The Impact of the Israeli Occupation Wall on the Urban Growth of Jerusalem

Master Thesis Submitted by the Student:

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December, 2006

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تأثير الجدار الاحتلالي الاسرائيلي على الامتداد العمراني لمدينة القدس

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5.12.2006

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Submitted in Partial Fulfillment of the Requirements for the Master Degree in Urban Planning and Design from the Faculty of Engineering at Birzeit University Palestine.

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الاهداء

إلى والداي اللذان ساندني أثناء دراستي
إلى زوجتي التي تعبت وتحملت وسهرت الليالي إلى جانبي
إلى الدكتور قاسم اغبارية مشرفي الذي كان معي دائما متفهما ومعطاءا
الى كل من أعان وساعد في إعداد هذه الرسالة

إليهم أهدي هذا العمل المتواضع

Acknowledgements

To my parents who supported me throughout my study

To my wife who stood beside me

To my supervisor Dr. Kassem Egbaria

To everyone who helped or contributed to this thesis

I dedicate this work

ملخص

إن الهدف من هذه الرسالة هو دراسة تأثير الجدار الاحتلالي على القدس الشرقية. إن الأهمية الاجتماعية والاقتصادية والدينية لمدينة القدس يضعها في مكانة متميزة في حياة كل من الفلسطينيين والعرب والمسلمين. يأتي الجدار الاحتلالي في القدس استمرارا للسياسات الإسرائيلية القائمة منذ عام 1948، والتي تهدف إلى احتلال الأرض مع أقل عدد ممكن من السكان الفلسطينيين وبالتالي الحفاظ على التفوق الديمغرافي للمستعمرين اليهود الإسرائيليين على السكان الأصليين الفلسطينيين.

من أجل القيام بهذه الدراسة، ونظرا لمحدودية الوقت والموارد، تمت دراسة حالة دراسية واحدة تقع ضمن مدينة القدس وهي قرية أبو ديس. ومن أجل أن تكون هذه الرسالة محايدة، غير منحازة، ذات مصداقية، تم القيام بالبحث باستخدام الأسلوب العلمي واستعمال تقنية إسقاط التوجهات (Trends Projection)، وذلك من خلال استعمال جميع المعلومات الديموغرافيه والاجتماعية - الاقتصادية والبيئيه والفيزيائية، من اجل صياغه وتقييم اتجاه النمو الحضري لقرية ابو ديس.

تم القيام بهذا البحث على مرحلتين : الأولى هي حساب مساحة الأراضي المطلوبة للنمو الحضري ، وثانيها ، اسقاط موقع هذه الأراضي المستقبلي. إن التحليل الحيزي لنظم المعلومات الجغرافية الجغرافية (GIS Spatial analysis) يأتي هنا بوصفه أداة رئيسية يستخدمها الباحث في هذه الرسالة.

نتائج هذا البحث يمكن تلخيصها بما يلي: إن الجدار الاحتلالي يقتطع أكثر من 60 ٪ من الأراضي اللازمة للنمو الحضري لأبو ديس، ولا يترك السكان المحليون مناصا سوى التوسع على حساب الأراضي الزراعية والتي هي المورد الطبيعي الوحيد في القرية. أو بدلا من ذلك، التوسع في المناطق غير المناسبة للنمو الحضري، مما يضع الأعباء المالية على السكان أنفسهم وعلى مقدمي الخدمات المحليين من ماء وكهرباء وبنية تحتية. كل هذا يشجع على الهجرة خارج

القرية، ويساهم بشكل مباشر في السياسات الإسرائيلية في مدينة القدس، والتي تهدف للحفاظ على التفوق الديموغرافي لليهودي الإسرائيليين المستعمرين على السكان الأصليين الفلسطينيين.

Abstract

The purpose of this thesis is to study the impact of the occupation wall on East Jerusalem. The socio-economical and religious importance of Jerusalem city gives it a unique place in the lives of all Palestinians, Arabs and Muslims. The occupation wall in Jerusalem comes as a continuation to existing Israeli policies since 1948, aiming at occupying the maximum land with the minimum number of Palestinian inhabitants, and maintaining the demographic superiority of Jewish Israeli colonists over Palestinian original inhabitants. In order to carry on this study, and due to limited time and resources, a single case study (Abu-Dis Village) within Jerusalem is studied.

