Although there were a number of mosques in both districts, the high degree of importance represented the strong bonding between religion and the residents.

The boys' primary school was ranked first by Al-Naseam respondents while Al-Mouhamadeyah respondents considered it a lower priority, in fifth place. Conversely, the boys' intermediate school was ranked in second place (high priority) in Al-Mouhamadeyah while Al-Naseam residents rated it sixth. A similar situation existed for the girls' intermediate school as well. This disparity can be attributed to the inadequacy of facilities in one district compared to the other.

Provision of health services was ranked lowest in both districts, i.e. in seventh place. This was surprising given the limited number of facilities in both districts. However, it is possible that provision of private health services in both districts led to low prioritisation of this service. The lack of importance attributed to it can also be explained by the fact that the majority of households would use the clinics occasionally while schools or mosques would be accessed daily.

9.4 Walking Distance

Table 9.2 shows the sampled residents' preferred walking distance to various services and facilities. Participants stated their preferred proximity, such as very close, close, and not far away in a subjective manner, as the manual of regulations for LSPs does not specify walking distances for various services, except for the boys' and girls' schools, and mosques (see Section 3.4.3). These approximation standards were adopted from the existing body of standards applied elsewhere in the western experience. They have been developed by planners independent of any attempt to discover users' preferences. Moreover, they have been developed without taking into account other factors such as the surrounding social and cultural characteristics, climate, and the style and way of life of Saudi society.

Table 9.2: Residents' preferences with regard to walking distance to public services and facilities within their neighbourhood

	Al-Mouhamadeyah dist. n=159		**Al-Naseam dist. n=160**		**Total=319**	
	(%)	Rank	(%)	Rank	(%)	Rank
Boys' primary school	72.3	5	68.2	5	70.2	4
Girls' primary school	71.7	6	68.8	4	70.2	4
Boys' intermediate school*	70.0	7	62.6	8	66.1	6
Girls' intermediate school*	76.1	4	63.8	7	69.9	5
Mosques	86.8	1	86.2	1	86.5	1
Health centres*	40.0	8	65.4	6	52.6	7
Public parks	78.0	2	81.2	2	80.0	2
Playground	76.8	3	75.6	3	76.2	3

* Difference significant at $p < 0.05$
The percentage represents the overall response in favour of close proximity (**very close** plus **close**)

Data on preferred walking distances was analysed for all facilities, with the pooling of percentage responses in favour of close proximity, i.e. 'very close' to 'close'.

The analysis revealed statistically significant differences between results of the two districts regarding certain services and public facilities (as noted in the left-hand column of Table 9.2).

The most important facilities preferred by the largest proportion of respondents (more than 86%) from both districts were mosques, which is due to the religious obligation of all Muslims to pray five times in a day, preferably at the mosque. However, some respondents also highlighted the need for landscaping along the pathways to make them walkable during the hot and humid hours of the day. A respondent from Al-Naseam district expressed that while he used to pray five times daily, walking to the mosque before sunrise (the first prayer) was most convenient due to comfortable temperatures and the lowest amounts of traffic, but during the rest of the day it was hard to walk because of rising temperatures and humidity as well as increased traffic; so if the mosque had been close to his house, and linked with shady and walkable pathways, he could certainly have walked to mosque on a daily basis to offer all his prayers.

After mosques, parks and playgrounds were rated as the second and third priorities as 80% and 76.2% of the sampled respondents wished them to be close or very close to the locations of their houses. A number of respondents stressed the importance of their

proximity to encourage walking to the facilities, resulting in better social relationships among local communities.

The ranking of girls' primary and intermediary schools reflected the variations in community responses across the districts. Accordingly, a girls' primary school within walking distance was preferred by Al-Naseam residents in fourth place whereas it was ranked sixth by Al-Mouhamadeyah residents. The trend was reversed for the intermediate school, which was fourth priority in Al-Mouhamadeyah but dropped to seventh in Al-Naseam. In the case of boys' schools, the disparities were comparatively less as the primary school was ranked fifth in both districts while intermediate schools ranked seventh and eighth in Al-Mouhamadeyah and Al-Naseam districts respectively. Overall, around 70% of the sampled residents wanted these services close or very close to their residences. The motivations behind these preferences were health consciousness and the reduction of the daily burden of driving the children to and from schools. However, the poor distribution of the primary schools' locations in the two districts, the lack of pedestrian footpaths and high volumes of traffic discouraged the residents to allow their children to walk to school, despite initial willingness to do so.

Health centres were ranked lowest by Al-Mouhamadeyah residents while respondents from Al-Naseam district ranked them in sixth place. The difference in the rankings of health centres as well as intermediate schools for boys and girls were statistically significant. While the comparatively higher ranking at Al-Mouhamadeyah regarding schools can be explained through the lesser number of facilities available in the district, the differential with reference to health facilities might be related to varying income levels in both districts, i.e. lower income levels in Al-Naseam make it less affordable for them to access private clinics outside the district as compared to Al-Mouhamadeyah residents who could easily afford them.

9.5 Residents' Preferences Regarding Distribution of Services' Site Locations

Table 9.3 shows the preferences of the sample members regarding the distribution of the locations of some services and public facilities in the district. Here, the researcher tried to get the residents to determine the locations of some of the services and public facilities in the district. This is contrary to the procedures followed for the approval of the residential plan, where the location of services and public facilities was determined on the basis of their own requirements and the preferences of developers in coordination

with the organisers, without considering the needs and opinions of users. Based on the analysis of results described in Chapter 7, the researcher found that some of the locations of services and public utilities in both areas was unsuitable and inaccessible to pedestrians. Moreover, some of the services are available on the outskirts of the district, and located near road junctions, which encouraged residents to use their private cars. Among other issues observed is the absence of a hierarchy between residential area centres. At the level of the district, there is no clear centre for those services and public facilities that are important to the residents, and to which their residences are connected via a safe pedestrian network. Moreover, it was also noted that there is no real micro-centre for either of the districts that have been studied. This is reflected in the distribution of the locations of services in the two areas, which are set in remote locations and scattered across the districts.

The analysis of results in Chapter 8 also pointed to the fact that the locations of these services are not suitable for many of the sample members. They and their family members were prevented from gaining access to them on foot in a way that was safe and comfortable. Respondents were asked to review the same list that was used for the questions above with regard to a range of location choices. The first option was for the service to be in the centre of the district; the second was for it to be at the centre of the residential clusters; the third was for it to be on the outskirts of the district, and the fourth option was left open, allowing sample members to choose a location in the district which was convenient for them.

It transpires from the results that most of the sample members preferred the services and facilities either at the centre of the district or the residential clusters, and not on the outskirts of the district. There was no significant statistical difference in the results of the two districts, with one exception in terms of responses for the recreational services of parks and playgrounds, the reasons for which have been explained below.

Table 9.3: Residents' preferences for location/distribution of important public services and facilities within their neighbourhood

	Al-Mouhamadeyah dist. n=159			Al-Naseam dist. n=160			Total=319		
	1	2	3	1	2	3	1	2	3
Boys' primary school	67.9	28.9	2.5	63.1	33.1	3.8	65.6	31	3.1
Girls' primary school	64.8	32.7	1.9	64.6	33.5	1.9	64.7	33.1	1.9
Boys' intermediate school	57.2	39.5	2.5	55.6	34.4	10	56.4	37	6.3
Girls' intermediate school	56.6	39	3.8	66	28.9	5	61.3	34	4.4
Mosques	45.3	53.5	1.3	67.5	30	2.5	56.4	41.7	1.9
Health centres	58.5	34	7.5	60.6	28.1	11.3	59.6	31	9.4
Public parks*	41.5	51.6	6.3	38.4	40.9	20.8	39.9	46.2	13.5
Playground*	38.4	52.8	8.2	39.4	38.1	22.5	38.9	45.5	15.4
Ranking	1	2	3	1	2	3	1	2	3

* Difference significant at $p < 0.05$
Percentage in favour of service location in **1 = in neighbourhood centre**, **2 = at centre of residential clusters**, **3 = at edges of neighbourhood**.

Irrespective of district and gender, the preferred location for schools and clinics was the district centre, reported by 55% to 68% of respondents. Preferences for locations on the outskirts were generally low, with the lowest levels reported for girls' primary schools (1.9% in both districts). However, in the case of mosques, the preferred location was at the centre of the residential cluster in Al-Mouhamadeyah (53.5%) and in the town centre in Al-Naseam (67.5%). With great majorities favouring options 1 and 2 in both locations, 98% of respondents in both districts disliked the far-flung locations of mosques at the edges of neighbourhoods. Some of the sampled respondents reported additional preferences for smaller mosques with pedestrian access, contrary to the existing practice of constructing large mosques at the meeting points of wide roads in all directions. Residents' preferences were rooted in their beliefs that mosques should serve as a place of worship as well as a place of communal gathering leading to better social relationships. In this respect, smaller mosques accessible on foot were deemed better compared with larger mosques requiring access via motor transport.

The same trend was demonstrated in the case of health public clinics, where almost 60% of the total sample indicated their desire to place these at the centre of the district. However, preferences for the parks and playgrounds differed from the other services. The majority of the respondents in Al-Mouhamadeyah wanted the recreational services in the centre of the residential clusters, but in the case of the Al-Naseam residents, 40% each expressed a preference for the centre of the district and the centres of the residential clusters. This trend can be attributed to the difficulties experienced by

residents in both districts due to the scattered spatial distribution of recreational services while also being remote from respondents' homes.

It was also notable to find that a significant proportion of sampled residents in the Al-Naseam district expressed their desire for recreational services to be located remotely from residential units, on the outskirts of the district: more than 22% (in the case of playgrounds) and 20% (in the case of parks). In contrast, Al-Mouhamadeyah residents did not favour such an idea, with only 6.3% supporting parks to be situated on the outskirts of the districts and around 8% preferring the same for playgrounds. Al-Naseam respondents explained such preferences were based on their desire to avoid crowds and the possibility of facing anti-social behaviour from visitors flocking to such amenities.

9.6 Residents' Preferences Regarding Accessways

This section complements the previous ones, concerning the preferred routes taken by the sample respondents to walk to and access the services and public facilities in the district. Three options were proposed to the sample respondents to choose from, one based on the current situation and two based on the ways they would prefer to use. The current manual of LSPs contained no requirements related to pedestrian and cycle paths that could be referenced at the time of the residential plans' approval. Moreover, there were no requirements that indicated the mode of transport by which residents should arrive at the district's services, and no requirements for the walking distance to each service.

Table 9.4: Residents' preferred access routes to public services and facilities within their neighbourhood

	Al-Mouhamadeyah dist. n=159	Al-Naseam dist. n=160	Total=319	Ranking
	Yes (%)	Yes (%)	%	
Use network road only (current situation)	9	12	10	3
Use specific routes for pedestrians	71	69	71	1
Pedestrian footpaths and road network	20	19	19	2

It is clear from Table 9.4 that a majority of sampled residents (around 70%) in both districts indicate a preference for pedestrian pathways. While around 10% of sampled respondents prefer using the road network, 20% again stressed the needs for various

services to be linked through safe pedestrian routes. The emphasis on the presence of pedestrian pathways was expected by residents to lead to greater walkability. There were also expectations from residents that with proper landscaping, such pedestrian routes could encourage the adoption of healthy lifestyles among various age groups in the district.

9.7 Neighbourhood Forms and Street Types

The current SR and the developers did not consider the needs of residential districts which are designed with internal streets suitable for both motorists and pedestrians; even most of the new residential districts (including Al-Mouhamadeyah and Al-Naseam) in Jeddah follow a similar pattern of planning. Newly developed districts (including Al-Mouhamadeyah and Al-Naseam) have been designed with the new grid form of multiple entrances and exits, wide internal streets that promote speedy driving in the interior of these residential districts, while again narrow pathways which are unsafe for pedestrians and the absence of cycle lanes discourage walking and cycling.

Respondents were also questioned about the forms and widths of the internal streets and footpaths. The choices in such questions were represented through sketches depicting the form of internal roads, street widths and footpaths and their components (e.g. planted verges). These illustrations provided the survey respondents with a visual image to refer to while responding to the questions and served to clarify the characteristics of the physical environment of the neighbourhoods in an easy to understand manner (see Appendix B).

Table 9.5: Residents' preferences regarding neighbourhood form

	Al-Mouhamadeyah dist. n=159	Al-Naseam dist. n=160	Total=319	Ranking
	Yes (%)	Yes (%)	%	
New grid pattern (current situation)	9.4	8.1	8.8	3
Cluster pattern	57.3	63.1	60.2	1
Curvilinear pattern	33.3	28.8	31	2

The results of Table 9.5 show that the current pattern of the districts, i.e. the new grid pattern, attracted the lowest preference at less than 10%. Over 30% of residents wanted

to live in curvilinear neighbourhoods, while the largest proportion, more than 60% of the total sample, opted for partitioned clusters with cul-de-sac streets.

A large number of the respondents expressed their dissatisfaction with the grid pattern and pointed out the safety concerns due to speedy traffic resulting from such a design.

9.7.1 Preferred Street Types

Respondents were also asked to choose from three street types: through streets (the current situation), non-through streets, and loop streets. The results tabulated below showed a similar opinion pattern to neighbourhood form, i.e. the existing form of the internal streets in both districts was liked by less than 10%, while 27% indicated their preference for the circular type. The majority (around 63%), however, opted for the cul-de-sac type of internal streets for their residential areas of Jeddah as they considered them secluded, calm and safe.

Table 9.6: Residents' preferred street type for their own residence

	Al-Mouhamadeyah dist. n=159	Al-Naseam dist. n=160	Total=319	Ranking
	Yes (%)	Yes (%)	%	
Through street (current situation)	10.1	9.4	9.7	3
Non-through street	62.2	64.4	63.3	1
Loop street	27.7	26.2	27	2

9.7.2 Widths of Streets and Footpaths plus Planted Verges

Table 9.7 illustrates the preferences of the sampled residents regarding the widths of internal streets and footpaths as well as the desirability of planted verges. Three choices were proposed to the respondents based on various combinations of wide and narrow streets and footpaths as well as the presence or absence of a planted verge to represent the current and proposed forms. Only 6% approved the current design of the internal streets. More than 33% wanted the internal streets to be narrower with wide pedestrian footpaths and space for green verges. The majority (more than 63% of the sample), however, liked wide internal streets accompanied by wide footpaths fringed with trees.

Table 9.7: Residents' preferences for street and footpath width plus planted verge in their neighbourhood

	Al-Mouhamadeyah dist. n=159	Al-Naseam dist. n=160	Total=319	Ranking
	Yes (%)	Yes (%)	%	
Wide paved street, narrow footpath at both sides without planted verge (current situation)	5.7	6.3	6	3
Wide paved street, wide footpath at both sides with planted verge	55.3	65	60.2	1
Narrow paved street, wide footpath at both sides with planted verge	39	28.7	33.8	2

9.8 Design Policies Preferred by the Respondents

The LSPs carry many design policies; however, most of these may not be implemented by organisers and developers due to lack of interest. Respondents were asked about five design policies present in the subdivision plans manual. The responses from both districts were similar, as shown in Table 9.8. The sequence of respondents' preferences, in descending order, was as follows: 97% of the sampled residents wanted the district design to encourage people to walk in a safe and pleasant environment. Next, 90% of residents preferred the design of the district to control the movement of vehicular traffic. Third, 82% of residents favoured design policies creating a residential district with roads having clear entrances and exits. Residential plans giving a distinct identity to the district and dividing the population into small neighbourhoods was favoured by most of the respondents (65% and 56% respectively).

Table 9.8: Residents' preferences for design policies within their neighbourhood

	Al-Mouhamadeyah dist. n=159	Al-Naseam dist. n=160	Total=319	Ranking
	Yes (%)	Yes (%)	%	
Distinctive identity for neighbourhood	66.6	64.2	65.5	4
Clear approaches and entry points for neighbourhood	83	82	82	3
Control of vehicular traffic within neighbourhood	91	89	90	2

	Al-Mouhamadeyah dist. n=159	Al-Naseam dist. n=160	Total=319	Ranking
	Yes (%)	Yes (%)	%	
Encouraging pedestrians through safe and enjoyable places to walk	95.2	98.8	97.1	1
Population to be divided into small groups within the neighbourhood	57.2	55.3	56.3	5

9.9 Preferred Timeframe for Provision of Public Services

A large number of the residents complained about the absence or late provision of public services and facilities. The researcher also noticed that development of various sites within the district was not uniform and certain facilities were given preference over the others during various stages of implementation of development plans (see Section 8.5.2). The sampled residents were offered four timeframes based on current and proposed options, in addition to a fifth choice which was left open to allow respondents to suggest a preference more appropriate for them.

Table 9.9: Residents' preferences for the implementation date of public services and facilities within their neighbourhood

	Al-Mouhamadeyah dist. n=159	Al-Naseam dist. n=160	Total=319	Ranking
	Yes (%)	Yes (%)	%	
Pre-sale development of major facilities	57.2	55.6	56.4	1
Development of major facilities within 5 years of sale of residential plots	23.3	24.4	23.8	2
Development of major facilities within 10 years of sale of residential plots	3.8	4.4	4.1	5
Development in multiple stages and in accordance with the requirements of the land users (current situation)	9.4	10	9.7	3
Other (specify)	6.3	5.6	6	4

In general, the preferences of the sampled residents in both districts were similar as differences were statistically non-significant. A majority of respondents (56.4%) expressed their preference for vital public services and facilities to be developed before

the sale of the residential units. They considered that waiting for the provision of services and facilities in the district was tiring, costly and irritating for the residents and possibly put off other potential buyers.

Around 24% of respondents indicated that they could wait up to five years for these services to be provided after the purchase of residential units. These residents stressed that the services and facilities should be developed early if not immediately after the allocation of residential plots. A limited number of the sampled residents (less than 10%) did not mind the current situation where the provision of public services and facilities would be phased chronologically according to the requirements of the residents. However, the low acceptance level meant that the majority of the residents rejected the existing land development practices in Jeddah.

9.10 Changing the Role of Developers Regarding Land Subdivision Plans

The conventional role of the developer is to stipulate the division of land into developed land plots for sale and undeveloped bare land for public services and utilities. However, the possibility exists to extend the role of developers regarding the planning and implementation of SR. The sampled residents were questioned about the acceptability to the community to extend the role of developers as well as the preferred additional roles to be assigned to them. A list of possible roles was proposed by the researcher with the option for an additional role to be proposed by the respondents. The resulting choices are shown in Table 9.10 to indicate the relative importance of each role according to the study participants.

A large proportion of the sampled residents, around 85%, agreed that the developers should be assigned additional roles in the development of the residential subdivision plans in Jeddah. However, the remaining respondents (15%) questioned the possibility of extending the role for developers by pointing out their limited capabilities as well as their lack of financial motivation as the key hindrances in the implementation of the proposed roles.

More than 70% of the total sample wanted the developers to develop the areas in an integrated fashion, i.e. the division of land and development of infrastructure and facilities. Most of the respondents favouring this option hoped that by vesting a broader

level of responsibilities in the developers, delays in the provision of services and facilities would be curtailed to a great extent.

The second choice, favoured by 47%, expressed such an outcome as the logical outcome of extended responsibilities specifically aiming at provision of such services. More than 28% of respondents favoured the option of assigning the additional responsibilities of maintaining the facilities in the district in a time-bound fashion. These respondents hoped that such modifications to the regulations would eliminate the environmental deterioration of the district in the hands of private constructors affecting the quality of life of the local residents.

A small percentage (14%) of the sample members wanted the developer's role to remain restricted to the division of the land and provision of roads, pavements, lighting and network infrastructure, as per their traditional role in Jeddah.

Table 9.10: Residents' preferences for developers' role in subdivision planning and development in Jeddah

	Al-Mouhamadeyah dist. n=147	Al-Naseam dist. n=132	Total=279	Ranking
	Yes (%)	Yes (%)	%	
Maintenance of neighbourhood for specified period of time	32.1	25	28.5	3
Full implementation and development of public services and facilities for neighbourhood	11.9	15	13.5	5
Implementation and development of some public services and facilities for neighbourhood	52.8	41.3	47	2
Subdivision of land plus provision of some infrastructure services only (current situation)	14.5	13.8	14.1	4
Full development of neighbourhood (residential units plus public services and facilities; or some of these, plus infrastructure network, plus maintenance)	73	70.6	71.8	1

9.11 Views on Evaluation and Participation Phases

The researcher also asked the respondents about the addition of a stage of public participation and evaluation of residential plans bringing regulators, developers and users together prior to the approval for residential plans.

As shown in Table 9.11, more than 75% of the sampled residents valued the importance of an evaluation phase and anticipated its benefits, such as the identification of residents' preferences and the resolving of potential issues, resulting in the amelioration of overall living standards in Jeddah's neighbourhoods.

Table 9.11: Residents' preferences for evaluation and participation phases to be included within the subdivision regulations

	Al-Mouhamadeyah dist. n=159	**Al-Naseam dist. n=160**	**Total=319**
	(%)	(%)	%
Evaluation phase	79.2	78.1	78.7
Participation phase	77.4	73.8	75.5

The percentage represents the overall proportion in favour of the new phases (**strongly like this** plus **would quite like this**)

9.12 Other Needs in Neighbourhood Areas

Finally, the researcher asked the sampled residents to list services which are required but not included in the SR, resulting in their absence. The concept from the findings is that residents are aware of SR.