In order to be as unbiased as possible, the research is approached scientifically using a trends projection technique, integrating all aggregated demographic and socio-economic information with disaggregated environmental and physical datasets in order to formulate and evaluate urban growth trend of Abu Dis village. The research is carried out on two stages: first calculating the land area needed for urban growth, and second, forecasting the allocation this land area. GIS spatial analysis comes in as a major tool used by the researcher in this thesis.

The findings of this research can be summarized by the following: The Occupation wall is cutting off more than 60% of land required for urban growth for Abu-Dis, leaving the local inhabitants with no choice but to expand on the expense of agricultural land – the only natural resource in the village. Or alternatively, to expand

in non-suitable urban growth areas, putting heavy financial burdens on the inhabitants themselves and on the local service providers. All this is encouraging emigration out of the village, and contributing to the Israeli policies in Jerusalem city; to maintain the demographic superiority of Jewish Israeli colonists over Palestinian original inhabitants.

Table of contents:

CHAPTER 1 : Introduction:

1.1 Main Argument

The occupation wall in East Jerusalem is dramatically cutting off land from Palestinian urban areas, whose inhabitants already live in overcrowded conditions due to the expropriation of land and demolition of buildings through organized Israeli policies.

The occupation wall comes as a continuation to these policies. It is physically insolating Palestinian urban areas from each other and physically limiting their expansion and continuity. Moreover it is forbidding most Palestinian workers from reaching their main source of income inside the green line. It is also cutting off main natural resources in the West Bank by cutting off water recourses such as wells, and cutting off agricultural land either directly or by leaving no choice for Palestinian urban areas to expand but over it.

On the other hand, the Palestinian population growth (4.2% yearly), (PCBS, 2002) is considered among the highest between other neighboring countries. This underlines the importance of having lands, available for urban growth. Therefore the lives of many Palestinians are either directly affected by the wall; through forbidding expansion, cutting off agricultural land and water resources or forbidding the reach of

the work inside the green line, or indirectly affected through causing crowdedness, unemployment, poverty and social problems.

1.2 The Gap

Lots of studies have been carried out about the Wall, but none examined the impact on the physical urban expansion. Most of these studies were either documentary, that lacked analysis; such as: The Palestinian environmental NGOs network (PENGON) and The United Nations office for the coordination of humanitarian affairs – Occupied Palestinian territories (OCHA-oPt), - or were political oriented rather than scientific like: the Palestinian negotiations department publishing. Some analysis studies have been carried out by the Applied Research Institute of Jerusalem (ARIJ), but did not study the physical urban expansion.

1.3 Main Objective

The main objective of this research is to rationally measure the effect of the occupation wall on the urban expansion of East Jerusalem. In order for the researcher to do so, the analysis in this research has been approached rationally, so as to be a reference to alert people - on both levels; public and decision makers - of these effects.

1.4 Main Factors and actors

Physical urban expansion, in general, depends on many factors that can be summarized in; Demographic factors; Socio-economical factors; Land use and natural resources, and Topography. In Palestine, and due to its unique situation being under occupation, three more factors may be added to the above mentioned: The Wall, The Colonies, Political factors.

The main actors can be summarized by; Palestinian decision makers (The Palestinian Authority), Israeli decision makers (The Israeli Government) and the Public.

1.5 Approach and Methodology

1.5.1 Approach

A comparison approach is used for the purpose of this research. The comparison took place between physical urban expansion trends of Palestinian areas in east Jerusalem before the Wall, and physical urban expansion trends of Palestinian areas in east Jerusalem after the Wall. The above mentioned factors and actors will all be taken into consideration.

1.5.2 Methodology:

This research uses a single case study method. A sub case study within east Jerusalem is selected to be Abu Dis village. This case study lays to the south of

Ramallah. It is relatively easy to access when compared to the northern Bethlehem region.

A tremendous quantity of data can be found documented about Jerusalem taking into consideration that Jerusalem city is the heart of the Palestinian – Israeli conflict. Thus most of data used is documentary. Some empirical data is gathered through interviews with key persons in the local government units of effected neighborhoods.

Documentary data will be gathered from deferent types of recourses:

1.5.2.1 International institutions, such as:

- United nations office for the coordination of humanitarian affairs (OCHA)

1.5.2.2 Governmental and formal sources such as:

- Palestinian central bureau of statistics (PCBS).
- Ministry of planning.
- Ministry of local government.
- Municipalities and local government councils.

1.5.2.3 Semi formal sources,

- The local different NGO's. such as Applied Research Institute of Jerusalem (ARIJ) for example

1.5.2.4 Private sector resources, such as

- Aerial photogrametry companies,

- Private engineering offices involved in the planning process.

Data gathered will be of two types; qualitative and quantitative, analysis of data will be carried out using a continued growth scenario through trends projection technique. GIS will be used as a main tool for analysis. It will also be used to interpret findings.

1.6 Research contents:

This study includes 6 chapters; Chapter one is the introduction. Chapter two discusses the Israeli policies in east Jerusalem and how is the occupation wall a continuation to accomplish these policies. In this chapter a historical enumeration of Palestine is discussed, showing the phases of the Israeli - Palestinian struggle, starting after the end of the WWII until now. Light will be through on Jerusalem's importance to Arabs in general and Palestinians in specific. Economical, religious, social aspects of importance will be discussed. Then an enumeration of the occupation Wall, its beginning, its phases and its objectives and a quick look at its impact on Palestinian communities.

Chapter three discusses urban theories used in this research. Continued growth scenarios, trends projection techniques, urban sprawl and the need for urban growth are all discussed in this chapter as they are used as a theoretical background for this research.

Chapter four discusses the methodology used in this research. It discusses the research design, the selection of the research settings, the data collection process and finally techniques and tools used within the analysis. The trends projection technique is a major technique used in this research. It is a continued growth scenario. continued growth scenarios are frequently prepared by urban planners in order to formulate a viable planning scenario which may serve as a benchmark against which to measure other alternative scenarios (Landis, 1995) and (Klosterman, 1999)

Chapter five is the analysis chapter it is divided into two parts; the first part is concerned with calculating land uses areas that is needed for future urban growth, within the time framework of the research in this part the trends projection technique plays a major roll. The second part is concerned with allocating these lands. GIS comes here as a major tool used for this process.

Chapter six is the conclusion and recommendations chapter.

1.7 Limitations:

- Access to east Jerusalem requires special permits that the researcher can't get. A sub case study that is easy to access is selected (Abu-Dis). The availability of documentary data has overcome this limitation.

- Citizens fear from any Israeli action against them, which makes data collected through interviews less reliable. The researcher will use more documented data than empirical
- limited time and resources

CHAPTER 2 : Israeli Policies and the Occupation Wall :

2.1 Introduction:

In this chapter a historical enumeration of Palestine will be discussed. Showing how the Israeli - Palestinian struggle has begun, starting after the end of the WWII through the catastrophe war in 1948 and the division of Jerusalem, then the occupation of East Jerusalem in 1967 along with the rest of the West Bank and Gaza Strip. Light will be through on Jerusalem's importance to Arabs in general and Palestinians in specific. Economical, religious, social aspects of importance will be discussed. A thorough discussion about Israeli policies in east Jerusalem since its occupation in 1967 will be conducted including demographic, land expropriation, and economical policies. Then an enumeration of the occupation Wall, its beginning, its phases and its objectives and a quick look at its impact on Palestinian communities. Its impacts will be discussed from a point of view to know true reasons after its construction.

2.2 Palestine through history – General background:

Historical Palestine is the spot of land that lies between the Mediterranean – west, and the Jordanian river - east, and between the Golan Heights – north, and the Gulf of Aqaba – south, with global coordinates of (31° North, 35° East). It has an area of about 27,000 Sq. Km. This spot of land was known internationally as Palestine. It was inhabited by Arabs for more than thirteen centuries, and was under the

Ottoman's Muslim empire for four centuries. After the First World War (1918) and at the break-up of the Ottoman Empire over 90% of the population of Palestine was Arabs (Coon, 1992). The Jewish was a minority that included a small indigenous population and Zionist migrants who had begun to arrive in the 1880s (Coon, 1992).

Palestine was under the British mandate from the League of Nations since the year 1922. Great Britain at that time committed itself to the establishing of a Jewish state in Palestine through Belford promise dated 1917. (Mid East Web, 2001). As a result, a conflict grew between the local Arab inhabitants and the immigrant Jews in Palestine who started to increase their population rapidly in Palestine by increasing Jewish immigration from central Europe. Meanwhile the United Nations Special Commission on Palestine (UNSCOP) recommended that Palestine to be divided into an Arab state and a Jewish state. The commission called for Jerusalem to be put under international administration. The UN General Assembly adopted this plan on Nov. 29, 1947 as UN Resolution (GA 181). See figure 2.1. This resolution was rejected by the Arabs who saw they have a historical right in Palestine. The growing Jewish Arab conflict resulted to the War of Catastrophe in 1948. Right before this war the population in Palestine was about 2 Million less than 30% of that number was Jewish. Jews in Palestine at that time owned less than 8% of the land (Mid East Web, 2001).