As shown in Table 9.12, the list of desirable facilities and their rankings were common across the districts; hence, the results are discussed on an overall basis. There is a privacy ethos in Saudi culture separating women from men, limiting their participation in outdoor physical, recreation and socialisation activities. Therefore, male heads of households (more than 80% of respondents) would like women-only parks for the female household members, which is likely to be an extension of women's freedom in KSA.

Two-thirds (67%) of respondents expressed the need for a library close to their homes to motivate reading habits in the local population. More than 60% desired a dedicated

space for mourning rituals, which last for three days in KSA, as the current practice of holding such rituals in the streets creates traffic congestion and lack of sufficient parking spaces, leading to the closure of some streets adjacent to the place of mourning.

Over 57% of the sample wanted a football ground in the district. Given that football remains a popular sport in Saudi society, it would come as no surprise to find undeveloped residential plots being used as football pitches.

More than 50% of the sampled residents asked for cycle lanes on the roads, while coffee shops and swimming pools were desirable to 44% and 41% of the respondents, respectively. Finally, 37% of the residents identified the need for a special concourse for women and adolescent girls, linking recreational venues and schools.

Table 9.12: Residents' preferences for other services and public facilities in their neighbourhood

	Al-Mouhamadeyah dist. n=159		Al-Naseam dist. n=160		Total=319	Ranking
	(%)		(%)		(%)	
Parks for women only	77.4	1	83.1	1	80.3	1
Cycle and pedestrian paths	44.7	5	56.9	5	50.8	5
Dedicated area or hall for gatherings and mourning rituals	56	3	66.3	3	61.1	3
Library	62.9	2	72.1	2	67.7	2
Coffee shop areas	40.9	6	47.5	6	44	6
Swimming pools	36	7	45.6	7	41	7
Football (soccer) fields	53.5	4	61.9	4	57.7	4
Pathways for women only	32.1	8	42	8	37	8

9.13 Conclusion

This chapter revealed that residents' preferences of public and other services could be ranked (in descending order) as parks/playgrounds, green spaces, mosques and boys' and girls' primary schools. Also in descending order, they desire to utilise mosques, parks/playgrounds and primary schools at a walkable distance at central locations within the district (not at the district boundaries). Moreover, they expressed their willingness to walk to these services if sufficient, convenient, well-connected and safe walkways are provided. Furthermore, they revealed their wish for each district layout to be designed

in a unique manner with traffic-calming measures, a limited number of entrances and exits, and green and well linked pathways of suitable widths. Residents seek implementation of these facilities in good time, together with popular consultation and participation. Sufficient provision of open and green spaces for female household members was also among the most important preferences, followed by an adequate number of libraries and space for performing mourning rituals in each district. Unfortunately, such preferences are neither well accommodated in the SR nor by what the developers offer; hence, the need of the day is to include all aforesaid elements in the regulations and in implementations.

CHAPTER TEN: RESIDENTS' PERCEPTIONS AND RELOCATION PREFERENCES: ANALYSIS OF UNCONVENTIONAL CASE STUDIES

Chapter 10: Residents' Perceptions and Relocation Preferences: Analysis of Unconventional Case Studies

10.1 Introduction

This chapter comprises interviews with residents. Section 10.2 clarifies the knowledge of residents about current subdivision regulations (SR), while Section 10.3 discusses residents' perceptions of conventional developers and their role in land subdivision and planning in Jeddah. Section 10.4 examines residents' readiness to relocate from their present neighbourhoods to others in Jeddah. In Section 10.5, the more desirable neighbourhoods (Durat Al-Aroos, Al-Mesarah, Al-Bewatat and Biyoot Al-Sharq) are taken as case studies, the data collection method is described, their socio-economic manifestation is explained, and individuals who worked on their development are identified. Importantly, this section also explains the unique aspects of how the neighbourhoods emerged and why they differ from conventional subdivision districts like Al-Mouhamadeyah and Al-Naseam. Section 10.6 discusses unconventional developers' views of the case studies. Developers discuss the use of conventional land subdivision practices in Jeddah that typically yield unfinished built environments unfit and unsafe for inhabitants. The developers offer critical feedback on the Jeddah Municipality's current SR that produce such uninhabitable results. Section 10.7 contains the conclusions of this chapter.

10.2 Subdivision Regulation and Residents' Perceptions

The survey questions regarding the existence and development of SR in KSA have received similar answers from the responders: only one out of four respondents said they were aware of the regulations and procedural changes in the past 30 years.

Table 10.1: Residents' perceptions of subdivision regulations

	Al-Mouhamadeyah (N=159)	Al-Naseam (N=160)	Total (N=319)
	Yes (%)	Yes (%)	%
Existence	23.9	25.6	24.8
Evolution	22.6	28.9	25.8

Source: Fieldwork, Jeddah, December 2009 to February 2010

The SR contain design policies and planning criteria directly relating to residents, intended to be achieved in those residential subdivision plans submitted for approval. These include the following statements:

- The subdivision plan should be in the form of an adequate physical environment to provide the residents with comfort and safety
- The design should help promote a sense of responsibility in the minds of the residents towards the residential district
- Pedestrian traffic should be encouraged in the residential district in safe and agreeable places
- The characteristics of the local architectural heritage in the design of the residential district should be observed based on the needs of the residents (MOMRA, 2003:3).

These regulations represent only a fraction of the copious material formulated in the manual. These quotations point, either directly or indirectly, to some repeated words such as 'residents' (users of the residential district). These statements also indicate that the residents of the district are entitled to enjoy certain rights, which should be embodied by the residential plan, and which are to be approved and then implemented by the developer. However, most of these rights or duties have not been observed in the residential areas completed in Jeddah (see Chapter 7).

10.3 Respondents' Perceptions of Developers' Role

The developers' role was studied by the researcher through the following perceptions:

1. Implementing LSPs without completing whole districts and providing only a few services.
2. Generating high revenue for the developer, rather than developing distinctive districts in Jeddah.
3. Obtaining approval from the municipality, implementing the LSPs, and selling the residential plots to users.

Table 10.2: Residents' perspectives of developer's role in land subdivision

	Al-Mouhamadeyah (N=159)	**Al-Naseam (N=160)**	**Total (N=319)**
	Yes (%)	Yes (%)	%
Incomplete development of facilities	78.0	69.4	73.7
Focusing on high revenues	76.1	83.1	79.6
Implementing the subdivision plans and selling the plots	20.0	23.0	21.6

Source: Fieldwork, Jeddah, December 2009 to February 2010

Most of the sampled individuals regard the developer as a mere profit-maker responsible for the incomplete implementation of land subdivision development plans. Developers were held responsible by the respondents for the lack of basic facilities and provision delays, as in the cases of the Al-Mouhamadeyah and Al-Naseam districts. Only one out of five respondents were aware of developers' responsibilities in the execution of the subdivision plans: the approval of the plan, the provision of infrastructure services and sale of plots to residents.

10.4 Residents' Relocation

More than 59% of respondents from Al-Mouhamadeyah and 41% from Al-Naseam indicated that they were not interested in relocating. When asked why, it emerged that this lack of interest was fear-based. Residents were afraid of finding public services, such as parks or schools, were either unavailable or further away. Residents also harboured fears surrounding safety, particularly pedestrian safety, due to the inadequate number of pedestrian footpaths in most other residential districts of Jeddah. Their general perception was that other places in Jeddah offered a similar poor quality environment to the one they currently experienced, and there was little point moving to somewhere no better.

Of the respondents interested in relocating, 64% indicated one area they are interested in, 27% specified two areas, and 9% picked three different areas as possible candidates for relocation (see Table 10.3).

Table 10.3: No. of areas considered for possible relocation in Jeddah

	Al-Mouhamadeyah (N=65)	**Al-Naseam (N=95)**	**Total (N=160)**
	Yes (%)	Yes (%)	%
One location	64.6	63.2	63.8
Two locations	24.6	29.5	27.5
Three locations	10.8	7.4	8.8

Source: Fieldwork, Jeddah, December 2009 to February 2010

The residential projects most frequently listed as possible choice(s) for relocation included Durat Al-Aroos; Al-Bewatat; Beyoot Al-Sharq; and Al-Masarah (see Figure 10.1).

Notably, the respondents did not mention any conventionally developed residential areas resembling Al-Mouhamadeyah and Al-Naseam districts. Rather, they showed a strong preference for areas which were fully developed. The presence of fences and gates are a key feature in the first three preferences mentioned. The Al-Masarah project enjoys a strong reputation due to positive media coverage for its award-winning design and implementation.

Given residents' relocation preferences, the question that arises is whether current regulations relating to land subdivision are capable of producing plans comparable to the models preferred. Does Jeddah Municipality have the ability, will and motivation to compel developers to develop residential areas comparable to the preferred designs? Is the municipality aware of the popularity of the model residential areas? Do conventional developers have the motivation and amenability to develop residential subdivision plans that compete with these models in popularity, instead of the conventional types developed by the majority of developers? How aware are developers of citizens' desires and preferences?

10.4.1 Private Communities (Unconventional Developments) in the Literature

In the literature of subdivision development types there are several authors such as e.g. Blakely and Snyder (1997b), Dowling and McGuirk (2006), Ben-Joseph (2005), Bajracharya et al. (2007), and Cheshire et al. (2010), who have indicated the proliferation of this kind of development in western societies. They labelled them as

gated communities, or Master-Planned Estates, or Master-Planned Private Settlements, and/or Common Interest developments (CIDs). Such private communities are similar to the respondents' choices (Durat Al-Aroos, Al-Bewatat, Beyoot Al-Sharq and Al-Masarah) in terms of their character, content and development approach (see Section 10.5.1). For example, in North America, it has been found that private communities are rapidly being popularised there. In the US, about 47 million Americans lived in one of these communities (Community Associations Institute, 1999, cited in Ben-Joseph, 2005:134). Ben-Joseph commented about this phenomenon and about the advantages of this type of development:

> *The last part of the 20th century witnessed record growth of private residential communities. Collectively referred to as common interest communities (CICs) or common interest developments (CIDs), these communities rely on covenants, conditions and restrictions to privately govern and control land use, design decisions, services and social conduct. The communities own, operate and manage the residential property within their boundaries, including open space, parking, recreational facilities and streets. Although CIDs have historically been the domain of the affluent, they are now becoming the choice both suburban and urban residential development. Taking the form of condominiums, cooperatives and single- and multi-family homes, gated and non-gated private communities are spreading, world-wide, across diverse economic and social classes* (2004a:131–2).

In Latin America, private communities (unconventional developments) are rapidly being popularised; several authors such as Coy (2006), Janoschka and Borsdorf (2006) presented an overview of the spread of private neighbourhoods in city regions since the 1980s. In China the situation is like Latin America; after the economic and political reforms in 1980s, new kinds of unconventional developments emerged in order to improve residents' security and define their social status (Miao, 2003; Webster et al., 2006). In Russia, Lentz (2006) showed that private communities first appeared in the mid-1990s; since then their numbers have consistently been rising.

Private communities, through their developers, provide a new way of cooperating in cities. Governance is very local; there is a diversity of services and facilities priced by assessments, and the services provided are of high quality and often matched to residents' preferences (Webster, 2002; Frantz, 2006; Glasze et al., 2006a). Private communities are distinguished from other land subdivision development practices, especially in terms of content and development approach. There are five main elements

to private communities: common ownership of real property, private land-use controls, private government, master planning and, with increasing prevalence, the use of various security features (Ben-Joseph, 2004a; McKenzie, 2006; Glasze et al., 2006a). Ben-Joseph (2004a) concluded that all private communities are not developed equal and perfect, but in terms of their planning and design efficiency, the utilisation of spaces and the integration of social and environmental amenities in one place, they illustrate the shortcomings of the current SR that are applied in the approval of typical subdivisions.

Private communities are considered by many citizens in several places in the world as a novel idea (Glasze et al., 2006b). Some authors mention that growing criminality is often considered as the single cause for private estates. This view may or may not be correct according to Reuband (1992, cited in Glasze et al., 2006b:1), who found that there is no clear relation between the level of criminality and feelings of insecurity. Other authors such as Low (2003) found that there may be little crime reduction involved. One research study in South Africa discovered that there was a rise in the number of private estates due to the increased crime rate and perception of insecurity (Jurgents and Landman, 2006). Indeed, security is one feature or service that the users want and think of in connection with any development type (whether conventional or unconventional subdivision plan); generally it is packaged with other services and presented as an advantage. Now, security services have become viewed as a feature that increases the housing value, which contributes to their popularity across the world (McKenzie, 2006).

In terms of criticisms of private communities, the literature highlights that these estates, particularly gated ones, are also the target of social critics. Some authors see them as places for the rich and elites only: they can physically segregate themselves from others in the city such as the lower and middle classes (Guterson, 1992; Marcuse, 1997, cited in Ben-Joseph, 2005:136). Other authors see the urban fear of the rich driving them to live behind the gates of private communities; according to Low (2001):

> *Gated communities respond to middle class and upper-middle-class individuals' desire for community and intimacy and facilitate avoidance, separation, and surveillance* (2001, cited in McKenzie, 2003:224).

To sum up, Ben-Joseph (2004a) concluded that the spread of private communities flag up many issues that need to be tackled: the most important one is the realisation that the

current SR must allow and promote a variety of developments. He added that unconventional projects should be seen as a catalyst to change or revise current SR and their standards in North America.

The next sections present four case studies of these private estates identified from the survey data as places in which respondents would prefer to live due to the better quality of the public realm and to the better/guaranteed provision of necessary services.

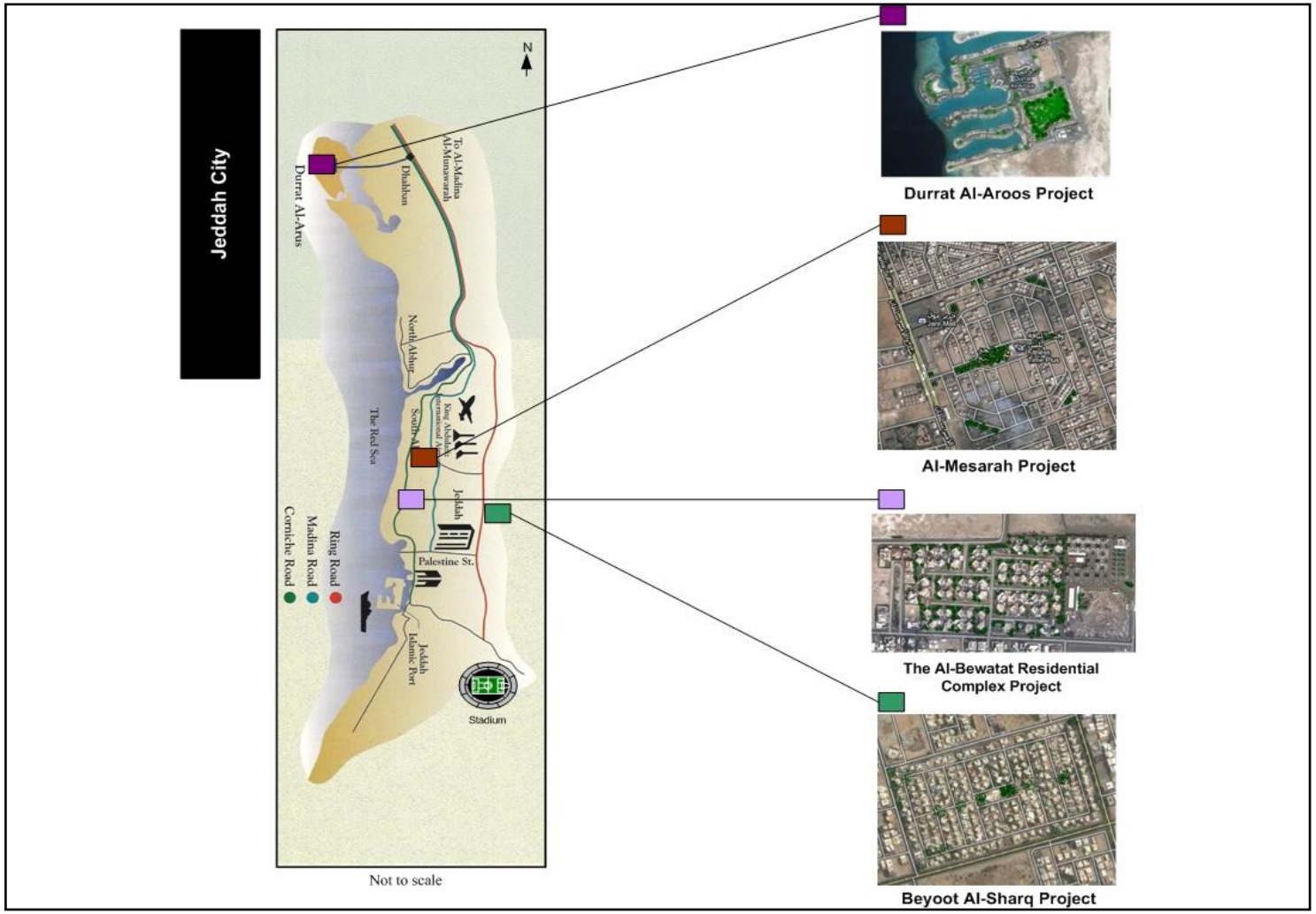


Figure 10.1: The residential projects most frequently named as possible relocation places in Jeddah by sample members
Source: Fieldwork, Jeddah, December 2009 to February 2010

10.5 Data Collection Process: Unconventional Developments

Four semi-structured interviews were conducted with executive managers of the real-estate companies who developed the preferred residential schemes. Each interview took 40 to 50 minutes. A number of additional informal discussions aided the collation of developers' views. In addition, the researcher visited each project to observe and capture photos about the quality and characteristics of these areas, and the websites of companies have visited to collect additional information about the projects. The following sections critically examine each settlements' development, and discusses developers' views.

10.5.1 Durrat Al-Aroos: Case Study 1

10.5.1.1 Developer's Profile

The Saudi Real Estate and Tourism Development Company is a subsidiary of the Dallah Al Baraka Group. It is one of the leading companies in the field of real-estate development in KSA, with its headquarters in Jeddah. Within the company, there are several departments, including marketing and sales, technology and engineering, operation and maintenance, and legal and finance departments. The company's development team includes expertise in urban design, urban planning, commercial residential development, residential management, and operation and maintenance management and marketing of development projects. Since its establishment, the company has embarked on the development, marketing and operation of a large number of unique residential, commercial and office projects. It has worked on tourist-oriented projects both inside and outside KSA, with a total number of more than 25 projects.

10.5.1.2 Project Profile

Durrat Al-Aroos, or the Bride's Jewel, is a residential tourist project off the coast of the Red Sea, approximately 30 minutes by car from King Abdul Aziz International Airport. Covering 13,000m^2, the project has three phases. The initial phase contains residential and recreational mixed-use, spread over 2,500m^2, and has been completed. The expansion phase is currently in progress, covering an area of 7,000m^2, focusing on the development of several islands of low residential density intended for individuals and

real-estate investors. The third phase will begin in 2015, containing schools, commercial buildings and offices over an area of 3,500m^2.

The project's first phase allocates 40% to residential use, while the remaining 60% includes a wide range of services and facilities such as extensive networks of streets, paved roads and footpaths. The residential area has been divided into more than ten complexes including Dream Island, Marina Village, Golf Village, Dreamy Village, Red Village and Freedom Village. Each gated complex has its own services and facilities as well as a unique architectural plan providing a diversity of residential environments.

10.5.1.3 Public Services, Facilities and Infrastructure

Each complex contains a park, mosque, playground and car park. The central area contains a large mosque, public park, playgrounds, car parks, a hall for community meetings and celebrations, an equestrian club, golf course, health clinic, and an office building for management, maintenance and project operations, as well as a security and safety department. The commercial area was developed within Marina Village. It contains restaurants, cafés, shops and catering services. All of these facilities have been linked to a network of internal pathways and streets facilitating the movement of pedestrian and vehicular traffic respectively. The pedestrian footpaths are wide and shaded, with a planted strip separating the street and the footpath. There is a network of pathways linking the marina area and the commercial centre of the project with the remainder of the project's residential areas. A number of traffic-calming tactics have been employed such as pedestrian crossing areas, traffic lights and speed bumps. Each residential complex has a set of gates, guarded by the security management personnel, to prevent uninvited people from entering the area.

In terms of infrastructure-based services, an electricity plant, a desalination plant, a sewage treatment facility and rainwater drainage facilities are included in each residential complex. In addition, a system of fibre optic cables has been installed to connect the residents with telephone and television networks and the internet.