The catastrophe War of 1948 resulted in the defeat of Arabs and declaring the new State of Israel. About 90% of the Arab population was expulsed out from land controlled by this Israeli state. Estimates vary considerably, but about (360,000) person of those were expelled to the West Bank alone — mostly as destitute refugees. In consequence the population of the West Bank increased by about 75% in about a year. (Coon, 1992)

The Israeli state militarily controlled more than 77% of the land of Palestine - considerably more than had been proposed in the UN partition plan, See figure 2.1. As a result Jerusalem city was divided into two parts; Eastern Arabian, including the old city, under the Jordanian Governance and Western Jewish under the Israeli state. See figure 2.2

Figure 2-1: Historic Palestine through different political stages (Mid East Web, 2001).

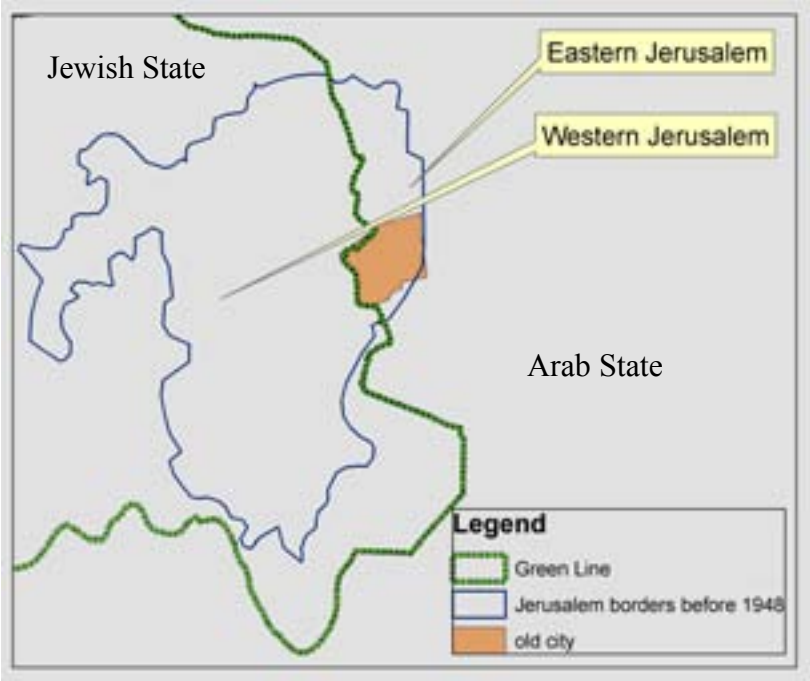


Figure 2-2: Result of the Catastrophe War 1948

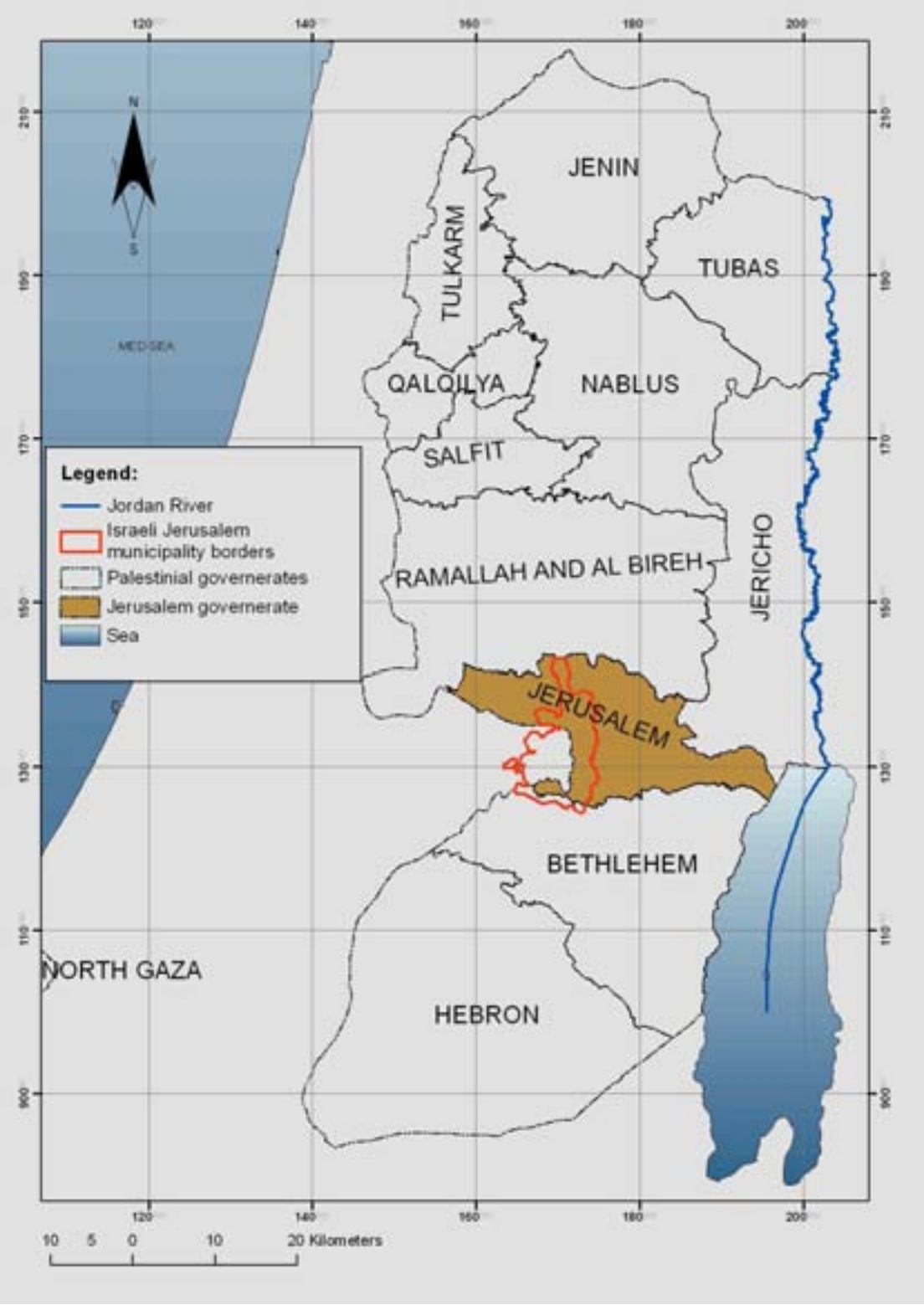
The conflict between Arabs and the state of Israel continued. As Arabs felt that their historic right in Palestine is being confiscated. East Jerusalem was also occupied militarily – along with the rest of West Bank and Gaza Strip - by the Israelis after the six day war between the Israelis and the Arabs in 1967. East Jerusalem has been occupied since then. UN resolution (242) states that Israel has to retreat from lands occupied in the year 1967 in exchange for peace. Of course lands occupied in the six days war include East Jerusalem. Consequently, East Jerusalem then – by international law – is Palestinian occupied land. Historically, it has been inhabited by Arabs for the past 13 centuries. Jewish population had been made through late immigration at the beginning of the twentieth century.