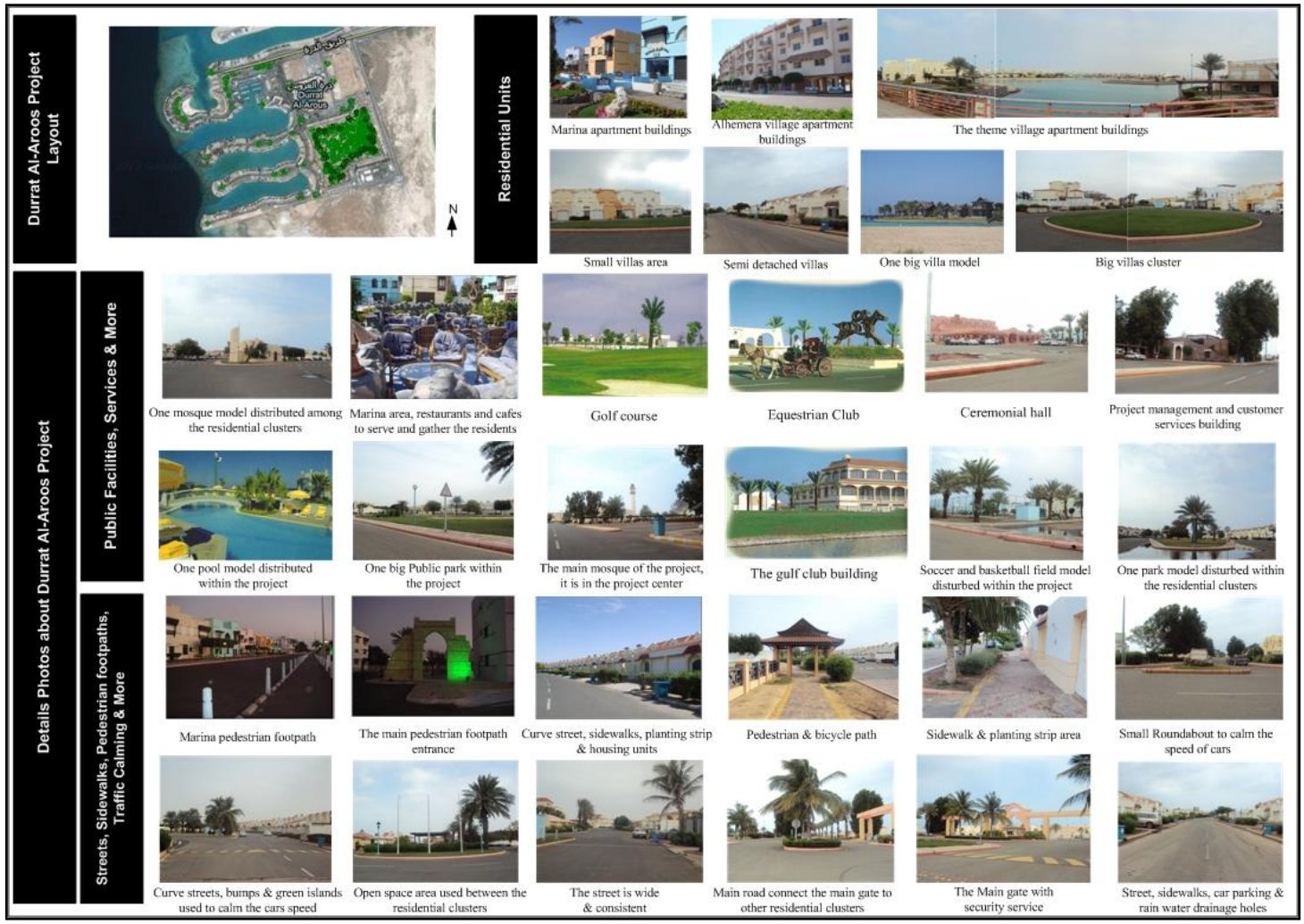


Figure 10.2: Durrat Al-Aroos residential project: diversity in housing units, public facilities and services, plus street and pedestrian footpath networks. (Source: Second phase of fieldwork, Jeddah, December 2010 to January 2011)

Management and maintenance of the project areas is conducted by a project management team. Residents pay annual fees from 10,000 to 15,000 Saudi riyals (SR) annually (approximately £2,000–3,000) for the operation and maintenance management of the project. A residents' association is also in place to supervise the management of the project and facilitate communication between residents and the complex's management.

10.5.1.4 Project Background

The project's history and early phases of development are described by the executive director of the project. The Durrat Al-Aroos project idea emerged before 1990 when the company acquired land located within the borders of Jeddah. Considering the large scale of the project, work was carried out in multiple planning and development phases.

During the pre-planning stage, a number of studies were carried out to analyse environmental issues. Issues studied include the movement of pedestrians, cars and boats. Marketing studies additionally focused on the needs and preferences of different age groups within targeted residents and tourists.

The planning was assigned to the company's technical and engineering department. A group of consultants were assigned to gather feedback from the public about the initial design and planning proposed. These opinions were collated and utilised in the preparation of the final design. A mix of design standards and policies based on conventional development and 'new urbanist' development were used to finalise the plan.

According to the project's developer, obtaining the necessary permits for the project took two years. There were significant delays reaching final approval as many planning and design ideas, such as the specifications of the streets and paved roads proposed for the project, had to be revised because they lacked conformity with the design and planning requirements detailed in the manual of land SR approved by Jeddah Municipality. On the other hand, there were no regulations for innovation and creativity, such as landscaping including planting, streets from footpaths, traffic controlling requirements, or specifications relating to open spaces and their hierarchies. Such deficiencies in regulation required revisions to the original plans and the overall bureaucratic nature of procedures negatively affected the project's budget and schedule.

The construction phase lasted almost three years, and involved several companies specialising in the implementation of the LSPs. During this phase the following were accomplished: land division; residential plot preparation; construction of street and footpath networks; erection of lamp-posts; construction of power plant, water desalination unit, and wastewater treatment plants; development of parks, playgrounds, mosques and recreational facilities; construction of administrative blocks and commercial buildings (available to rent for commercial activities), clinics, equestrian and golf courses, and main gates; and the construction of several model residential units.

Marketing and sales began after 40% of construction was complete. The company's marketing and sales team launched a huge advertising campaign to target high- and medium-income Saudi families by inviting them to observe the progress of the work and assess the quality of model residential units on display. Marketing lasted more than three years. Although this project is a *high end solution* yet it became the way forward for all developments which could be done at lower price and as a low end solution. The first purchasers moved into their residences in the beginning of 1997, and by that time all the public services and facilities were fully operational.

Today, the company provides round-the-clock administration and management of the project facilities. A specialist team has been assigned to answer customer queries and resolve any issues in partnership with the residents' association.

10.5.2 Al-Mesarah Project: Case Study 2

10.5.2.1 Developer's Profile

SEDCO, the Saudi Economic and Development Company, is a leading private wealth management organisation. It specialises in the producing, management and operation of real-estate assets. It was founded in 1976, and grew from a small trading and construction contracting business in Jeddah to become one of KSA's largest conglomerates. With increases in shareholder numbers and growth in the company's property portfolio, a separate entity specialising in real-estate development was established in 1995 under the name of the Saudi A'Amar Company. Since then, the company has developed more than 15 projects inside and outside Jeddah.

10.5.2.2 Project Profile

The Al-Masarah project is located north of Jeddah, about 5km from the King Abdul Aziz International Airport. The subdivision plan is characterised by low residential density and primarily comprised of low-rise residential villas (i.e. not higher than two floors) with annexes.

The total area of the Al-Masarah residential subdivision plan is more than a million square metres. More than 40% of the total land has been allocated to public services and facilities, while the rest has been assigned to residential use. The project contains more than 700 land plots, with an average area of 606m^2.

The Al-Masarah plan is surrounded by a group of other residential districts, including the Al-Mohammediah residential district, north of the plan area. The district is encircled by the Prince Sultan commercial road. This subdivision plan has four main gates dedicated for residents' use. The purpose of these gates is to limit the entry of strangers so as to maintain calm conditions and facilitate the residents' comfort, as well as increasing traffic safety for pedestrians and cyclists.

10.5.2.3 Project Background

Al-Masarah residential plan development began in 1999, after the Saudi A'Amar Company bought the land for the project. The company's owners wanted to depart from conventional residential subdivision plan development by developing public facilities (e.g. parks, playgrounds and mosques) and infrastructure networks (water supply, electricity, telephone, sewage and rainwater drainage) prior to the sale of residential plots.

In the preparatory stage, the market research, technology and engineering, and marketing departments of the company conducted a series of studies to analyse previously implemented residential subdivision plans in northern Jeddah. The studies collated information about the residents' preferences on the provision of services and facilities, and assessed trends in housing to best meet demand. They worked to make sure the availability of plots closely matched the number of potential buyers.

These studies, plus others, incurred further financial costs for the company, which were calculated as part of the final cost of the project and passed onto the householder at the

point they bought the house. During the studies, the company's executive director reported that the cost of development per square metre of other developments, i.e. conventional residential subdivision plans lying close to Al-Masarah, averaged 40 SR. The average cost of conventional development, according to the executive director, is insufficient for the provision of a residential subdivision plan of high quality; hence, this creates challenges to find people willing to pay. Based on this rationale, the company was keen to increase development costs in order to improve the quality of components and elements of the subdivision plan developed. Thus, the total development cost exceeded 90 SR per square metre. The inflated development price was caused by providing public facilities, conducting environmental and hydrological studies for soil preparation, soil preparation, and provision of public service infrastructure. The additional work was done entirely at the expense of the company who believed the added cost would improve the quality and thereby the desirability of their development. The above cost sometimes exceeds up to 120 SR or more, depending on specific situations.

The additional services provided are not required by the SR, nor the authority responsible for approval of residential plans. Moreover, there are no requirements within the regulations related to networks of rainwater and wastewater drainage. The usual procedure is to provide a septic tank for wastewater collection in each residential unit intended for development, while rainwater is left to collect on the residential streets, from which it is subsequently removed by means of specialised water extraction vehicles, especially after heavy rains. Alternatively, the water is left for evaporation or absorbed by the soil under the asphalt layer.

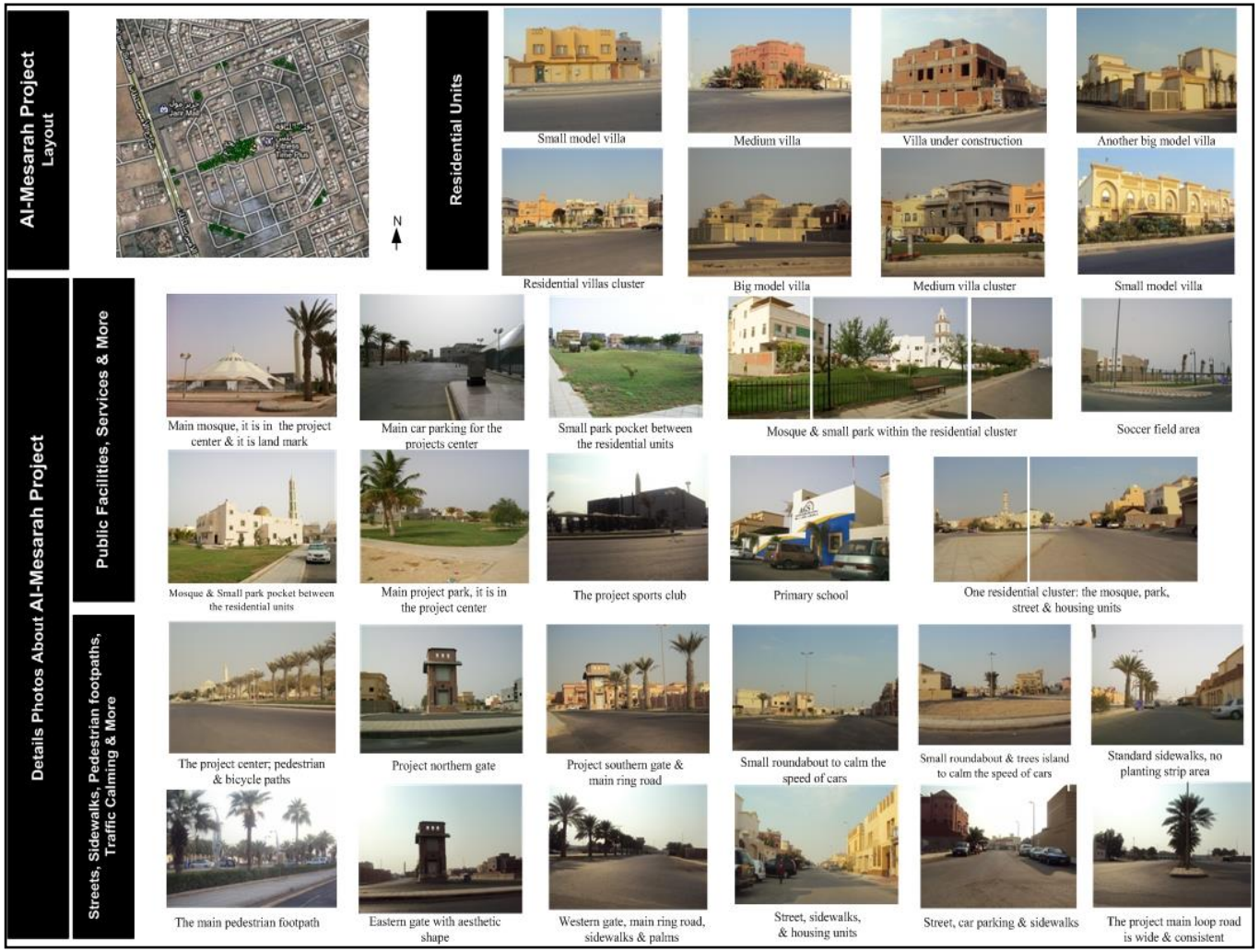


Figure 10.3: Al-Mesarah residential subdivision plan; housing units, public facilities, services, street network and pedestrian footpath network

During the marketing phase, the Saudi A'Amar Company offered land plots for sale directly to individuals who were willing to develop the residential units themselves and live in the district. There was a deliberate effort by the company to prevent the sale of these plots to real-estate speculators, for fear they would employ delay tactics in order to monopolise the market. The marketing of the residential plan took less than six months and the project achieved a number of awards for excellence in the field of development of residential projects in Jeddah. 'This had a very significant effect on the local residents and they developed a sense of belonging', claimed the executive director of the company.

After the sale of the project land plots, the company maintained responsibility for the maintenance and operation of the subdivision plan for two years. It was responsible for the development of all public services and mosques within the plan area. After two years, the company handed over some of the subdivision plan area's responsibilities to Jeddah Municipality, who then became responsible for the cleanliness and maintenance of the project. Currently, the company continues the running and maintenance of the wastewater treatment plant that was constructed under the car park in the eastern part of the plan area. The company director has also explained that the company intended to form a residents' association that could take over control of the management and operation of the project in future.

10.5.3 Al-Bewatat: Case Study 3

10.5.3.1 Developer's Profile

This project is being developed by the Urban Development Company (UDC), which was founded as a private company by the engineer Abdul Aziz Abdullah Kamel in 1990. Since 1999, the company has been converted into a limited liability company owned by Kamel and his family members.

The company practises a modern approach to Islamic architecture, having completed 14 projects in Jeddah. Their work includes the Al-Bewatat project, which was well received by this study's respondents.

10.5.3.2 Project Profile

The Al-Bewatat project is located within the Al-Hawamat residential district, about 10km from King Abdul Aziz International Airport. The total project area is more than 80,000m^2, with more than 50,000m^2 allocated to residential use. Forty per cent of the area is public facilities, leaving room for 67 units of residential villas. The villas do not exceed two storeys, with floor areas ranging from 750 to 1,500m^2. The residential component was completed in 1995, and the population density has remained low.

This project is the first of the private-sector projects in Jeddah to win an architectural project award from the Arab Cities Organization. The project is considered to be among the first residential projects created conforming to the needs and privacy requirements of the Saudi family in general, and the Hijazi family in particular. It was designed based on social, climatic and aesthetic considerations and provides security and safety elements that encourage pedestrian movement.

The project provides a range of services and public facilities, such as parks for children, sport club, pedestrian footpaths, a hall for events and ceremonies, spacious non-intersecting streets, car parks, service centres, and special gates for vehicular access (see Figure 10.4). The project can be described as a fashionable and integrated residential environment, set up to provide residents with tranquillity and peace of mind and a sense of social amity and good neighbourliness. This project, according to the company's executive director, embodies accurate construction, quality maintenance, and the use of building materials appropriate to community values and local climate.

10.5.3.3 Project Background

The preliminary work related to the project began before 1990, as UDC already owned a large piece of land overlooking King's Road. The company conducted several studies related to residential areas in Jeddah to better understand existing patterns and opportunities. They learned that:

- Most areas developed for residential use are in different areas from workplaces and recreational facilities;
- The residential plots were offered to clients prior to the development of residential units, and the provision of services and facilities;

- The residential plan discourages walking, thereby negatively affecting the development of social relationships;
- Important environmental aspects such as orienting the streets and buildings in the direction of the sea breeze have been ignored in the planning and designing of the residential areas. The developers have little interest in the district after the sale of the residential plots, leaving the maintenance and management to Jeddah Municipality;
- The residential districts do not take into account Islamic design standards and policies, particularly with respect to the design and shaping of the residential units.

An excessive number of vehicle entrances and exits were responsible for traffic jams in various neighbourhoods. Based on these findings, the development of this project was carried out in two phases. Phase I focused on the development of the residential complex having a range of services and recreational facilities. Phase II concentrated on the development of a sophisticated office complex for businessmen with a wide range of office spaces for sale or rent. Therefore, the overall target population were those with middle to high incomes who wanted to own a home in the vicinity of their work.

During Phase I, the company embarked on development by dividing the area into land plots with streets aligned in an east–west direction, in line with that of the dominant sea breeze. Coupled with lesser exposure to sunlight, such an orientation helped to reduce energy consumption. Departing from the traditional pattern of residential units, the shape of the residential blocks was determined by privacy considerations. The *roshan*, a historic architectural window feature, was also used to cover the windows of residential units, giving them better privacy and aesthetic appeal (see Figure 10.4). Access to the district was limited by the no through road network pattern, as well as through the erection of gates for entry and exit via the main road. The whole district was linked by footpaths and paving designed to encourage walking (see Figure 10.4).

Figure 10.4: The Al-Bewatat residential complex project; housing units, public facilities, services, streets, pedestrian footpath network and elements of older architecture

Work on Phase II started at the end of 1994. The marketing and sale of office units was completed at the end of 2002. Similar to the design of the residential area, the offices were also oriented in such a manner as to allow better wind circulation and reduce sun exposure. The building facades were covered with local stone, also used in the houses of old Jeddah. The stone is well-suited to the humid climate and provides additional thermal insulation. The office complex is linked to the residential area by footpath.

While the innovative project designs helped create better living conditions and reduced energy consumption, the company faced some problems in obtaining the necessary permits for construction due to the unusual design. The approval procedures took more than 17 months to complete, causing a considerable delay in the marketing of the project. The studies prepared and the development of infrastructure services and facilities design innovations were not acknowledged by Jeddah Municipality's officials.

The operation and management of the project depends upon the homeowners' association working with the operation and maintenance department of UDC. Owners of the residential and office units pay an annual fee of more than 15,000 SR for the maintenance, security, safety and cleanliness of the project infrastructure and facilities, which is considered to be affordable in the developers' view.

10.5.4 Beyoot Al-Sharq: Case Study 4

10.5.4.1 Developer's Profile

The Beyoot Al-Sharq residential project was developed by the Saudi Real Estate Development Company (SREDCO) in Jeddah, affiliated to the Alesayi Investment Group (AIG). The company was established in 1990 with the purpose of developing the company's assets into residential and commercial projects in Jeddah. The company has developed more than 15 projects in Jeddah.

10.5.4.2 Project Profile

The Beyoot Al-Sharq residential project is located in eastern Jeddah, in the Al-Samer residential district, about 12km from the King Abdulaziz International Airport. The Alesayi group acquired the land for the project in 1988. Development work started after the founding of SREDCO in 1991. The total project area was less than one million square metres, of which more than 35% of total area was allocated to public facilities

(e.g. parks, playgrounds, mosques, special fitness centres, celebration halls, streets, and footpaths). The remaining project land area was divided into land plots of various sizes (300, 600 or 900m^2). The project's residential density is low, and the buildings permitted are residential villas, two floors high, with an annexe (see Figure 10.5).

10.5.4.3 Project Background

The story of the development plan of Beyoot Al-Sharq residential project started in 1991. During that period, the company prepared several important studies prior to beginning the process of developing the project. The most prominent among these studies was the study of a sample of low-density residential plans in the north and east of Jeddah. The company also embarked on the study of preferences and wishes of a large section of the population renting residential units in Jeddah. The study targeted the staff of certain government sectors and major companies, such as employees of Saudi Arabian Airlines, ARAMCO and King Abdulaziz University, and the customs officers at King Abdulaziz Airport. The investigations discovered that conventional subdivision suffered from a number of issues:

- Residential subdivision plans do not require development of residential units by the main developer; rather, the subdivided land is sold to users;
- Residential subdivision plans do not have space allocated for public facilities and their development is not required;
- The residential subdivision plans under study failed to use a no through road system in the process of network design and street planning;
- There are no development guidelines dealing with building appearance, leading to a lack of visual consistency, particularly as individuals develop their land plots;
- Only medium- to large-sized land plots were created, thus limiting spatial and economic diversity within the district;
- The residential plans do not encourage pedestrians to walk or cycle;
- The residential plans do not take into account security, including the prevention of strangers from accessing the district;
- The project plans do not furnish users with public services and facilities prior to their development of the residential units.

Regarding the study of the targeted population's preferences, the company discovered that a large proportion of residents:

- Would like to own a residential unit in a ready-to-move-in form;
- Do not have the necessary funds in full to purchase the land and immediately develop it, but there are no financing options such as mortgages available to them;
- Would like to select from several unit options, especially in terms of the location, size, floor plan, and finish;
- Would like their residential district to have secure entry and exit gates rather than multiple access points; and
- Would like the design of the residential district to encourage and facilitate walking and cycling.

The executive director directly referenced the results of these studies, which were utilised in the project's organisation, design, planning and development. During the design of the project, a specialist expert in the field of urban design from King Abdul Aziz University in Jeddah was consulted. Professor Mohsen Farahat worked with the company as an adviser on the technological, design and planning aspects of the project. He was also responsible for the final design and planning concept of the Beyoot Al-Sharq residential project.

The project's key design principles include:

- Use of locked gates to reduce the frequency of entry and exit by non-residents (see Figure 10.5);
- A no through roads system (see Figure 10.5);
- Pedestrian pathways for pedestrians' and cyclists' use;
- Provision of green space and playgrounds (see Figure 10.5);
- Central connections to a pedestrian pathway separated from vehicular traffic;
- A community hall for ceremonies (see Figure 10.5);
- Environmental aspects, leading to the orientation of residential plots and streets to take advantage of the natural direction of the breeze, and to provide protection from the heat of the sun for the sake of energy efficiency;
- Provision of five different unit floor plans for built diversity and to better meet buyers' preferences (see Figure 10.5);

- A choice of finishing materials for the residential units;
- Various prices fixed for residential units.

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- Provision of five different unit floor plans for built diversity and to better meet buyers' preferences (see Figure 10.5);
- A choice of finishing materials for the residential units;
- Various prices fixed for residential units;
- Customers were offered the option of selecting the land plot, finishing materials, and financing of the unit.

The company encountered difficulty obtaining the construction permits for the project. The problems, according to the executive director, include:

- It also had no standards relating to the no through roads or pathways for walking and cycling, or for the provision of a hall for celebrations and mourning rituals, planted areas and locked gates;
- There were multiple administrative procedures with no flexibility, along with a lack of specialised skills within the administration – factors which contributed significantly to delays in the approval of the residential plan; and
- The administration of permits caused a 15-month delay in the approval of the project, which significantly affected the project's budget. The budget impacts caused increased development costs and ultimately increased residential units' prices.

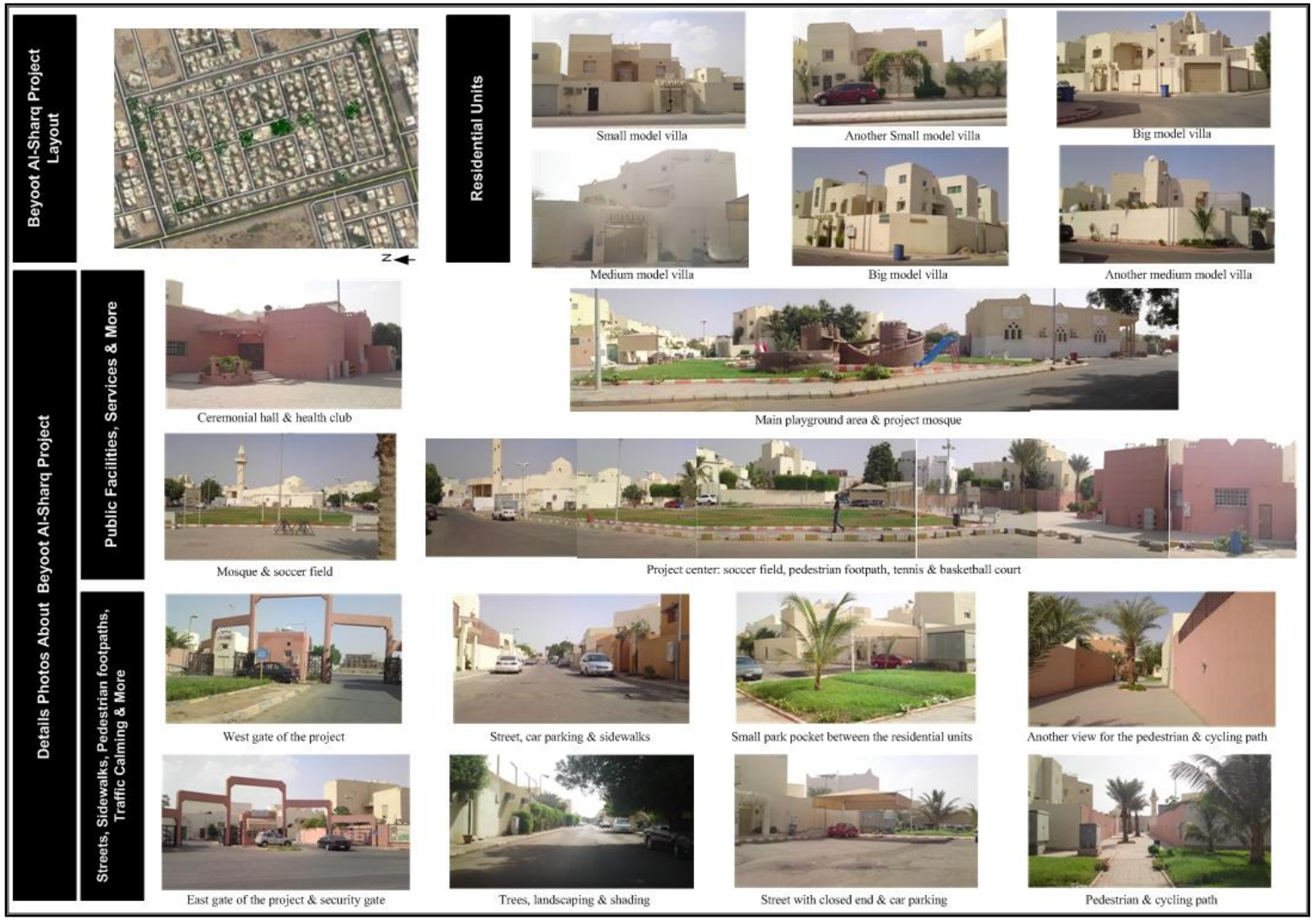

Figure 10.5: Beyoot Al-Sharq residential project; housing units, public facilities, services, streets, pedestrian footpath network, etc.

The implementation and development of the residential subdivision plan started after the final permits had been issued. The developer divided the subdivision plan area into plots of various sizes for construction, and demarcated all the internal streets and all infrastructure networks. The central part of the project was developed as well as land set apart land for development of public facilities (i.e. central park, children's playgrounds, ceremony hall, tennis court, football pitch, fitness club). Land was also set apart for the main mosque and the pedestrian and cycling pathways connecting the southern area to the northern. The project's gates were installed and five unit models were built to show to prospective buyers.

A year after the start of implementation, the marketing and sales team launched an advertising campaign in the newspapers. The same team addressed the targeted population mentioned earlier, and invited them to visit the project and its model villas. This period was one of the project's most successful periods, as reflected in the sales volume. The marketing phase of the project took more than two years, and targeted a large number of Saudi families whose aspirations the project was able to meet.

The operation and project follow-up is carried out by both the homeowners' association and the SREDC maintenance department. The owners of the residential units pay an annual service charge in the range of 8,000–10,000 SR to cover the expenses of maintenance and security within the district.

10.6 Perceptions of Developers Using Unconventional Methods

Semi-structured interviews with non-traditional developers working in Jeddah were conducted. The non-traditional developers have created unique residential areas distinct in Jeddah, introducing innovative and creative methods in the organisation, planning, design and development of residential areas in Jeddah.

10.6.1 Residential Subdivision Plans in Jeddah

All the development executives interviewed agree that the residential subdivision plans developed in Jeddah are controlled by real-estate speculators. The executive manager of the Saudi A'Amar Company believes the majority of residential subdivision plans developed in Jeddah belong to developers and speculators involved in the development of residential plans. He indicated his opinion in this regard as follows:

> Frankly, the majority of the residential subdivision plans executed in Jeddah mainly belong to real-estate speculators. A large proportion of these control the market for developing land subdivision plans in Jeddah. All these subdivision plans do not observe the preferences and needs of the residents and they do not observe the aspects of creativity and innovation that are supposed to be achieved in a city such as Jeddah.

Regarding the aspects of design and planning, he added that the majority of residential subdivision plans fail to meet basic district requirements, for reasons including the following:

- poorly defined boundaries;
- poorly defined district centre;
- poorly defined entrances and exits without multiple access points;
- failure to provide a network of pathways for pedestrians and cyclists; and
- failure to secure comfort and tranquillity for end-users.

The executive manager of Durat Al-Aroos believes the design and planning concepts of traditional residential subdivision plans are based mainly on the developers' financial goals. He considers the main objective is to secure high financial returns at the expense of improving the quality and standard of the plans. He also said that the developers of these plans seek to achieve their goals through communication and coordination with Jeddah's survey offices. He believes that these offices and their management have compromised the quality of development of residential plans in Jeddah. He also noted that most of the design ideas provided by these offices do not rely on analytical studies surveying the preferences of the consumers. On the contrary, they duplicate and copy a single design and planning idea formulated and adopted by a group of Jeddah developers. He contends that this idea has been replicated in many of the residential sites that have been developed, and converted into residential plans by Jeddah developers.

The executive manager of the Saudi Arabian Real Estate Development Company believes the market for residential subdivision plans suffers from being controlled by a large number of real-estate speculators. He thinks that the majority of the residential plans in the north and east of Jeddah bear considerable resemblance to one another, which just expands the city and scatters its residential areas. Such districts have helped to valorise the reliance on the private car, precluding walking, cycling or public

transport options. He believes the majority of these residential subdivision plans are based mainly on one idea: dividing up the land into small land plots to be offered up for sale (but not providing the final unit), with only the minimum of land provided for services and public facilities, along with the extension of some of the infrastructure networks such as electricity, water and telephones. These tend to be arranged on the new grid form, which serves the circulation of vehicles but does not benefit pedestrian movement or consider alternative mass transit options. He also said that the areas allocated for facilities and services in these residential districts tend to be left undeveloped for long periods of time. With regard to the design and planning of the residential areas, they are basically founded on the developers' opinions. They often try to reduce the final development costs by avoiding the cost of preparing analytical, technological and design investigations associated with the project.

10.6.2 Role of Other Conventional Developers

Conventional developers produce incomplete, insufficient, uninventive and unsustainable residential districts in Jeddah. In the opinion of all the development executives interviewed, a large percentage of developers in Jeddah play a purely conventional role in the development process.

SR appeared initially in 1960 and were gradually developed. After 1970, developers were required to provide essential elements in the interests of the end-users. The most important among these essential elements was the reservation of a third of the developed land area for public facilities. Other requirements in the plan included the laying of asphalt roads and footpaths and the provision of street lighting. This is in addition to the extension of electricity, water supply and phone networks in the residential subdivision plan to be developed. Since then, most developers have continued to play the role provided for them in the land SR. This role, in the opinion of all the executives, is not suitable for the current time. They all believe that the role does not provide complete residential subdivision plans and is not conducive to high-quality, sustainable development.

The division of developed land into plots and the setting apart of land for public facilities and services, without developing them and making them available to end-users, is not a complete role for developers. Extension of some of the infrastructure networks and failure to follow up with the maintenance of the district after the sale of

residential plots to users is not a complete role either. All of the interviewees agreed on the importance of having the developers carry out this role and move on to the next stage in the development of the residential subdivision plans in Jeddah, though there is a risk of this being too expensive.

Currently, due to economic and social variables in combination with prevailing physical and environmental conditions, it has become necessary to furnish users with finished, ready-to-move-in residential units. Among the variables referred to by the interviewees is the high cost of individual unit development by the residents, as well as the lack of time, effort and sufficient knowledge on the part of individual users to develop their residential units autonomously. Another variable they pointed out is the city's expansion, leading to delays in the development of public services and facilities, and the poor maintenance of residential areas. Also, environmental fluctuations have shown an increase in rainfall in Jeddah over the last five years. This has led to increased rainwater runoff and the presence of surface water in the residential districts. Increased precipitation has caused many problems for the residents of these districts, including the contamination of drinking water, the pollution of water reservoirs and damage to houses and cars. Among the most important reasons for the recurrence of such problems is the lack of drainage networks for runoff water and sanitation in residential plans. The conventional developers' failure to carry out environmental studies submitted during the approval of the residential subdivision plans has contributed significantly to the emergence of such ongoing problems.

Another environmental issue is the failure to cultivate energy efficiency by properly orientating land plots in the direction of the wind to reduce their exposure to the heat of the sun. The executive director of UDC raised some of these issues as follows:

> The majority of the residential subdivision plans that have been developed in Jeddah do not take into account environmental aspects. Analytical studies conducted in several residential subdivision plans have proven this. Subdivision regulations do not observe this aspect, and the approval authority does not require developers to carry out such studies before the approval of the subdivision plan. Before the development of the project, the company was keen to prepare these studies and pay attention to the environmental aspects, and was also keen to draw benefits from this aspect, as an advantage in the process of marketing and presenting the project to its end-users.

The executive director of the Biyoot Al-Sharq project stressed the need to change the developers' practices and the importance of requiring them to deliver the final product to the customer. Additionally, he emphasised the importance of requiring the developers to develop part or all of the public services and facilities in their residential subdivision plans should the need arise. The executive director of UDC said that the end-user is the victim of these developers, as they continue to play an unthinking and uncritical but traditional role in the development of residential plans in Jeddah. He added that users in these districts suffer from many problems:

- Delays in the development of land reserved for public facilities and services;
- Delays in the development of the residential units by individuals due to lack of liquid funds, time and development knowledge;
- Limited availability of infrastructure services, and, more specifically, sewage and rainwater drainage networks;
- Plans do not encourage pedestrian and cycle traffic, but instead encourage people to rely on their private cars; and
- Poor maintenance of the district is a result of the lack of effective administration to manage the affairs of the district and reliance on Jeddah Municipality.

10.6.3 Subdivision Regulations

Because land SR have not been brought up to date, developers have been allowed to create repetitive residential subdivision plans. This has also encouraged developers to rely heavily on their conventional role in the organisation, design and development of residential subdivision plans in Jeddah. It has also contributed significantly to the appearance of many of the problems affecting the end-user. For example, forced dependency on the car without suitable public transit or pedestrian alternatives has been problematic for residents. Many similarities were found among development executives' views regarding the liveability of traditionally developed residential districts. Each executive criticised the current SR on the basis of their rigidity or inability to consider alternatives to helping to improve the quality of habitation. Only one set of SR is applied to all types of residential land densities for development in Jeddah. The executives are concerned because of the inappropriateness of the regulations to the local context. They also criticised the general failure to make amendments or otherwise modify the regulations. They believed the current regulations

do not provide the requirements needed to produce appropriate low-density or medium-density residential subdivision plans, nor do they integrate such requirements. This implies that the regulations are designed for high-density development only.

The executive manager of Durat Al-Aroos commented on problems facing their company due to a number of proposed features unaddressed or unaccounted for by the current requirements in the land SR manual. The company suffered during the approval stage for the project plans, because the project included two types of residential densities. The authority responsible for approvals delayed the approval of the project, as it used numerous design ideas and proposals drawn from western experiences such as New Urbanism, the conventional development approach and gated community approach. The SR do not address many design standards and policies pertaining to such types of project, a factor contributing to the delays in project approval. Among the aspects which have no special requirements in the SR manual are entry and exit gates, pedestrian and cycling pathways, planted strip areas, as well as street patterns such as no through roads. During construction of these features, the company prepared a general design manual to deal with the outline of the project, including details of the project's residential and recreational areas. Furthermore, the company also prepared detailed design manuals for each project zone. These design and planning manuals included detailed comprehensive maps showing the land use, residential unit types, building heights, street setback distances, facades, materials used, pavements, pathways, streets and car parks, in addition to a full representation of public services (such as parks, playgrounds and mosques, dedicated to serve the residents of each residential area in the project). The company – specifically, the technical and engineering department – invested a great deal of effort in creating many of the organisational, design and planning aspects of the project. The effort came at high financial cost, but proved to be a worthwhile investment in ensuring the project met the requirements of the current land SR. The authority approved the residential projects in Jeddah Municipality. A lot of ideas and proposals have been modified to reach appropriate solutions able to gain acceptance from the approval authority and meet current regulations. This complexity of the process has led to delays in the project's development and raised its overall development costs.

Among other matters criticised in the current SR is that they do not observe the special requirements of residential projects. The regulations also do not allow for creativity and

innovation in the process of planning, designing and developing the residential subdivision plans. The executive managers of the Saudi Arabian Real Estate Company and of UDC indicated that some of the requirements not included in the regulations are: pedestrian pathways, bicycle lanes, requirements relating to no through roads or combinations of the closed, loop and grid-type streets. There are, additionally, no requirements to which reference can be made relating to tree planting and landscaping of the site. Furthermore, there are no requirements regarding the provision of additional facilities and services other than what is usually provided in the residential areas (e.g. segregated swimming pools, sports fields, public libraries, celebration halls, women's sports parks and clubs, cafés and restaurants). The executive manager of UDC commented on these aspects as follows:

> The land subdivision regulations do not observe the provision of many elements, including pathways, no through roads, sports clubs, celebration halls and closed gates. Besides, they do not observe the harsh environment of the city of Jeddah, including the high temperature and humidity. Regarding the Al-Boytat residential project, the company managed to provide some of these elements to customers. It also took advantage of these elements in the marketing of the project and presenting it to the targeted population, which earned the project unparalleled success. I hope that our experience will be considered and used to modify the land subdivision regulations and the manner in which residential projects are developed in Jeddah.

The executive manager of the Saudi A'Amar Company underlined the fact that the SR, at the time when they were formulated and applied, did not observe the distinctive components and characteristics of each city separately. He believes that the main reasons behind the declining standards in developed residential subdivision plans, making them uncongenial to residents, is the uniform application of one set of regulations and procedures (relating to the LSPs of residential areas) to all cities in KSA, and the failure to study users' opinions and preferences in each city at the time when these regulations were formulated. Additionally, the failure to evaluate and measure the regulations' effects, and to amend them in order to prevent negative outcomes and to regularly re-examine them for possible points of improvement, has contributed to their ineffectiveness in meeting consumer demand.

The executive manager of Durat Al-Aroos observed that Jeddah is a large city with a large and diverse population, factors which have generated socio-cultural diversity. The

diversity has caused lifestyle variations distinctly different from the way Saudis traditionally lived, even 30 years ago. Yet the current regulations do not accommodate diversity and are unresponsive to lifestyle changes, as is reflected in the kinds of residential units available for sale. There is a particular residential subdivision plan dedicated to residential villas, and another for residential apartment buildings. The plans have not helped the emergence of an environmentally-friendly and healthy residential district that encourages residents to go about on foot and by bicycle. The manager views the uniform application and generalisation of common regulations to all the Saudi cities as having had an overall negative impact, causing the continued prevalence of a single type of unsustainable, uninventive residential subdivision plan. He mentioned that the public pedestrian pathway near the Corniche (figure 10.6) is among the most illustrative instances of the current SR's negative effects. The idea of pedestrian pathways near the Corniche that allow people to come directly from their homes to take part in physical activities with their family members did not exist ten years ago but the regulations have allowed it to happen. There has been a change in the lifestyle and habits of Saudi families, and thus, it is important to meet the residents' new requirements and to accommodate these arising needs. The private companies surveyed have no objection to allowing Jeddah Municipality to benefit from its own development experience, should it be inclined to develop and modify the current land SR.

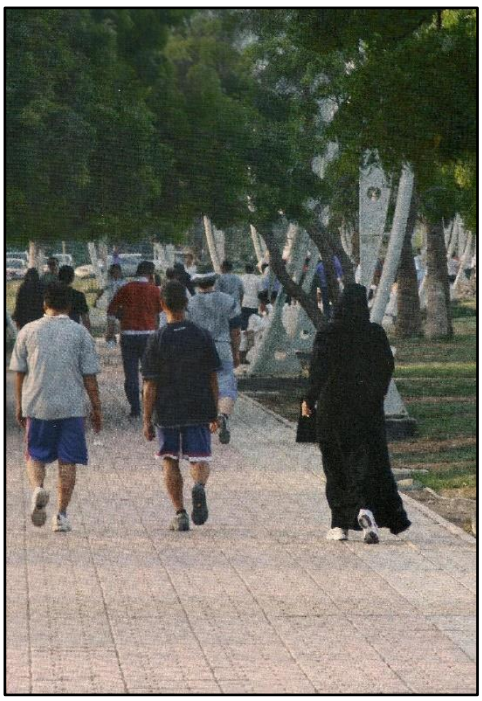

Figure 10.6: Public pedestrian pathway near the Corniche area in Jeddah allows people to come directly out from their homes to take part in physical activities with their family
Source: Jeddah Municipality (2009a)

The executive manager of the company that developed the Biyoot Al-Sharq project believes the current regulations present a major obstacle to their permit applications. Among the main problems they regularly encounter is that the current regulations discourage the emergence of residential projects that provide the final product to the user, causing costly application delays and rejections. The regulatory requirements are all limited to the production of a divisional residential plan (land divided into segments of various sizes, connected by streets and paved roads). The current regulations lack many components necessary in order to fit the changes surrounding them, and they do not deal with the final residential district form. There is no relationship between residential buildings and the open spaces around them, such as paved roads, surrounding streets and car parks. The aesthetic aspects of the residential district are not taken into consideration when the plan is submitted for approval, due to the lack of a comprehensive vision of all the eventual components and elements of the district. Even the land allocated for public services and facilities, developed by the relevant authorities, has no comprehensive vision that can be evaluated prior to its development. The design and layout of these sites is dealt with separately, where the design of each plot is autonomous and developed individually by a single contractor. In the end, the overall district does not meet users' needs and preferences.