2.3 East Jerusalem – Context

From the perspective of East Jerusalem as an occupied Palestinian land, this research is being carried out. This assumption is based upon historical facts and international law. In spite of all Israeli governments' policies – over time – that aim at changing this fact. Israeli policies however will be discussed thoroughly later in this chapter.

2.3.1 Importance of Jerusalem

Jerusalem city gains its importance to Palestinians in particular and to all Arabs in general because it hosts many of the most religious sacred places to both Muslims and Christians, and it is known that the vast majority of Arabs are either Muslims or Christens. At the heart of the old city of Jerusalem lies Al-Aqsa Mosque, the third mosque in Islam after both al-Haram Al-Makki in Makkah city and Al-Masjed Al-Nabawi in Al-Madina Al-Munawwara city in Saudia Arabia. This has been motioned in the holey Qura'an which more than a billion muslim has faith in. For Christians it hosts the Church of the Holy Sepulchre and the Church of Gesthemane which are also of great importance to the Christians. Moreover East Jerusalem has physical, social and economical factors shoring its importance to Palestinians; Jerusalem lies in the middle of Palestine and in the heart of the West Bank. This combined with its religious importance made it the central city for the Palestinian community, both economically being the Palestinian commerce center for about 13 centuries, and socially being an attraction center due to the above discussed values it has.