The company's aim in developing the Biyoot Al-Sharq project was to deliver a complete built product for users. The sites for public services and facilities were developed before residential units were built. The company has been keen to improve the quality of the build and the development of these facilities to meet residents' aspirations. A comprehensive vision of all district components was articulated and the residential units' relationship to open spaces was examined in advance. With regard to infrastructure services, the company has been keen to provide all infrastructure networks, including runoff and sanitary drainage. This is in addition to the study of vehicle and pedestrian movement in the district, and taking environmental aspects into consideration. The interviewee noted that SR must be modified and expanded if developers are to supply users with a completed residential district. He also stressed the importance of requiring other developers to work to these standards, in order to upgrade the local development standards for residential subdivision plans in Jeddah.

Among other criticisms, it was recorded that current SR do not require developers to prepare project studies related to pedestrian and vehicular movement. The Saudi

A'Amar Company executive manager reported problems with the movement of vehicles and pedestrians in a sample of residential subdivision plans to the north of Jeddah. Among the aspects highlighted are the multiple vehicular entrances and exits in residential plans, increases in vehicles' speed, especially on the residential units' peripheral streets, and the inability of residents to walk or cycle safely in these areas. All these problems have been reported as a result of the failure of developers to carry out prior examinations and appropriately design for the circulation of vehicles and pedestrians. The company was keen to prepare such studies during the final design and planning stages of the project. The company benefited from the research when marketing the project to consumers and presenting its special features to the targeted population. Among the most prominent of the special features is the reduction of the number of entrances and exits, the provision of a pathway for pedestrians and cyclists at the centre of the project, and improvement of the district centre to attract large resident numbers in various age groups.

10.6.4 Role of Jeddah Municipality

The role of the authority that approves the residential subdivision plans does not support developers in innovating and upgrading the standard of plans developed in Jeddah. The managers interviewed regard the deficiencies of Jeddah Municipality in this matter as a mark of its ineffectuality. Furthermore, they all attributed the incomplete development of residential plans to Jeddah Municipality. Everyone criticised the municipality for not considering the studies carried out by innovative developers in the preparation of the development process and for failing to learn from the studies in the improvement of residential subdivision plans. They also criticised the approving authority for not requiring developers to carry out a wide range of analytical and technical studies, as well as making it unnecessary to submit them in their application package to obtain the implementation permit.

The executives agreed that the authority approving the residential plans usually does so by submitting them to routine bureaucratic procedures that cannot have any effect on raising the quality and standard of residential subdivision plans in Jeddah. There are always delays in the approval of these plans, particularly the innovative ones containing ideas and proposals that differ from the norm. They all commented that the approval authority needed to involve the developers and provide them with appropriate facilities

to accelerate the approval of residential plans before initiating the approval process. It is important that this authority provides technical advice to the developers prior to considering the approval of their plans. All executives pointed out that the role of the authority is limited, and its main procedure is the review of the plans in terms of residential occupancy. A minimal number of technical requirements are reviewed and approved in coordination with MOMRA in Riyadh.

The executive manager of the Biyoot Al-Sharq residential project decried the capacities of the authority approving residential subdivision plans in Jeddah. He pointed out the limited availability of qualified planning personnel in its administration. He also noted the lack of staff specialising in the field of urban design capable of the task of upgrading the standard and quality of residential subdivision plans. There is also the questionable ability of Jeddah Municipality to approve residential plans without referring back to MOMRA in Riyadh or to draft regulations for the LSPs. The executive manager of Durat Al-Aroos agreed with this opinion in view of his personal experience with Jeddah Municipality. The company's problems with the process of winning approval for the project master plans, was due to the lack of competence of Jeddah Municipality. The lack of staff capacity in the municipality administration, specifically in the field of urban design had delayed the approval of his project; researcher observed the same during the interviews with officials.

10.6.5 Suggestions and Recommendations

All the development company's executive managers interviewed pointed to the importance of drafting new regulations for LSPs in Jeddah. However, before the drafting process, it was thought necessary that MOMRA should give Jeddah Municipality full powers to redraft the current regulations.

10.6.5.1 Subdivision Regulations

Assuming that the municipality is assigned the powers to redraft the current regulations, the executive managers of the Saudi A'Amar Company and UDC stressed the importance of conducting several studies to clearly identify problems associated with the current LSPs. The importance of knowing the preferences of the residents across their demographics, in addition to examining the views of the developers and the

agencies specialising in the design and planning of residential projects in Jeddah, is unquestioned. The executive manager of the Saudi Real Estate Company stressed the importance of going through several preparatory stages before beginning the process of amending or improving the SR. The method should involve many of the key actors in the development of residential subdivision plans, foremost are the users, followed by the developers and administrators.

Among the approaches proposed to redraft the regulations is one that relies on studies of the city's economic, social, physical and environmental variables. The executive manager of UDC emphasised the importance of drafting regulations compatible with the components, composition and properties of the city, and the importance of formulating regulations responsive to the culture. Among other approaches, he suggested paying attention to the city's identity and preserving it by drafting regulations that address aspects of identity in the residential districts developed. The old Jeddah contains many traditional and Islamic elements that set this city apart from others. However, the current regulations do not require the developers to pay attention to them. Also highlighted is the importance of rediscovering these elements, which should be formulated in a modern way, as has been carried out in the Al-Biotat residential project.

On the other hand, the managers stressed the importance of drafting creative regulations encouraging design innovation in the development of residential subdivision plans. The executive manager of the Saudi A'Amar Company pointed out that these regulations should be formulated in such a way as to provide a complete product for the users (complete with residential units, services and public facilities). He believes there is a need to draft multiple and varied requirements to deal with the many kinds of residential projects developed in Jeddah, resulting in both diverse and higher-quality residential projects. It is important that there be different regulations to deal with low-density residential projects and others for projects with high and middle density. It is also important to provide different regulations for projects that incorporate gated barriers, New Urbanist principles, conventional approaches and others. The proposals shared by the four executives are as follows:

- Provide regulations requiring developers to carry out marketing and analytical studies related to the project and to submit them with their development applications.

- Provide regulations obliging the developer to prepare technical and environmental studies related to the project and to submit them with their development applications.
- Increase the 33% of the total area of the subdivision plan currently required for allocation for public services to 40%–45%.
- Provide regulations to require that developers implement a full infrastructure network.
- Provide regulations obliging developers to provide pedestrian pathways and cycling networks within residential subdivision plans.

10.6.5.2 Role of Municipality

Respondents of the research study frequently suggested that the authority approving residential plans should also assess the residential subdivision plans developed in Jeddah. All agreed on the importance of setting up a specialised department that could host meetings with developers before they apply for approval of their plans. The powers of this section or department would include providing technical and engineering advice to project developers and directing them properly through the regulations and application process. One proposal presented suggests forming an advisory committee comprised of an expert group to assess projects and assist development proposals. The feedback would be useful for development companies when modifying their proposals to ensure quicker approval. The executive manager of the A'Amar Company pointed to the success of an experiment of this kind in Riyadh. He noted the existence, over the last five years, of a committee that plays this role in Riyadh Municipality, which has achieved remarkable progress in improving the quality of the residential projects implemented.

Among other proposals put forward was the need to appoint specialised personnel to work in the field of planning and urban design. The role of these staff would be to help developers to improve the quality of submitted projects and to accelerate the approval of their residential plans. The executive managers of the Saudi A'Amar Company, UDC and SREDC support the proposal. Among their proposals was the idea to refuse applications for residential subdivision plans submitted by survey offices in Jeddah. Instead, there should be special requirements within the SR obliging developers to

consult engineers specialising in the design and planning of residential subdivision plans.

10.6.5.3 Role of Developers

Developers should be creative and innovative and pay attention to the needs of end-users. These beliefs were repeated during interviews. The managers agreed on the importance of requiring Jeddah's developers to practice residential development in other capacities than the traditional one of providing basic land plots for residential users. The executive manager of the Saudi A'Amar Company stressed the importance of introducing changes to the development philosophy of residential subdivision plans in Jeddah. Thinking seriously about the provision of residential subdivision plans and providing users with the final product, including after-sales services such as maintenance, cleanliness and management is important, as is communicating the new values to traditional developers. The role of Jeddah Municipality and its land SR is to oblige developers to carry out this task. The residential subdivision plans developed practice sustainability and do not observe the needs of end-users. Furthermore, these plans are not innovative.

The executive manager of UDC suggested that traditional developers should be integrated with large real-estate companies, or centralised among themselves to create real-estate investment companies that contribute to the development of residential subdivision plans in Jeddah. Also proposed is the creation of a real-estate developers' association for subdivision plan developers in Jeddah. One function of the association would be to develop (or to create) the basic regulating principles for design and development of residential subdivision plans, to gain the support and commitment to these principles, and support the realisation of building according to them. Associations are part of the American development experience and can be applied and adopted to the advantage of Jeddah.

10.6.5.4 Role of End-Users

All these unconventional developers believe that the end-user has now become aware of various types of residential subdivision plans and has the ability to distinguish between creative residential plans and conventional ones. The executive manager of UDC indicated that the developer should follow users' preferences and that these should

materialise in any projects developed, for a reasonable cost. At present, end-users endure a large number of traditional subdivision plans carried out in Jeddah. The information this study has managed to assemble shows the desire of a proportion of the survey sample to relocate to a residential project responsive to their needs (such as Al-Masarah, Biyoot Al-Sharq, etc.); this is evidence of users' ability to distinguish between suitable and unsuitable schemes. The end-user is left without adequate options as a result of the development process being neglected by so many developers, in particular the conventional ones. The conventional developers typically neglect user needs, except for some fairly modest efforts to go part way to meeting a small proportion of them. Jeddah Municipality and the current regulations should bring users' needs to the forefront of developers' concern by requiring them to conduct studies on the users' preferences as part of the requirements for subdivision plan approval. They should also involve the users in the approval procedures for subdivision plans, in order to upgrade the quality of residential projects. Alongside this, there should be regular post-occupancy evaluations of subdivision plans that include feedback from inhabitants.

10.7 Conclusion

This chapter has reviewed four main topics, the first of which shed light on the extent of knowledge about SR among sample members in the Al-Naseam and Al-Mouhamadeyah districts. The survey respondents' reactions reveal an appetite for greater knowledge about the regulations and their rights in the residential areas where they live. While the residents or users are mentioned by name in many of the requirements of the SR, they themselves are not aware of this. This means that, in effect, Jeddah Municipality applies SR unbeknownst to its residents.

The second aspect of the analysis turned to an investigation of the sample members' views towards developing residential subdivision plans in Jeddah. Survey respondents were critical of developers' lack of attention to users' needs and preferences. A large proportion of the respondents do not trust developers and do not trust the developers' role in the development of subdivision plans in Jeddah.

The third point of analysis asked the survey respondents a hypothetical question about where they might wish to relocate to if they possessed sufficient financial liquidity. One group expressed unwillingness to move and among the reasons given for why they would not want to relocate was their lack of confidence in the role of developers, the

lack of unique residential areas in Jeddah to which they could move, and the fact that they perceived other residential areas as similar to their district, which would render any move to another district futile because it would too closely resemble their current one. A second group indicated an inclination to move to areas developed by companies specialising in real-estate development in Jeddah.

The fourth aspect of this chapter conducted case study analyses of the residential areas desire by the group willing to relocate. These case studies are potential alternative models that can be utilised in the process of amending the SR and in the process of designing, planning and developing residential subdivision plans in Jeddah. The story of the success of these projects brought to light many problems and constraints; foremost among these are the SR themselves and the authority that enforces them.

The study of the design and development of these residential areas is informative, supplying many useful lessons to carry forward into possible amendments to the current regulations. The key lesson to take away is the need for flexible regulation allowing for creativity and innovation, as opposed to inefficient regulations generating conventional development. Analytical, marketing, technological and environmental studies prepared by the developers for these residential projects are essential for the design of innovative projects prior to embarking on their development. The case studies highlight design standards and policies drawing value from the American experience, such as New Urbanism and the gated communities that emerged in the suburbs of American cities, as well as learning from the requirements for developing ancient Islamic projects. Furthermore, in these projects, responsiveness to the preferences and needs of the users who can afford it is the major factor leading to their success. Elements of creativity which the projects exhibited include the integration of diverse use, accommodation of pedestrians and cyclists, consideration of environment, more land allocated to public services, and fully completed projects. These are the most important lessons that can be utilised in the development of land SR for the future improvement of residential areas in Jeddah.

This chapter reviewed unconventional developers' opinions towards the authority that approves the subdivision plans, residential plan developers, and the conventional residential plans developed in Jeddah. The SR may have had an impact on this group of these developers, which was one of the reasons behind the delays in the approval of their projects and increases in development costs. The executives criticised the SR and

Jeddah Municipality's approval method for residential plans. They stressed the importance of SR as an essential tool in the provision of adequate living environments. However, it was agreed that new requirements must be formulated. The most prominent of elements needing regulation requirements are pathways for pedestrians and cyclists, and services and public facilities, with the intention of obliging developers to build high-quality residential areas in Jeddah.

Developers using unconventional methods attribute their dependence on conventional development methods to the SR. They claim the current regulations have encouraged dependence and fostered the emergence of the conventional development pattern in Jeddah's residential areas. Moreover, all the developers criticised conventional development for overlooking user preferences. They also stressed the importance of providing a complete product that includes not just the housing units, but also the development of land allocated to facilities and services in the residential areas, as well as the continued management and operation of the residential areas. Developers also criticised the conventional reliance on Jeddah's survey offices as one factor for supporting poor design and planning standards.

The recommendations and proposals of the creative executives focused on the need to amend the land SR to take into consideration the urban, social, environmental and economic characteristics of Jeddah and its inhabitants. Deeper engagement with the urban and socio-cultural context in the process of amending current regulations would be translated into new requirements and policies. The developers' views should also be given formal consideration in the approval application for residential plans. A specialised planning and design staff within the management, organisation and approval team for residential plans would have a positive impact on improving the standard of plans accepted. Additionally, a technological advisory department should be created to support developers to speed the approval process of residential plans and improve their quality. These are the most salient recommendations isolated in this research to improve LSPs in Jeddah observed by the researcher.

CHAPTER ELEVEN: CONCLUSIONS AND RECOMMENDATIONS

Chapter 11: Conclusions and Recommendations

11.1 Introduction

Subdivision regulations (SR) play a strong role in shaping urban areas within a city through subdivision plans; it is a diverse tool impacting broader physical, economic, social and environmental aspects of urban life. The impacts of SR evolve over a period of time, hence attracting sustainable prolonged observation and in-depth studies to evaluate and establish cause and effect relationships through a project's pre-construction and post-construction (habitation) phases. Academics have encouraged the need of successive advancement of such regulations, though unfortunately there are only a few studies targeting Saudi cities that are concerned with SR which could assist in their continuous development.

This research investigation was carried out with the following objectives:

1st Objective: To understand the history of the concept of SR, reflecting on their purpose, content and practice/implementation, using the US system as an originator of KSA practice and as a comparator to the KSA/Jeddah experience.

2nd Objective: To investigate the quality of the public realm and service provision these regulations and conventional development practice produce, through site analysis and through understanding local residents' experiences and aspirations gained by surveying them.

3rd Objective: To review the shortcomings of the system, explore alternative models of development, and make recommendations of how the system might be improved through exploring alternative unconventional models of development already operating in Jeddah, and through interviewing planners and conventional developers.

The first objective draws from the literature, highlighting the important literature depicting SR as a way of structuring space, ensuring quality of environment and provision of public services and facilities. KSA drew from the US literature/practice in setting up SR and has utilised it in the last 60 years to manage subdivision development in its cities. The literature highlighted shortcomings in the Saudi regulations, which were mainly unsuitable SRs, ignoring of the sustainability element, centralised approval and review procedures. These were also evident in the analysis of SR and their administration with special reference to Jeddah.

The second objective draws from the initial findings – the quality of the two case study areas in Al-Mouhamadeyah and Al-Naseam. Case analysis and residents' surveys revealed a lack of public services and facilities, the non-incorporation of people's needs, the non-provision of residential units as the final and ready-to-move-in product, non-walkability of districts, lack of cycle paths, etc. The *prima facie* quality of public services and facilities provision was found to be poor, as subdivision development was carried out by conventional developers who were primarily seeking to develop speculatively and did not want to be engaged themselves in providing a high-quality public realm that even the current SR do not require. It also reflects institutional incapability in updating and improving SR and also in enforcing and monitoring of LSP implementation.

The third objective draws from the non-conventional developers and the discussions with developers and planners about ways in which the public realm could be improved, reflecting very different starting points: the speculator developer – interested in a quick turnaround (and would really like to see reduction in regulation); the planner – believes subdivision plans could be made to provide the quality public realm alluded to in the regulations themselves; the non-conventional developer – offering an alternative model but at a price which may be beyond stakeholders' capacity to pay, especially if neither planners/service providers nor developers take responsibility for it, leaving it up to private individuals.

Also, there are deficiencies in the LSP approval process, which suffers delays; Jeddah Municipality does not possess the technical and institutional capacity to make the LSP preparation, approval and implementation process rapid, accurate, innovative and up to date.

Key findings from literature reviews reveals that in the US, the current land SR evolved over time, originating from the desire to improve conditions in urban areas in the late 19th and early 20th centuries, to solve problems regarding health, safety and morality. The quality of land subdivision is linked with the adequate or inadequate reflections of public interests and values. Modern SR prevent premature subdivision and the integration of new developments into the existing community. Subdivision controls address such matters as street layout, provision of water, sewage, drainage capacity and other utilities, plot frontage, plot size, and amenity-based requirements such as

pavements and street lights and more than that land dedicated to public facilities such as schools, parks, or playgrounds and further.

KSA has adopted SR from the US, though its initial centralised characteristics, inadequate autonomy to local institutions, lethargy in preparation, approval and execution, relaxed monitoring and enforcement, inadequate technical, professional and planning capacities, unrestrained developers, lack of consultation and participation of community members (residents or end-users) has resulted in undesired and ambiguous impacts.

11.2 Subdivision Regulations: Jeddah at the Macro Level: Impacts and Challenges

Jeddah before 1947 was a typical Middle Eastern Islamic city characterised as small, sleepy, walled and Islamic-ruled city which created a unique type of urban development. This development contributed substantially to the identity of place, where the old residential built environments were subdivided into a number of quarters. These were further subdivided into organic form, narrow streets, open spaces; even cul-de-sacs were provided to give access to residents' housing units. Housing units were built based on a compact form. The sea and the local climate had significant impacts on the orientation of housing units and local streets.

After 1947, the demolition of the city walls, growth of oil revenues, population growth, emergence of modern housing and application of imported land-use regulations cumulatively shaped the form of the modern city. The first part of this phase was responsible for unplanned development until 1960 while the genesis of residential areas occurred without SR due to the technical and administrative incapability of Jeddah Municipality, though the first step towards the full adoption of subdivision plans was taken in the same period. In this development phase, there were narrow street networks (2–4m in width), no distinct public or semi-public spaces and provision of streets easing movement to animal-dependent transportation; even public services were not valued at that time. From 1960 onwards, SR was being used to regulate LSP at local level; the Saudi government established MOMRA in the 1970s as the centralised planning authority responsible for city planning in KSA; the ministry created a unified SR code in 1976 for subdivision plan approval. Without doubt, SR has improved forms of residential areas yet also contributed in the emergence of conventional subdivision

development in Jeddah; around 1,400 LSPs were approved under this approach. The conventional approach was characterised by failing to offer ready-to-move-in residential units, being uncreative in nature, ignoring pedestrians' and cyclists' needs, lacking attention to traffic-calming components, inattentive towards the disabled's needs and a general lack of infrastructure services and facilities. In parallel to the conventional development, a new and innovative pattern of unconventional development has also appeared, built by big real-estate companies, while a number of private subdivision plans (similar to western communities) have been implemented which were not based on local SR requirements. The unconventional patterns were entirely unique in terms of contents and physical elements; for instance, gated and ungated developments; offering a ready-to-move-in product; due attention to pedestrians' and cyclists' safety and comfort; recognition of urban design and aesthetics; a reduction in vehicular street traffic; comfort and safety for the disabled; provision of parks, playgrounds, mosques, and schools by the developers; public service infrastructure (electricity, water, sewage, rainwater, sewage treatment, gas, television) provision by integrated networks; considerations for sustainability and climate change adoptions taken care of. Hence, unconventional development in Jeddah seems totally dissimilar to that of conventional development.

Five successive master plans were also running in parallel with the adoption of SR, aimed at controlling urban development and fulfilling future needs (housing, roads, public services and facilities and infrastructure service) of Jeddah. Each of the master plans articulated goals, objectives and ideas formulated based contemporary challenges. Only the first master plan provided special SR for Jeddah, linking it with zoning regulations. Each zone has its own organisational, construction and land development process requirements which are used as reference at the time of the approval of the residential project. Details of internal land development organisation include development types and pattern, road network configurations, services, etc.; they usually refer separately to the SR manual issued by the Riyadh ministry. The total number of the executed plans is approximately 1,459; the majority of these subdivision plans are conventional and also responsible for urban 'sprawl' development in the city. Therefore, this situation highlights the need for a new and improved set of SR.

Many factors affect Jeddah's entire landscape, such as extreme climatic events (heavy rain), rapid population growth, increasing air, water, soil and noise pollution, limited public transportation, and inadequate public services and facilities; all these

cumulatively create a variety of challenges for subdivision planning regulators and developers. There are different needs and aspirations of residents in each neighbourhood which, unfortunately, are not considered by regulators and developers; even SR as currently practised ignore them.

11.3 Subdivision Regulations: Micro Level: Study and Analysis of Two Districts

Negative impacts of SR are explained through examining two conventional residential districts in Jeddah at micro level. The examined districts differed in location, area, density and housing type. It was found that conventional developers do not provide the final product, or any part thereof, with additional features such as parks, playgrounds, mosques or housing units. The Al-Mouhamadeyah district, for example, is a low-density area, comprised of residential villas splintered into four subdivision plans that have been developed over different periods. The Al-Naseam district is medium density, which allows for apartment buildings and includes two subdivision plans: Al-Naseam 1 and 2. The subdivision schemes were regulated, designed, planned and developed based on a single standard local SR formulated centrally at ministry level in Riyadh. The regulations ignore the individuality and uniqueness of each city.

Urban planning and design in the two districts studied portrays a *new grid pattern* (a favoured prototype pattern for developers and regulators since the mid-1980s). In brief, this pattern shows no variety and innovation in planning. This has occurred because SR has not encouraged developers to apply different layout patterns such as the cul-de-sac or fusions of two patterns in the subdivision planning process. The districts are similar in terms of internal streets and pavements; there is a lack of proper pedestrian and cycle paths, hampering the physical activities of residents in both localities. It was also revealed that the street pattern is safe only for cars, not pedestrians (due to less connectivity of pedestrian pathway networks).

Negative aspects of public services and facilities are examined in the research, which reveals that subdivision plans approved simply between Jeddah Municipality and the developers do not include a comprehensive vision for the provision of public services and facilities sites with strong links with residential units; any kind of district centre or hierarchical distribution of these service provision sites is absent. Unusual delays in the provision of public services and facilities sites was also pointed out, while construction of these sites was done in a haphazard manner without any sort of coherence with the

residential units which were appearing. Current SR do not force developers either to offer or pay for public services and facilities (parks, playgrounds, mosques), so the sites located for these are currently being used for car parking and construction waste dumping; some of the sites are even encroached upon by neighbouring residents and there is no monitoring of this by Jeddah Municipality.

It was also found that most of the public services and facilities offered are either not located at a walkable distance, or walking/cycling to them is not safe and comfortable (danger from fast cars, pedestrian pathways are not well linked, no shade offered to tolerate the scorching sun, width of pathways is not adequate, cycle path is absent). It seems these services and facilities may be only reached easily via cars, which hamper physical activities among residents, which is a threat to urban health. Surely the above considerations call for attention to new and improved SR codes in future.

11.4 Subdivision Regulations: Regulators' Perceptions (Role of Jeddah Municipality)

Evolution of SR has gone through various phases; initially, there were no regulations, and development plans were being approved by local authorities based on personal discretion.

At the first phase, SR emerged in a very centralised manner from the MOI in Riyadh, with no role for Jeddah Municipality (except receipt of applications from developers).

In the second phase, MOMRA was established, while a planning framework in KSA was introduced; in this phase regulations were too centralised, drafted at ministry level; even approvals of plans were carried out at central level at Riyadh.

During the third phase, Jeddah Municipality was granted approval power for LSPs without the need for consultation with ministry and the planning department was set up for this task. In this period, *SR* quality seemed to be improved; the regulations were still issued by the ministry.

In the fourth stage (in the 1980s), although Jeddah Municipality became solely responsible for applying regulations and procedures issued by the ministry, the approval of LSPs was again the subject of close review and monitoring from the ministry.

Finally, in 2009 the biggest cities of KSA acquired powers to approve LSPs without referring them to the ministry, while a *Higher Advisory Committee* was formed in Jeddah Municipality to review LSP approvals; the results were not positive, as the municipality continued to rely upon standard regulations and procedures issued by the ministry.

Study of one of the LSPs used as an example to study the approval process at Jeddah Municipality revealed that: officials involved in the approvals have a minimal role to play; modern technology has not been adopted for decision-making; the lack of technical and analytical studies, time, capacity and training are cumulatively reflected in the inadequate provision of public services and facilities.

In an open discussion with regulators, a few remained silent; others responded in a pessimistic way, considering SR to be inadequate in the development of residential areas. The rest were optimistic and expressed their views for further development and improvement of LSP regulations in future, integrating with residents' needs and developers' perceptions; even all the members of the Higher Advisory Committee stood by this view.

11.5 Subdivision Regulations: Conventional Developers' Perceptions

Evident from US experience, conventional development was behind the growth of sprawl which produced a series of negative impacts such as accelerated automobile dependence among communities in which the subdivision pattern characterised a car-oriented community. The causes responsible for higher car dependency were portrayed as the necessity of travelling long distances and the lack of adequate bus services. Additionally, the absence of bicycle lanes, and the nature of road pavements has prevented walkability and cycling in and among the neighbourhoods; if provided these services could ease access to transit services. These circumstances also led to the decline of neighbourhood social ties, a sense of cultural isolation and a decline in social capital. Moreover, conventional development types caused damage to environmental quality through the eating up of precious agricultural land and consuming the landscape. Traffic congestion, long commuting times, air pollution and GHG emissions adversely affected the ambient air quality. The natural drainage pattern in these conventional developments was also impaired because of high pavements that made surfaces hard leading to the clearing of natural vegetation, a higher velocity of storm water runoff, a

decrease of groundwater recharge, the depletion of groundwater tables and many other effects.

Studies confirm that the provision of public services and infrastructure in conventional development was not economically feasible due to the higher cost of services that would make new housing more expensive and less affordable, especially to low- or moderate-income people. As the SR were not amended for several decades and became more demanding and complex, the resulting scenario was a loss of general public health conditions (increased occurrences of heart disease, hypertension, and diabetes) that was especially due to the hindering of walkability and physical activities. All these factors obligated regulators in the US to improve the old sub-divisional regulations that promoted the growth of sprawl.

In Jeddah, all conventional developers have significant practical experience in the housing market as they have developed numerous residential subdivision plans in Jeddah; yet none of them offered final, ready-to-move-in products for the residents who are the end-users. Conventional developers enjoyed higher profits while showing no professionalism, creativity and innovation in the development of residential subdivision plans. They always attempt to cut costs and achieve quick profits, while repeatedly using similar, monotonous designs. Furthermore, unconventional developers remain dependent upon survey and engineering consultancy offices for many professional tasks; the SR do not force them either to possess these skills themselves or to carry out critical studies required for such types of development. Moreover, these developers attempt to avoid any sort of communication with end-users or residents, while also shifting the provision of necessary public services and facilities on to service providers. No due time is devoted by the developers for any unconventional development, which also hampers the quality of the end product. Conventional developers have shown no considerable criticism of the current SR, as they are favourable to them, because they do not enforce provision of public services and facilities; however, the developers wish to allocate less land for public services and facilities (less than the present 33%), even reducing interior street widths, and providing pedestrian footpaths on one side of the road only rather than on both sides. A few of them, exceptionally, want to simplify bureaucratic procedures for ease of plan approval and recommended giving full autonomy to Jeddah Municipality; they indicated it would remove unnecessary delays in approvals.

Although the execution of residential plans are supposed to be carried out soon after they are approved, a few developers mentioned that they waited to do so for long periods in the hope of land price increases, and while completing contract negotiations with executing companies and watching the progress of introducing other land plots to the market by which their sale can be affected in an individual residential plan.

Delays in the execution of residential plans also occur because there is no time-related compulsion in the SR once the plans are approved. In addition, there is no mechanism which forces developers to execute their residential plan in a complete manner; hence, they are free to implement their approved plan at their own ease, in parts or in other ways, as they wish.

Therefore, the results show that conventional developers are utilising current SR in many ways; on the one hand, they indicate there are no favourable conditions for them to offer public services and facilities, while on the other, they do not possess the required practical expertise to carry this out; they even suggest that it is too early to offer these services while the land is not being developed for residential units.

Such developers have no interest in post-sale operation and maintenance management of residential units; rather, they want to secure their financial returns by selling plots, and after delivery wish to depart the scene, because the responsibility of further development has been transferred to Jeddah Municipality.

In conclusion, it seems that developers have full control of the development of LSPs; they are not even interested in their designing and planning process; they do not wish to plan creative, innovative and unique LSPs; they do not concern themselves with post-sale services or the provision of public services and facilities. This also shows that the current SR are outdated and favourable for developers only; while on the other hand, Jeddah Municipality seems not to be really capable to establish a proper monitoring and enforcement mechanism; it does not even have the modern technology and capacity required to ease and speed up approval processes. All of this demonstrates the need for new improved SR, exclusively tackling the challenges of overall urban expansion and development in Jeddah city.

11.6 Subdivision Regulations: Residents' Perceptions in Two Districts

Residents perceive that they are living in an unsafe and unhealthy environment because the road layouts encourage car use instead of walking or using bicycles; the services offered are scattered and the land uses are dominantly residential rather than being mixed-use. This scenario also obstructs social links. Both districts were developed using conventional subdivision plans, though by different developers.

As perceived by residents, these problems exist because of the deficiencies in current SR codes, which lead to gaps between the implementation of the subdivision plan and people's actual needs; also because the end-users (residents) are neither consulted nor involved in subdivision plan preparation, approval and implementation processes. In a few cases, developers have not implemented their project as per SR and regulators have failed to enforce its proper implementation, due to unsuitable monitoring and enforcement mechanisms.

11.7 Residents' Needs: Guidelines for Regulators and Developers

Responses from both districts studied revealed an urgent need for the provision of more parks, playgrounds, and green spaces in the district. It was found that current regulations for the undeveloped LSPs contributed to shortcomings in the provision of such services in both residential districts, with concerns arising as to their spacing, quality, and pedestrian access.

Residents preferred to walk for short/very short distances to avail themselves of services like mosques, parks, playgrounds and primary schools; in fact they also wished the same for their wards, if these services were to be offered at accessible locations. Furthermore, survey results confirm that the preferred location of the above services must be at a central location rather than on the outskirts of the district. Respondents would also prefer to walk on foot if proper pathways were provided.

Respondents were in agreement to follow an efficient urban design policy in the district as the SR contains design policies but not implemented in the residential areas. These policies must contain provisions of safe pedestrian pathways, traffic calming, and a limited number of exits and entrances to a district.

Concerns towards redesigning street patterns inside the district was also conveyed, including designing streets with proper shape, width and pavement components,

providing a residential cluster with no straight roads in its interior. Again there was a desire for wide internal streets and footpaths equipped with wide green verges, while conversely a few expressed their aspiration for narrower internal streets with wide footpaths, also containing also wide green spaces.

Residents want such preferred services and facilities to be developed prior to the sale of land plots; and for the proper provision of public services and facilities, developers must be ready to adopt multiple approaches for land division and development of residential units with properly implemented services and facilities (or parts thereof) in the LSP.

The need for residents' participation and consultation along with other stakeholders (Jeddah Municipality and developers) was also pointed out in the various stages of LSP preparation, approvals and implementation, so that residents' views and preferences could be properly reflected in LSP.

Provision of open green spaces exclusively for women and adolescent girls, a library, space for social gatherings and especially for mourning rituals were other preferred services stated by residents.

Such preferences are unfulfilled because they call for amendment of the current set of rules and regulations by Jeddah Municipality; it is also noteworthy that the needs and preferences stated above are those which are urgent, though the list might be longer; other items were not captured by the researcher due to time and budgetary constraints.

11.8 Subdivision Regulations: Residents' Relocation and Perceptions of Unconventional Subdivision Plans

Responses from the districts studied revealed that residents were not aware of *SR* despite their thirst for public services and facilities; they showed their criticism of many of the developers as developers were reluctant to meet the residents' preferences. Most of the residents demonstrated their apathy in relocating to the other residential areas (while financially able to do so) because of their lack of confidence in developers, absence of uniqueness in residential areas (these areas are monotonous); while some residents showed their inclination to relocate to the residential areas developed by highly sophisticated and expert real-estate developers.

Findings from a set of case studies on unconventionally developed residential areas were also part of this research, which could be an important model for a new and

improved set of SR codes. Lessons from these areas could be the creativity and innovations of urban planning and urban design, a major shift from ordinary and conventional development, realising the importance of analytical, technical, market and environmental studies by developers themselves before plan preparation; lessons from New Urbanism (the US experience) especially noticing the value of using design standards and policies, advantages of learning from the conventional approach in US suburbs and, most of all, experiences from ancient Islamic projects. Residents' needs are well incorporated in these unconventional projects, which reflect values of creativity, variety and diversity. These projects are varied in densities; they even paid due attention to pedestrians' and cyclists' needs, and also to the quality of environment and sustainability objectives. They offer ready-to-move-in residential units and more land allocation to public services and facilities with timely implementation.

Unconventional developers expressed their frustration regarding SR and the approval process for LSP by Jeddah Municipality. They recommended that SR should be supportive to the offering of a final product (ready-to-move-in residential units) rather than provision of undersupplied (considering the innovation and sustainability criterion) residential areas. Further, they agreed upon incorporating residents' requirements such as proper pedestrian and cycle paths, more public services and facilities including urban designing and landscaping, golf courses and swimming pools in order to improve the current development scenario.

11.9 Thesis Contribution

This thesis makes contributions to both the academic and practical arenas. In the academic domain, these comprise four main aspects. First, the literature revealed a lack of studies investigating SR and LSP practices, or what the impact of the regulations are, or what the land subdivision development process is and who the main actors are. Second, this thesis accounts (in two chapters) for many aspects related to SR and land subdivision practices. Third, it also contributes to current local procedural models of the subdivision approval process carried out by regulators, as well as the development process by developers. Lastly, GIS was used as a visualisation tool to analyse aspects related to SR and land subdivision practices, producing maps and statistical results.

The contributions for practitioners are also numerous. For regulators, they have a ready model for amending SR requirements and their practice of subdivision plan approval,

which is based on the thesis results, to improve the quality of future subdivision plans. For developers, the thesis may assist them to change their conventional practices in terms of subdivision planning, designing and even development. The satisfaction studies' results can be readily utilised to help developers secure higher investment returns and thereby build better reputations if they follow the needs of people, as explained in Chapter 9. If government officials and developers were to take up and begin acting on the results of this thesis, the quality of subdivision developments in Jeddah could be improved. Finally, for consultants' offices, the thesis' output provides them, free of charge, with guidelines for a range of design concepts for the creation of subdivision plans based on people's needs.

11.10 Recommendations

The thesis points out an urgent need of a new set of SR to ensure sustainable urban development in Jeddah city through efficient and adequate monitoring and control. Hence, in the light of this, the following recommendations are put forward concerning stakeholders including officials, conventional and non-conventional developers, residents, consultants and service providers; moreover, recommendations are also made for further studies.

National Level: the major recommendation for national-level urban authorities is to give greater autonomy to local administrations, including the following points:

Local-level control: the failure of the centrally imposed uniform regulations prompts an acute need for more focused delegation of responsibilities; hence, MOMRA should delegate *sovereign authority* to Jeddah Municipality to create its own SR to fit best into the local scenario.

Experimentation: the value of testing new ideas through experiments in isolated applications is highly pertinent for sustainable urban development, which should be monitored and evaluated both by *MOMRA* and *Jeddah Municipality*.

MOMRA's role: the role of MOMRA should not be ended after transferring sovereign authority to Jeddah Municipality; rather, it should take on a more specialised role as an *advisor* to local-level institutions, including encouragement and guidance resource mobilisation, transfer of technology, capacity building, technical assistance and administrative consultation in the formulation of new improved SR in Jeddah city.

Replicability of experimentation: if the experimental applications in Jeddah or any other city in KSA are found to be successful, these should be further shared for learning and replicability purposes in Jeddah and other cities, to avoid duplication of effort in the formulation of new SR.

Local Level: Jeddah at Macro Level: to create particular SR for Jeddah, recommendations are as follows:

Master plan and SR: the SR must be directly related to the objectives and visions of the latest Jeddah master plan. This is because control over subdivision plats via regulations should be implemented in conformity with the master plan, as this plan has more clearly defined rules than presently exist over land which may potentially be developed and subdivided. The point of coordinating the two efforts is to orchestrate development in a cohesive and coherent manner.

SR should be inclusive of local practices in Jeddah: new SR for Jeddah must incorporate problem-solving solutions aimed at local physical, societal, behavioural and practical challenges, which comprise urban flooding in extreme weather events, threats from climate change, deficiencies and gaps in provision of public infrastructure, increased reliance/overreliance on cars because of the current built pattern, which has also resulted in increased pollution and a decrease in physical activities (for health improvements).

Spatial form and SR: the formation of SR standards should be closely related to the spatial form with details of surroundings near the place of development, because it would directly impact the resulting spatial form.

Diversity in SR guidelines: the SR should include several guidelines in order to increase their applicability to the available options. Each guideline should contain requirements to regulate one type of subdivision development, such as the low-density or villa type, the middle-density or apartment building, and the mixed-use or high-density residential subdivision plan. One example of this guideline model is the New Urbanism code, which takes into account the diverse array of residential densities in planned residential subdivision plans.

Conventional LSPs: lessons from analysing conventional development practices (failure and limitations) in the current study should be taken into account in the new improved set of *SR* codes and practices.

Unconventional LSPs: unconventional developers have expressed their interest in offering expertise to improve subdivision plan practices in Jeddah, which should be utilised by Jeddah Municipality.

Jeddah Old Town: the historical elements of Jeddah Old Town were created in a very different manner that was much more in keeping with the individual desires and cultural practices of Islamic Saudis. Given the different approach embodied in the old town, there is a range of physical elements that can usefully be brought back into the SR code as new requirements, in order to better serve the city's residents. The incorporation of traditional building practices into the new SR would have the added benefit of protecting and preserving the city's socio-cultural identity.

Planning pattern: unique and versatile layout patterns, such as the cul-de-sac, grid, new grid, loop, curve or fusion between two patterns in the plat, should be part of a new improved SR code. This code should contain a clear explanation and examples of each pattern, such as drawings, that will provide samples of a variety of patterns applicable within the city.

Urban design: the urban design aspects should be emphasised and well integrated into new improved SR codes; in particular, streets, pavements, and landscaping features are important urban design aspects that should be so integrated. The amalgamation of urban design elements has worth because of their aesthetics, innovation, efficient place-making to provide traffic calming, car parking, a safe and efficient road network and site intersections, and green and open spaces. Moreover, each guideline includes detailed specifications for streetscape and open spaces. Several experiences in the world, such that as of Abu Dhabi (UAE) (see Abu Dhabi Urban Planning Council, 2010e, f), the City of Oak Harbor, the city of Meridian (Idaho) (see City of Oak Harbor Planning Department, 2009; Meridian City Council, 2005, 2009) and Kāpiti Coast District Council (New Zealand) (see Kāpiti Coast District Council 2008, 2009), have prepared urban design guidelines integrated with development regulations for urban open spaces.

Liveable community: the liveability of a community should be improved by integrating pedestrian pathway accessibility, improved walkability, and cycle paths in the subdivision plan, allowing residents to walk and cycle and generally increase their daily physical activity for improved urban health. Several excellent examples from around the world that have applied the aforementioned principles in their development regulations

include Knoxville and Knox county (see Metropolitan Planning Commission, 2011), the City of Oak Harbor (see City of Oak Harbor Planning Department, 2012), the city of Meridian (Meridian City Council, 2005, 2009), the city of Abu Dhabi (see Abu Dhabi Urban Planning Council, 2010e, f), and Kāpiti Coast District Council (see Kāpiti Coast District Council, 2005, 2006).

Jeddah Municipality: Officials:

Recommendations for Jeddah Municipality officials are as follows:

Active role in developing SR: officials of Jeddah Municipality should play a role engaging and involving all the stakeholders such as developers, consultants, academics, local residents and others parties in order to improve SR and the current conventional practices of subdivision development in Jeddah.

Public information: Jeddah Municipality should inform the city's residents of the SR, their contents, importance, benefits, and also inform residents of their rights in order that they provide for the public and protect consumers. Public notification and information availability should be achieved in part by notices in local newspapers of opportunities for popular public participation. Opening discussion to the public would both raise local awareness of the regulations and give residents the opportunity to submit their suggestions on future residential development in Jeddah's neighbourhoods.

Subdivision approval:

- *Modern technology:* the latest advances in geo-informatics have improved space visualisation which saves wasting time, money and effort. Hence, Jeddah Municipality should incorporate *GIS* software and techniques in the subdivision plan approval process to make it efficient, accurate, reliable and fast. *GIS* could be used by the planning department in Jeddah Municipality or a separate *GIS* department could be established.
- *Visual Interactive Code (VIC)* is recommended for imaging the quality of SR on the ground VIC is a computer-based intranet system that helps regulators to convert development regulations and planning information into visualisations using architectural and engineering drawings, renderings, and maps, by utilising an easy and engaging graphic interface.

- Use of *3-D visualisation* tools is also recommended. These are typically used after alternative project solutions have been identified and designers and planners start to explore and understand the implications of these options.

The above solutions should also be equipped with a user-friendly interface making its use easy for common people.

Cooperation: The local government needs to cooperate with and involve service providers in the process of approving a subdivision plan in order to have clear and better insights of the service site, coverage area, contextual relationship, ability of the service to meet project service demands, accessibility for users, maintenance and emergency vehicles, and the projected date of completion within the plat boundary.

Studies: the local authority should enforce developers to conduct more analytical studies and reports their findings. The reports should show in-depth understanding of the site and its relationship to its surroundings. Aspects related to the plat approval must include environmental, traffic/pedestrian movement-related scenarios and their relationship to neighbouring plats.