Map 2-1 : Location of Jerusalem Governorate

2.3.2 Historical urban characteristics of Jerusalem

Until the year 1948, before the catastrophe war, Jerusalem consisted mainly of the old city, with an urban extension to the north. See figure 2.2. This extension had been formed as a result of the population growth in the old city which is limited in area inside the historical wall of Jerusalem.(PASSIA, 2000). Jerusalem city – at that time – economically depended mainly on commercial activities. People used to come to Jerusalem for shopping their needs, and for trading, thus Jerusalem was – as mentioned before - the commercial and social hub not only for surrounding villages but also for other Palestinian major cities. This area – the old city and its north extension – consisted of mixed use buildings with 1 to 4 stories. Religious, residential, commercial, educational, health and public uses were all found there. As many of these buildings can still exist and can be found until this day.

As for the surrounding villages – which now are a main part of east Jerusalem – they were surrounded by lands in the ownership of the people of the particular village, on whose, agricultural productivity, their prosperity and population growth are greatly depended. (Coon, 1992). Villages have been compact, and the traditional form of building (one storey buildings or two maximum).

With the increases in population and living standards of the second half of the twentieth century, a huge expanse of development beyond the compact traditional

village occurred. Villages now often extend along main roads. Buildings are now often of two or more stories.

A major problem in Palestinian urban development, that still exists is overcrowding. In 1980 statistics indicate that nearly half of the population was still living in three or more people in a room (Coon,1992). This is considered by the Palestinian central bureau of statistics as a high housing density (PCBS, 2005). Recent 1997 statistics in East Jerusalem show that: 23% of Palestinian families still live in a housing density of 3 or more persons per room compared to only 1.6% of Israeli's (PCBS, 2005). This indicates that the problem still exist though the average housing density is dropping. Recent statistics also indicates that in the year 2003, after beginning construction of the occupation wall, the average housing density in Jerusalem has jumped from (1.8 p/room) to (2.5 p/room). An indicator of the occupation wall impact on crowdedness in Jerusalem city

2.3.3 Israeli Policies in Jerusalem

Since the occupation of East Jerusalem 1967 the main goal of Israeli planning policies was to enhance Israeli control over this part of the city. (Bollens, 2000). Bollens discusses in his book that the director of the Department of Local Planning, Ministry of the Interior (B. Hyman), explained to him in an interview that urban goals of Israeli policy makers seek to:

- Extend the Jewish city geographically and demographically;

- Control the heights for military security;
- Reconnect the formerly partitioned areas by building a Jewish development bridge from west to east;
- Build Jewish neighborhoods so that division of the city in terms of political control and sovereignty is never again possible. (Bollens, 2000)

Israeli policymakers and planners try to achieve such control through strategies that entrench a Jewish majority and control over Jerusalem with its two parts. These strategies are interrelated and build one upon the other. They involve three main points:

- Stabilization of Jewish-Arab demographic proportions;
- Location of new Jewish colonies; and
- Expansion of the economic base of the city. (Bollens,2000)

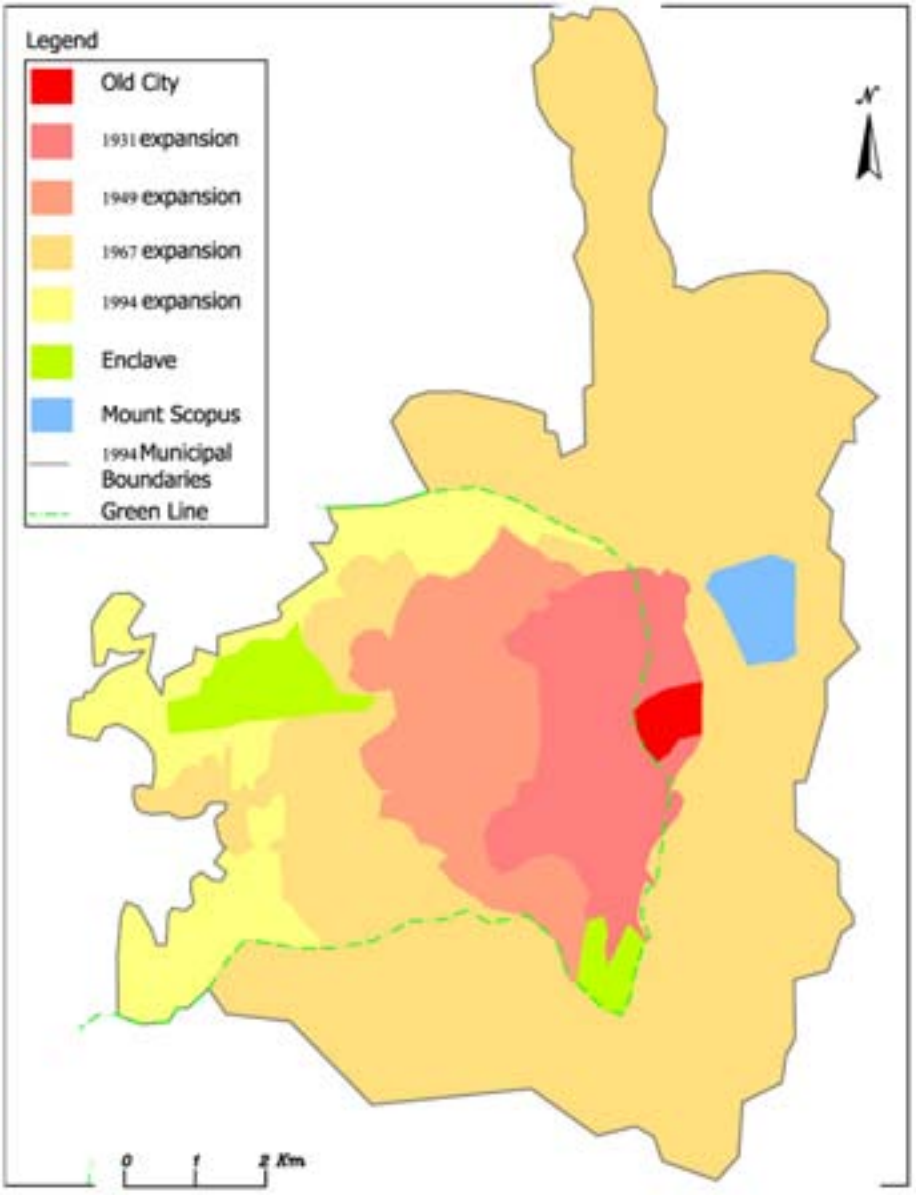
These three main strategies will be discussed in details in the following paragraphs.