Introduction of pre-approval stage: Jeddah Municipality should add an introductory stage to the subdivision approval process. The pre-application, named after the US equivalent, is meant to allow the developer or the engineering office working on the plat to introduce the primary idea of the plan to the local authority. This is an opportunity for the authority to view the application and provide the developer and his consultants with necessary and required information as well as initial impressions of the application before the applicant submits it for formal review to the planning department. This pre-application stage allows the applicant to get planners' and engineers' feedback before submitting their application, which in turn allows them to revise their application before submission and thereby improve chances of approval.

Post-implementation evaluation: Assessment of a scheme after its development should be a practice adopted by the local authority, which would be critical in identifying implementation problems and administering responses to these problems, as well as measuring whether the project has been successful in meeting its stated intentions by surveying residents. The purpose of this stage is to ensure the continued advances of SR practices, by regular monitoring and evaluation of all schemes in Jeddah.

Participation: the formation and development of a committee under the local municipality should include several members: the planning department, developers, consultants, local residents or residents' associations, and academics. The purpose of participation is to give voice to those involved in development, specifically those who can represent their own satisfaction regarding process and outcome. Participation generally appreciates the quality of subdivision plan practices by concrete evaluation criteria, which are useful for SR follow-ups and updates.

Acceleration of approval process: In order to alleviate bureaucracy, all the data and prerequisites for development should be available online, which would make the approval process transparent, efficient and fast.

Support and encouragement: Jeddah Municipality should encourage unconventional developments by improving the approval process and allowing greater flexibility. Such flexibility is essential to promote innovative plans from unconventional developers which may bring a lot of best practices to the city scene; incentives for best developments may also work.

Market projections: developers should conduct market studies which can help them to evaluate the potential success of a project as well as its capability in meeting the local community's demand.

After-sales services: these services, including operation and maintenance management of the subdivision plan, should be insured by the developers for 2–3 years after project completion.

Offering ready-to-move-in products: developers should offer ready-to-move-in residential units with the provision of parks, playgrounds and mosques.

Submission of urban design plans: subdivision approval procedures in Jeddah Municipality should force developers to submit urban design plans for their subdivision plats, inclusive of street networks, pavements, pedestrian pathways, cycle lanes, landscaping, shade and construction materials. The submission of urban design intentions correlates with the integration of urban design guidelines within the local SR code.

Training and capacity building: in order to improve subdivision plan approval administration, Jeddah Municipality should offer tailor-made training and capacity

building for officials, especially on computer applications, spatial data visualisation (concerning SR codes), and speedy communication; experience-sharing visits to developed countries such as the US, Canada, and Australia could be also fruitful. Interested officials should attend international urban planning conferences, especially that of the American Planning Association (APA).

Consultants:

Qualifying consultants: in order to avoid continuing to develop conventional schemes, consultancy office experts in subdivision development in Jeddah should be identified as acceptable consulting partners, while developers working with survey offices pretending to be urban planners should be prohibited from becoming partners.

Jeddah Municipality should identify suitable consultants under the supervision of the *Saudi Engineers Association* and list approved consultancies. Such listing will help developers to contact qualified consultants for the designing, planning, and service delivery concerned with subdivision development.

Competition: a maximum quota of five plans should be fixed yearly for each consultancy to avoid monopolies in the sector and to promote diversity and innovations in plans. It will also encourage a healthy competition among consultants making them selective and offering a plan of good quality.

Residents:

Desires and needs: residents' desires should be reflected in new improved SR codes.

Quality evaluations: it is important for the local authority, developers, consultancy offices and service providers to continue studying residents' views. Studying these helps to determine more clearly and accurately, for example, residents' satisfaction levels with subdivision plans and their contents, and comprehend what their needs are that may be used to improve future developments.

Participation: in order to improve the SR and the quality of subdivision development, the residents should be allowed to participate in the development process. Participation is an opportunity not only for residents but also for regulators, developers and consultants to indicate their views, points of conflict and needs related to SR proposals, as well as the planning and design practices for land development in Jeddah.

Orchestrated voice: establishing housing associations or neighbourhood associations in Jeddah is effective for the purpose of giving voice to the residents. These organisations operate in a transparent and cohesive manner, with more collective weight, and for these reasons are easier for policymakers and regulators to work with. For regulators and developers, the purpose of engaging local interest groups such as housing associations is to contribute to SR improvements and produce quality developments.

Suggested Areas for Future Studies:

There is still a lack of studies of SR and their impacts, as well as study of the practices surrounding LSPs, especially concerning conventional and unconventional development at the local level.

Further SR-related studies in Jeddah should be aimed at the environmental impacts, impacts concerning sustainability objectives, economic impacts, impacts on housing affordability, professionals' opinions on the development of subdivision plans, influence on the design of residential developments at various levels, residents' perceptions of private communities, their satisfaction and their views on unconventional development plans. Finally, it would be useful to study and analyse the views of public services and facilities providers, particularly pertaining to their role within the LSP approval process.

APPENDICES

APPENDIX A: SUBDIVISION CONTROL ORDINANCE: A US EXAMPLE

Figure A.1: Title page and table of contents of Hendricks County subdivision control ordinance

Effective Date: December 21,2004

SUBDIVISION CONTROL ORDINANCE

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APPENDIX B: MAPS FOR INTERMEDIATE SCHOOL SERVICE AREAS

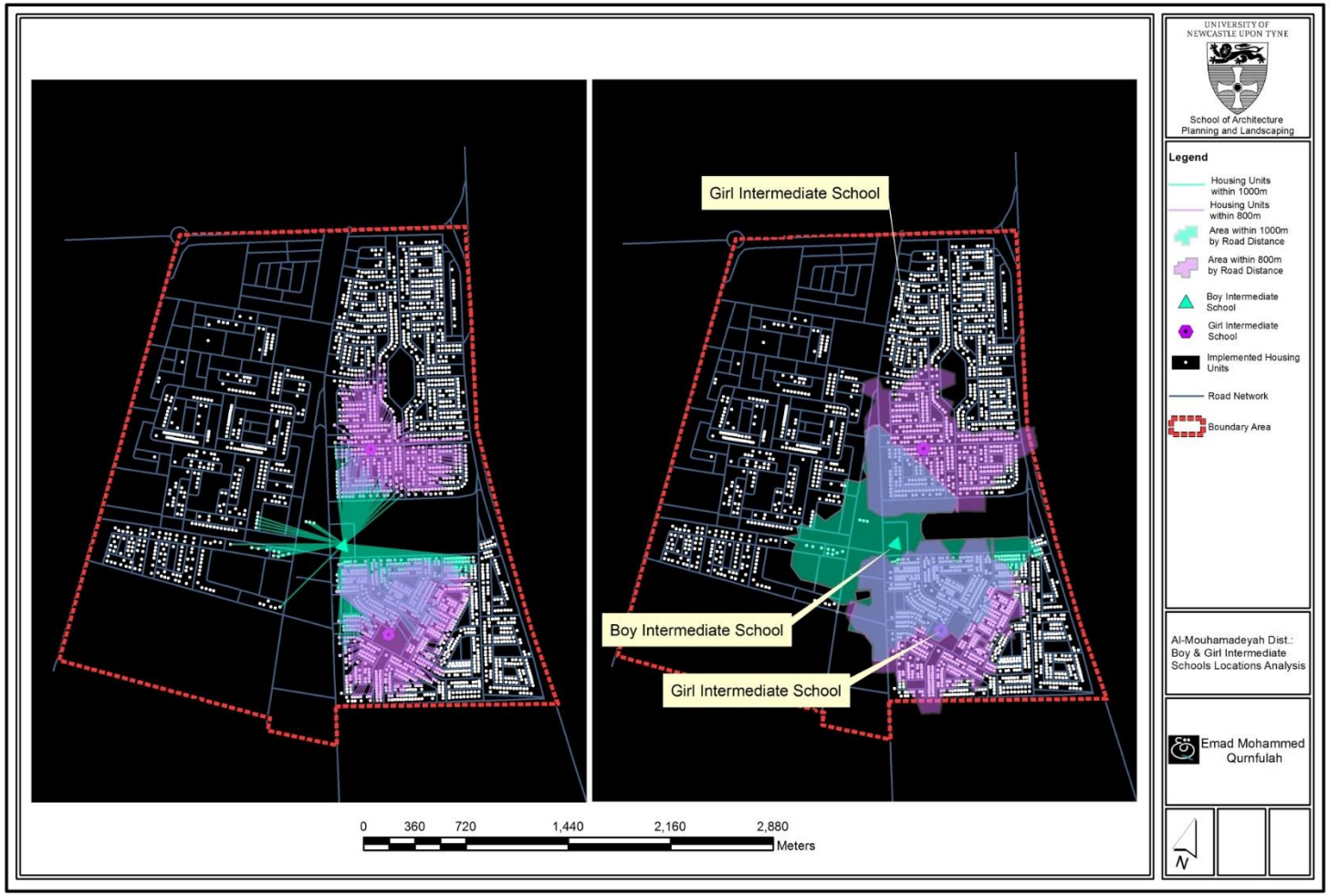

Figure B.1: Sites of implemented boys' and girls' intermediate schools in the Al-Mouhamadeyah district. Location allocations (left) and new service areas (right)

Figure B.2: Sites of implemented girls' intermediate schools in the Al-Naseam district. Location allocations (left) and new service areas (right)

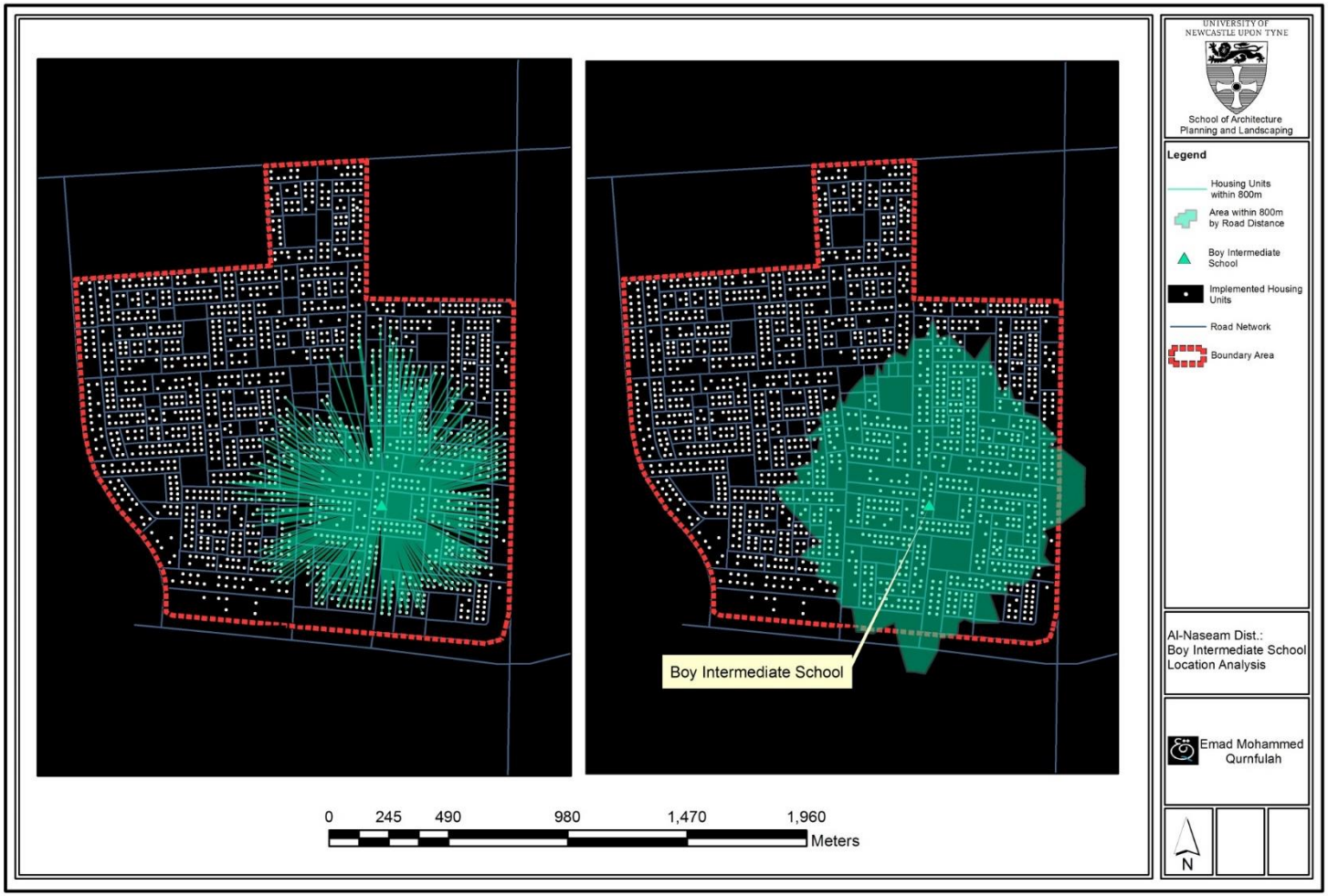

Figure B.3: Sites of implemented boys' intermediate schools in the Al-Naseam district. Location allocations (left) and new service areas (right)

APPENDIX C: STUDY AREAS QUESTIONNAIRE FORM

KING ABDUL-AZIZ UNIVERSITY
COLLEGE OF ENVIRONMENTAL DESIGN
URBAN AND REGIONAL PLANNING
DEPARTMENT

NEWCASTLE UNIVERSITY
SCHOOL OF ARCHITECTURE,
PLANNING AND LANDSCAPE

UNIVERSITY OF
NEWCASTLE UPON TYNE

QUESTIONNAIRE FORM ABOUT THE IMPACT OF SUBDIVISION REGULATIONS ON THE LAND USERS IN JEDDAH AS A CASE STUDY

FORM NO. (1) FOR THE HEAD OF THE HOUSEHOLD

DEAR RESPONDENT, THIS QUESTIONNAIRE IS PART OF AN ACADEMIC RESEARCH FOR A PHD PROGRAMME IN URBAN LAND DEVELOPMENT. IT WILL TRY TO COLLECT SOME INFORMATION ABOUT THE RESIDENTS AND THEIR DISTRICT WHICH WOULD REFLECT THEIR LIVING CONDITIONS, NEEDS, AND DESIRES. IT WILL TRY ALSO TO COLLECT SOME INFORMATION ABOUT THE GOVERNMENTAL OFFICIALS AND THE PROFESSIONAL PEOPLE IN LAND SUBDIVISION PLANS, THE MAIN PURPOSE HERE IS TO INVESTIGATE ABOUT THEIR RESPONSIBILITIES AND OPINIONS REGARDING THE REGULATION OF LAND SUBDIVISION PLANS OF THE EXISTING NEIGHBOURHOODS IN JEDDAH CITY. THE FINDINGS AND ANALYSIS WOULD BE PRESENTED TO CONCERNED DECISION-MAKERS WHO HOPEFULLY WOULD UTILISE THEM FOR FUTURE PROVISION OF LAND SUBDIVISION PLANS' ACTIVITY. THE MAIN BENEFITS OF THIS INTERVIEW WILL GO BACK TO THE FUTURE OF LAND SUBDIVISION PLANS IN JEDDAH. HOWEVER, THE ABOVE DEPENDS ON THE COOPERATION OF RESPONDENTS, THEIR CONSENT TO PARTICIPATE IN THIS INTERVIEW AND THE ACCURACY OF THEIR ANSWERS.

PLEASE ANSWER THE FOLLOWING QUESTIONS THINKING ABOUT THE NEIGHBOURHOOD THAT YOU LIVE IN THE MOST. THERE ARE NO RIGHT OR WRONG ANSWERS, WE ONLY WANT YOUR OPINIONS, AND EVERYTHING YOU TELL US WILL BE KEPT STRICTLY CONFIDENTIAL. PLEASE TRY TO ANSWER ALL THE QUESTIONS HONESTLY.

THANK YOU FOR YOUR COOPERATION

Emad Mohammed Qurnfulah
Postgraduate Research Student
Newcastle University

Questionnaire No. ☐☐☐☐

SECTION 1: PROBLEMS FACED BY LOCAL RESIDENTS (YOUR NEIGHBOURHOOD)

1-THE FOLLOWING QUESTIONS RELATE TO SOME PUBLIC SERVICES AND FACILITIES (INCLUDING PUBLIC SPACES) IN YOUR NEIGHBOURHOOD.

PLEASE CONSIDER EACH CATEGORY FOR YOUR NEIGHBOURHOOD AND THEN CHOOSE THE APPROPRIATE ANSWER:

1-IN YOUR OPINION, ARE THE FOLLOWING PUBLIC SERVICES …

		AVAILABLE & ADEQUATE	AVAILABLE & INADEQUATE	NOT AVAILABLE
1	BOYS' PRIMARY SCHOOL			
2	GIRLS' PRIMARY SCHOOL			
3	BOYS' INTERMEDIATE SCHOOL			
4	GIRLS' INTERMEDIATE SCHOOL			
5	LOCAL MOSQUES			
6	HEALTH CENTRE			
7	PUBLIC PARK			
8	PLAYGROUND			

2-IN YOUR OPINION, ARE THE LOCATION OF THE FOLLOWING PUBLIC SERVICES CONVENIENT FOR YOU AND YOUR FAMILY MEMBERS?

		YES	NO
1	BOYS' PRIMARY SCHOOL		
2	GIRLS' PRIMARY SCHOOL		
3	BOYS' INTERMEDIATE SCHOOL		
4	GIRLS' INTERMEDIATE SCHOOL		
5	LOCAL MOSQUES		
6	HEALTH CENTRE		
7	PUBLIC PARK		
8	PLAYGROUND		

3- IN YOUR OPINION, HOW FAR IS THE DISTANCE TO THE FOLLOWING PUBLIC SERVICES?

		VERY CLOSE	CLOSE	NOT FAR	FAR	VERY FAR
1	BOYS' PRIMARY SCHOOL					
2	GIRLS' PRIMARY SCHOOL					
3	BOYS' INTERMEDIATE SCHOOL					
4	GIRLS' INTERMEDIATE SCHOOL					
5	LOCAL MOSQUES					
6	HEALTH CENTRE					
7	PUBLIC PARK					
8	PLAYGROUND					

4-IN YOUR OPINION, DO YOU OR ANOTHER FAMILY MEMBER WALK TO THE FOLLOWING PUBLIC SERVICES WITHIN THE NEIGHBOURHOOD WITHOUT TOO MUCH TROUBLE?

		YES	NO
1	BOYS' PRIMARY SCHOOL		
2	GIRLS' PRIMARY SCHOOL		
3	BOYS' INTERMEDIATE SCHOOL		
4	GIRLS' INTERMEDIATE SCHOOL		
5	LOCAL MOSQUES		
6	HEALTH CENTRE		
7	PUBLIC PARK		
8	PLAYGROUND		

IF YOU SAY YES PLEASE GO TO QUESTION NOS. 5 & 6, IF YOU SAY NO FOR ALL GO TO QUESTION NO. 7

5-IF YOU OR ANOTHER FAMILY MEMBER WALK TO THE FOLLOWING PUBLIC SERVICES, WHICH ACCESS ROUTES DO YOU USE FROM YOUR HOME TO THE ABOVE PLACES?

1	USE THE ROAD NETWORK ONLY	
2	USE SPECIFIC ROUTES FOR PEDESTRIANS	
3	PEDESTRIAN PAVEMENTS + ROAD NETWORK	
4	OTHER (SPECIFY)	

6-HOW SAFE DO YOU (OR ANOTHER FAMILY MEMBER) FEEL AS YOU (THEY) WALK TO THESE PLACES?

(WHERE 1 IS THE LEAST SAFE AND 5 THE MOST SAFE (1=STRONGLY UNSAFE, 2=UNSAFE, 3=NEUTRAL, 4=SAFE, 5=STRONGLY SAFE)

		1	2	3	4	5
1	BOYS' PRIMARY SCHOOL					
2	GIRLS' PRIMARY SCHOOL					
3	BOYS' INTERMEDIATE SCHOOL					
4	GIRLS' INTERMEDIATE SCHOOL					
5	LOCAL MOSQUES					
6	HEALTH CENTRE					
7	PUBLIC PARK					
8	PLAYGROUND					

7-IN YOUR OPINION, DO YOU OR ANOTHER FAMILY MEMBER SUFFER FROM THE DELAY IN PROVIDING ANY OF THE FOLLOWING PUBLIC SERVICES WITHIN THE NEIGHBOURHOOD?

		YES	NO
1	BOYS' PRIMARY SCHOOL		
2	GIRLS' PRIMARY SCHOOL		
3	BOYS' INTERMEDIATE SCHOOL		
4	GIRLS' INTERMEDIATE SCHOOL		
5	LOCAL MOSQUES		
6	HEALTH CENTRE		
7	PUBLIC PARK		
8	PLAYGROUND		

THE FOLLOWING QUESTIONS RELATE TO THE DESIGN POLICIES OF YOUR NEIGHBOURHOOD.

PLEASE CONSIDER EACH DIMENSION CAREFULLY THEN CHOOSE YOUR ANSWER

(RATE THE DIMENSION FROM 1 TO 5, WHERE 1 IS STRONGLY UNAVAILABLE AND 5 IS STRONGLY AVAILABLE)

(WHERE 1=STRONGLY NOT AVAILABLE, 2=NOT AVAILABLE, 3=NEUTRAL, 4=AVAILABLE, 5=STRONGLY AVAILABLE)

8-CLEAR BOUNDARIES FOR THE NEIGHBOURHOOD

1	2	3	4	5

9-CLEAR ENTRY POINTS FOR THE NEIGHBOURHOOD AND NO MULTIPLE POINTS

1	2	3	4	5

10-CONTROL OF VEHICULAR TRAFFIC (CARS, VANS, LORRIES) INSIDE THE NEIGHBOURHOOD

1	2	3	4	5

11-AVAILABILITY OF SIDEWALKS AND SUITABILITY FOR USE

1	2	3	4	5

12-SPECIFIC ROUTES FOR PEDESTRIANS, NOT CONNECTED WITHIN THE ROAD NETWORK

1	2	3	4	5

13-THERE ARE BICYCLE TRAILS THAT ARE EASY TO GET TO

1	2	3	4	5

14-THINK ABOUT THE NEIGHBOURHOOD. HOW WELL DO YOU FEEL YOU KNOW YOUR NEIGHBOURS? IF YOU CHOOSE 1 OR 2, PLEASE SPECIFY WHY?

1	NOT AT ALL	
2	JUST A LITTLE	
3	MODERATELY WELL	
4	EXTREMELY WELL	

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SECTION 2: RESIDENTS' OPINIONS

1- IF YOU HAVE A GOOD AMOUNT OF MONEY RIGHT NOW AND MORE ABLE TO MOVE FROM YOUR CURRENT NEIGHBOURHOOD, DO YOU THINK IN JEDDAH THERE ARE OTHER PARTICULAR NEIGHBOURHOODS YOU COULD MOVE TO?

1	YES	
2	NO	

2-IF YOU SELECT "YES" PLEASE SPECIFY THREE NEIGHBOURHOOD NAMES IN JEDDAH:

1	
2	
3	

IF YOU SELECT "NO" PLEASE SPECIFY THE MAIN REASONS:

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

3-DO YOU KNOW ANY INFORMATION ABOUT THE CURRENT LAND SUBDIVISION REGULATION WHICH HAS USE IT BY JEDDAH MUNICIPALITY?

1	YES	
2	NO	

4-DO YOU KNOW WHETHER THESE REGULATIONS AND THE APPROVAL PROCESSES HAVE NOT BEEN IMPROVED IN THE LAST 30 YEARS?

1	YES	
2	NO	

THE FOLLOWING QUESTIONS WILL FOCUS ON THE ROLE OF THE DEVELOPER OF LAND SUBDIVISION PLANS:

5-DO YOU BELIEVE THAT DEVELOPERS IN JEDDAH WORK TO DEVELOP LAND SUBDIVISION PLANS AND NOT TO IMPLEMENT A COMPLETE NEIGHBOURHOOD WITH (SOME) INTEGRATED SERVICES?

1	YES	
2	NO	

6-DO YOU BELIEVE THAT DEVELOPERS IN JEDDAH WORK TO GENERATE A HIGH REVENUE RATHER THAN TO DEVELOP AND IMPLEMENT DISTINCTIVE NEIGHBOURHOODS IN JEDDAH?

1	YES	
2	NO	

7-DO YOU BELIEVE THAT THE DEVELOPER'S ROLE INCLUDES THREE STEPS: FIRST, OBTAIN APPROVAL FROM THE MUNICIPALITY, SECOND, IMPLEMENT THE LAND SUBDIVISION PLAN AND LAST, SELL THE RESIDENTIAL PLOTS TO USERS?

1	YES	
2	NO	

SECTION 3: RESIDENTS' NEEDS AND PREFERENCES IN JEDDAH NEIGHBOURHOODS

1-THE FIRST NEED IS FOR THE PROVISION OF SOME PUBLIC SERVICES AND FACILITIES IN THE NEIGHBOURHOOD. WHAT WOULD YOU PREFER TO FIND MORE OF IN *YOUR NEIGHBOURHOOD AREA?*

PLEASE CONSIDER CAREFULLY WHAT YOU WOULD LIKE TO SEE MORE OF IN YOUR NEIGHBOURHOOD:

		I WOULD STRONGLY LIKE THIS	I WOULD QUITE LIKE THIS	I WOULDN'T PARTICULARLY LIKE THIS	I WOULD STRONGLY DISLIKE THIS
1	BOYS' PRIMARY SCHOOL				
2	GIRLS' PRIMARY SCHOOL				
3	BOYS' INTERMEDIATE SCHOOL				
4	GIRLS' INTERMEDIATE SCHOOL				
5	MOSQUES				
6	HEALTH CENTRE				
7	PUBLIC PARK				
8	PLAYGROUND				

2-THE SECOND NEED IS THE PREFERRED WALKING DISTANCE TO SOME PUBLIC SERVICES AND FACILITIES WITHIN YOUR NEIGHBOURHOOD

PLEASE CONSIDER CAREFULLY WHAT YOU WANT FROM THE FOLLOWING OPTIONS:

		VERY CLOSE	CLOSE	NOT FAR	QUITE FAR	VERY FAR
1	BOYS' PRIMARY SCHOOL					
2	GIRLS' PRIMARY SCHOOL					
3	BOYS' INTERMEDIATE SCHOOL					
4	GIRLS' INTERMEDIATE SCHOOL					
5	MOSQUES					
6	HEALTH CENTRE					
7	PUBLIC PARK					
8	PLAYGROUND					

3-THE THIRD NEED IS THE PREFERRED LOCATION OF PUBLIC SERVICES AND FACILITIES WITHIN YOUR NEIGHBOURHOOD

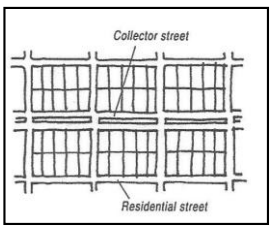
PLEASE CONSIDER CAREFULLY WHERE YOU WANT THE FOLLOWING OPTIONS:

		IN NEIGHBOURHOOD CENTRE	RESIDENTIAL CLUSTERS CENTRES	AT EDGES OF NEIGHBOURHOOD	OTHER (SPECIFY)
1	BOYS' PRIMARY SCHOOL				
2	GIRLS' PRIMARY SCHOOL				
3	BOYS' INTERMEDIATE SCHOOL				
4	GIRLS' INTERMEDIATE SCHOOL				
5	MOSQUES				
6	HEALTH CENTRE				
7	PUBLIC PARK				
8	PLAYGROUND				

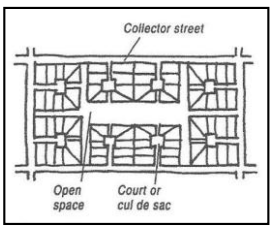
4-THE FOURTH NEED IS THE PREFERRED ACCESS ROUTE FROM YOUR HOME TO THE PUBLIC SERVICES AND FACILITIES WITHIN YOUR NEIGHBOURHOOD. COULD YOU PLEASE CONSIDER CAREFULLY WHAT YOU WANT FROM THE FOLLOWING OPTIONS:

1	USE THE ROAD NETWORK ONLY	
2	USE SPECIFIC ROUTES FOR PEDESTRIANS	
3	USE PAVEMENT + ROAD NETWORK	
4	OTHER (SPECIFY)	

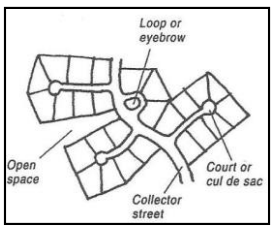
5-THE FIFTH NEED: WHICH OF THE FOLLOWING NEIGHBOURHOOD FORMS WOULD YOU CONSIDER TO BE THE BEST TO LIVE IN (CHOOSE ONE):



☐ **CURRENT PATTERN**

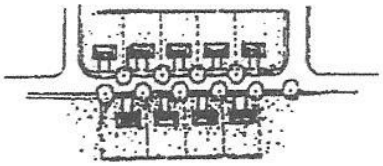


☐ **CLUSTER PATTERN**

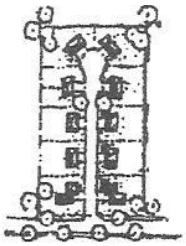


☐ **CURVILINEAR PATTERN**

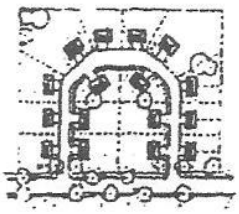
6-SIXTH NEED: WHICH OF THE FOLLOWING STREET TYPES WOULD YOU CONSIDER TO BE THE BEST TO LIVE ON (CHOOSE ONE):



 THROUGH STREET (CURRENT SITUATION)

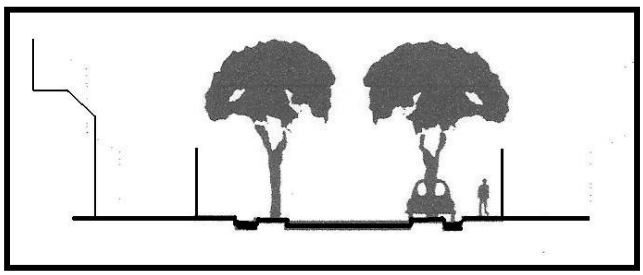


 DEAD-END STREET

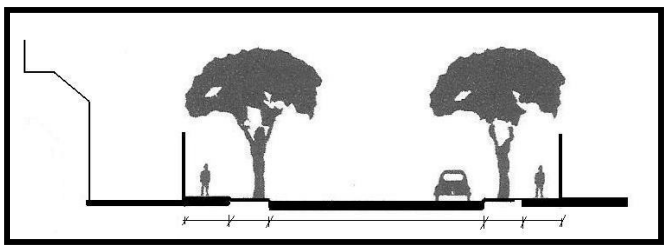


 LOOP STREET

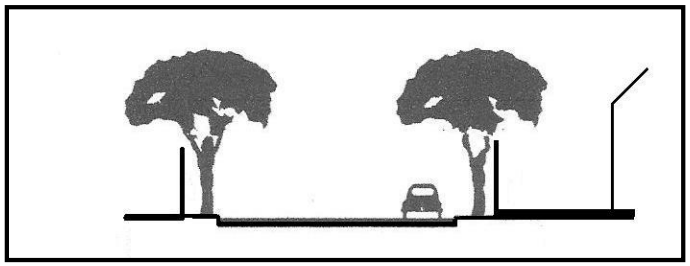
7-SEVENTH NEED; WHICH OF THE FOLLOWING STREET SECTIONS WOULD YOU CONSIDER TO BE THE BEST TO FIND IN YOUR NEIGHBOURHOOD (CHOOSE ONE PLEASE):



 NARROW STREET SURFACE, WIDE PAVEMENTS ON BOTH SIDES AND PLANTING STRIP



 WIDE STREET SURFACE, WIDE PAVEMENTS AT BOTH SIDES AND PLANTING STRIP



 WIDE STREET SURFACE, NARROW PAVEMENTS ON BOTH SIDES AND WITHOUT PLANTING STRIP (CURRENT SITUATION)

8-THE EIGHTH NEED IS THE IMPLEMENTATION OF DESIGN POLICIES IN YOUR CURRENT NEIGHBOURHOOD, COULD YOU PLEASE CONSIDER CAREFULLY AND CHOOSE THE MOST APPROPRIATE ANSWER FOR YOU:

		I WOULD STRONGLY LIKE THIS	I WOULD QUITE LIKE THIS	I WOULDN'T LIKE THIS	I WOULD STRONGLY DISLIKE THIS
1	A DISTINCTIVE IDENTITY FOR YOUR NEIGHBOURHOOD				
2	CONTROL OF VEHICULAR TRAFFIC WITHIN THE NEIGHBOURHOOD				
3	CLEAR APPROACHES AND ENTRY POINTS FOR THE NEIGHBOURHOOD				
4	ENCOURAGE PEDESTRIAN TRAFFIC IN PLACES SAFE AND ENJOYABLE				
5	POPULATION MUST BE DIVIDED INTO SMALL GROUPS WITHIN THE NEIGHBOURHOOD				

9-THE NINTH NEED IS THE PREFERRED IMPLEMENTATION DATE FOR PUBLIC SERVICES AND FACILITIES WITHIN YOUR NEIGHBOURHOOD. COULD YOU PLEASE CONSIDER CAREFULLY WHAT YOU WANT FROM THE FOLLOWING OPTIONS:

1	IMPLEMENTED BEFORE THE SALE OF RESIDENTIAL PLOTS TO USERS	
2	AFTER THE SALE OF PLOTS BUT DURING THE PROCESS OF IMPLEMENTING THE HOUSING UNITS BY USERS	
3	AFTER THE COMPLETION AND FULL IMPLEMENTATION OF HOUSING UNITS	
4	IN MULTIPLE STAGES AND IN ACCORDANCE WITH THE REQUIREMENTS OF THE LAND USERS	
5	OTHER (SPECIFY)	

10-DO YOU PREFER A CONTINUING ROLE FOR LAND SUBDIVISION DEVELOPERS AFTER THE SALE OF RESIDENTIAL PLOTS TO LAND USERS?

1	YES	
2	NO	

11-IF YES, WHAT IS THE MOST APPROPRIATE CONTINUING ROLE? (CHOOSE A MAXIMUM OF TWO ANSWERS ONLY):

1	MAINTENANCE OF THE NEIGHBOURHOOD FOR A SPECIFIED PERIOD OF TIME	
2	FULL IMPLEMENTATION AND DEVELOPMENT OF PUBLIC SERVICES AND FACILITIES FOR THE NEIGHBOURHOOD	
3	IMPLEMENTATION AND DEVELOPMENT OF SOME PUBLIC SERVICES AND FACILITIES FOR THE NEIGHBOURHOOD	
4	THE PROVISION OF INFRASTRUCTURE SERVICES ONLY	
5	CONSTRUCTION AND DEVELOPMENT OF (RESIDENTIAL UNITS+PUBLIC SERVICES AND FACILITIES) WITHIN THE NEIGHBOURHOOD	
6	OTHER (SPECIFY)	

12-WOULD YOU PREFER TO INCLUDE AN EVALUATION PHASE FOR THE APPROVED AND IMPLEMENTED NEIGHBOURHOODS IN JEDDAH IN ORDER TO VERIFY THAT PLANNING CRITERIA AND DESIGN POLICIES HAVE BEEN IMPLEMENTED IN THE NEIGHBOURHOODS, AND TO DEFINE THE PERCEPTIONS OF RESIDENTS?

1	I WOULD STRONGLY LIKE THIS	
2	I WOULD QUITE LIKE THIS	
3	NEUTRAL	
4	I WOULDN'T LIKE THIS	
5	I WOULD STRONGLY DISLIKE THIS	

13-WOULD YOU PREFER TO INTRODUCE A PUBLIC PARTICIPATION PHASE BRINGING TOGETHER THE JEDDAH MUNICIPALITY, DEVELOPERS, CURRENT RESIDENTIAL LAND USERS AND PREDICTED LAND USERS FOR ANY NEIGHBOURHOOD PROPOSAL IN JEDDAH?

1	I WOULD STRONGLY LIKE THIS	
2	I WOULD QUITE LIKE THIS	
3	NEUTRAL	
4	I WOULDN'T LIKE THIS	
5	I WOULD STRONGLY DISLIKE THIS	

14- COULD YOU PLEASE LIST THE MAIN NEEDS IN YOUR CURRENT NEIGHBOURHOOD, STARTING WITH THE MOST IMPORTANT:

1- ……..
2- ……..
3- ……..
4- ……..
5- ……..

DO YOU HAVE ANY SUGGESTIONS OR OTHER OBSERVATIONS?

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…….

SECTION 4: GENERAL INFORMATION

1-NEIGHBOURHOOD NAME:

2-HOUSE NO.:

3-STREET NAME:

4- GENDER OF HEAD OF HOUSEHOLD:

1	MALE	
2	FEMALE	

5-MARITAL STATUS:

1	SINGLE	
2	MARRIED	
3	DIVORCED	
4	WIDOWED	

6-NUMBER OF PEOPLE LIVING IN THE DWELLING:

1	HEAD OF HOUSEHOLD	
2	SPOUSE OR PARTNER	
3	MALE CHILDREN	
4	FEMALE CHILDREN	
5	OTHER RELATIVES/FRIENDS	
6	DOMESTIC STAFF	
7	TOTAL NUMBER	

7-NATIONALITY OF HEAD OF HOUSEHOLD:

1	SAUDI	
2	NON SAUDI	

8-WHAT IS THE HIGHEST LEVEL OF EDUCATION OF THE HEAD OF HOUSEHOLD?

1	LITTLE OR NO FORMAL EDUCATION	
2	ABLE TO READ AND WRITE	
3	ELEMENTARY SCHOOLING	
4	INTERMEDIATE SCHOOLING	
5	SECONDARY SCHOOLING	
6	TECHNICAL SCHOOL	
7	VOCATIONAL COLLEGE	
8	UNIVERSITY DEGREE	
9	POSTGRADUATE DEGREE	
10	OTHER (SPECIFY)	

9-EMPLOYMENT STATUS:

1	PUBLIC SECTOR EMPLOYEE	
2	PRIVATE SECTOR EMPLOYEE	
3	SELF-EMPLOYED	
4	UNPAID DOMESTIC DUTIES ONLY	
5	RETIRED	
6	STUDENT	
7	UNEMPLOYED	
8	OTHER (SPECIFY)	

10-AGE:

1	UNDER 20 YEARS	
2	20-25 YEARS	
3	26-30 YEARS	
4	31-35 YEARS	
5	36-40 YEARS	
6	41-45 YEARS	
7	46-50 YEARS	
8	OVER 50 YEARS	

11-WHAT IS THE INCOME OF THE HEAD OF THE HOUSEHOLD?

12-HOW MANY CARS DO YOU OWN?

13-EDUCATIONAL LEVEL OF ANY MALE CHILDREN (PLEASE RECORD THE NUMBER OF MALE CHILDREN AT EACH EDUCATIONAL LEVEL, BESIDE EACH CATEGORY):

1	NURSERY	
2	PRIMARY SCHOOL	
3	INTERMEDIATE SCHOOL	
4	SECONDARY SCHOOL	
5	UNIVERSITY DEGREE	
6	OTHER	

14-EDUCATIONAL LEVEL OF ANY FEMALE CHILDREN (PLEASE NOTE THE NUMBER OF FEMALE CHILDREN AT EACH EDUCATIONAL LEVEL, BESIDE EACH CATEGORY):

1	NURSERY	
2	PRIMARY SCHOOL	
3	INTERMEDIATE SCHOOL	
4	SECONDARY SCHOOL	
5	UNIVERSITY DEGREE	
6	OTHER	

15-YOUR DWELLING TYPE:

1	PALACE	
2	VILLA	
3	SEMI-DETACHED VILLA	
4	TRADITIONAL HOUSE	
5	APARTMENT	
6	OTHER (PLEASE SPECIFY)	

16-IF YOUR DWELLING TYPE IS (PALACE, VILLA, SEMI-DETACHED VILLA, TRADITIONAL HOUSE) WHAT IS THE TOTAL AREA OF YOUR PLOT (APPROXIMATELY)?

17- IF YOUR DWELLING TYPE IS (APARTMENT) WHAT IS THE TOTAL AREA OF THIS APARTMENT (APPROXIMATELY)?

18- IS THE HEAD OF HOUSEHOLD:

1	OWNER OF THE DWELLING	
2	TENANT	
3	OTHER (SPECIFY)	

19- IF YOU OWN THE DWELLING, DID YOU:

1	FIRST BUY THE PLOT THEN BUILD THE DWELLING FROM SCRATCH.	
2	BUY THE DWELLING WHEN UNDER CONSTRUCTION AND THEN COMPLETE IT	
3	BUY THE DWELLING IN A COMPLETED STATE	
4	OTHER (SPECIFY)	

20- IF YOU CHOSE THE FIRST OR SECOND OPTIONS IN QUESTION NO. 19 ABOVE, CAN YOU SAY HOW LONG THE DEVELOPMENT PROCESS HAS TAKEN?

1	UNDER 1 YEAR	
2	1-3 YEARS	
3	OVER 3 YEARS, UP TO 6 YEARS	
4	OVER 6 YEARS, UP TO 9 YEARS	
5	OVER 9 YEARS, UP TO 12 YEARS	
6	OVER 12 YEARS, UP TO 15 YEARS	
7	OVER 15 YEARS	

21-DID YOU BUY THIS PLOT OR DWELLING FROM:

1	REAL ESTATE OFFICE	
2	REAL ESTATE COMPANY	
3	BUILDERS' COMPANY	
4	LANDOWNER OF LAND SUBDIVISION PLAN	
5	OTHER (SPECIFY)	

22-NUMBER OF YEARS IN CURRENT HOUSING:

23-THE MAIN REASONS THAT LED TO YOU TO LIVE IN THIS NEIGHBOURHOOD (YOU MAY CHOOSE MORE THAN ONE RESPONSE)**:**

1	DWELLING PRICE (PURCHASE/RENT)	
2	DWELLING LOCATION	
3	PROXIMITY TO RELATIVES	
4	PUBLIC SERVICES AVAILABILITY	
5	INFRASTRUCTURE AVAILABILITY	
6	SECURITY AND SAFETY	
7	NEIGHBOURHOOD'S DISTINCT IDENTITY	
8	NEIGHBOURHOOD'S DISTINCT BOUNDARIES	
9	OTHER(SPECIFY)	

24-WHAT IS YOUR ASSESSMENT OF YOUR CURRENT NEIGHBOURHOOD (OVERALL):

1	VERY GOOD	
2	GOOD	
3	FAIR	
4	BAD	

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