2.3.3.1 Stabilization of Jewish-Arab demographic proportions:

"Let there be no mistake. I do not want to enhance the Arab population in Jerusalem. It should not grow. . . I wish that the Arab minority in Jerusalem will shrink." These were the words of Ehud Olmert, Mayor of Jerusalem (as told to Yediot Aharonot), (Los Angeles Times May 13, 1995). The clearest articulation of this Israeli urban strategy was Prime Minister Golda Meir's proclamation in the early 1970s that Israel

should do all that is necessary to maintain the numerical ratio of 73 percent Jewish to 27 percent Arab population within the municipal borders of Jerusalem. Another source emphasizing this is the Israeli law of Jerusalem municipality. It states that Arab to Jewish population ratio should not exceed 30 to 70 percent (law of Jerusalem Municipality, section 3.1). In the implementation of this strategy, one of the first moves after the end of the Arab Israeli war in 1967, was the forceful eviction of more than 1,000 Palestinians from the Old City's Mughrabi Quarter and the destruction of their houses (about 135 houses) in order to create a plaza in front of Al-Buraq wall (the western wall of Al-Aqsa mosque). (PASSIA, 2000)

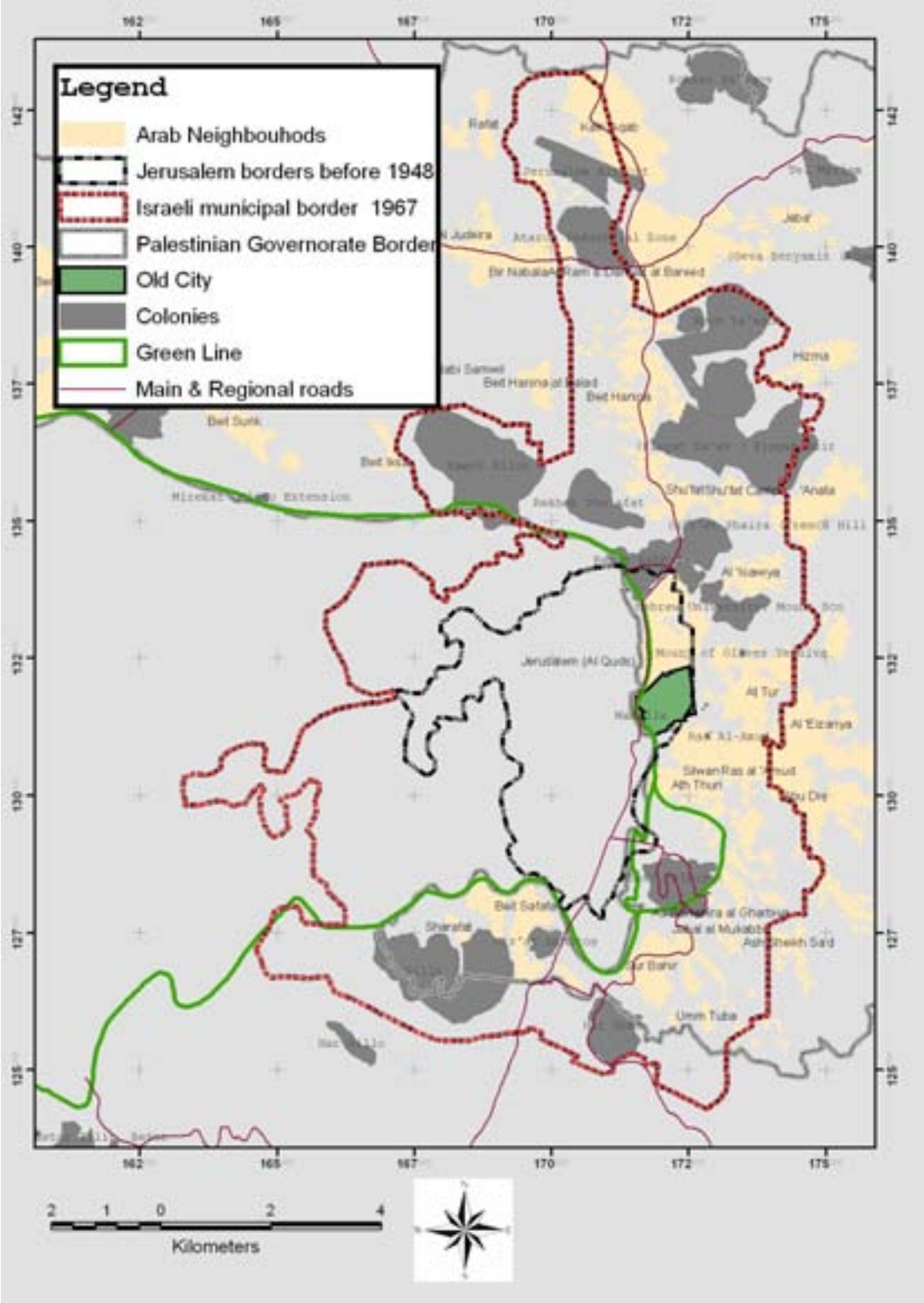
But the most effective action - by the Israeli government - in that direction is the expansion of the municipality borders of Jerusalem municipality. The Arab East Jerusalem municipal boundaries, comprising 6.5 km^2, were expanded through the annexation of an additional 70 km^2 of East Jerusalem and some 28 surrounding villages into the State of Israel's territory. (B'Tselem, 1995). This expansion had three major effects—inclusion, exclusion, and legitimating.



Map 2-2: Jerusalem Borders through history

First, because the new borders encompassed “maximum land with minimal population,” it provided a large land supply for subsequent Israeli development of Jewish neighborhoods. The large-scale annexation brought twenty-eight Arab villages and settlements into the domain of Israeli control. Schmelz estimates that annexation of the additional 70 square kilometer (beyond Jordanian east Jerusalem) increased the non-Jewish percentage in the “city” by 7 percent (Layish, 1992). In the longer term, however, this allowed Israel to control many strategic geographic points in the Jerusalem region, and established a large reserve of buildable land upon which it could practice partisan planning and reinforce demographic dominance.

A second effect of boundary drawing was an exclusionary one. Where it was possible to exclude Arab populations from the greatly expanded new “Jerusalem,” Israel did so. The new border was intentionally drawn to exclude several Arab nodes of population well within the urban sphere. As Map 2.3 displays, boundary drawing left out such villages as A-Ram and Dahiet Al-Bareed (25,217 person) in the north, and el-Azariya (17,142 person) and Abu Dis (11,932 person) to the east. (PCBS, 2005). These population agglomerations adjacent to “Jerusalem” are highly populated as seen from the above mentioned figures.



Map 2-3: Jerusalem Israeli municipal boundaries

Third, by extending municipal borders, Israel provided a grounds whereby they argue that growth and development issues in the region are of municipal, not international, concern. Controversy and instability are dealt with by attempting to place contested actions within a framework of routine management (Dror, 1989). This municipalization of controversial action can be traced back to 1967, when the Knesset decided that territorial enlargement should occur through municipal legislation, not through its own declarative acts (Amirav, 1992). Today, a common legitimization of Israeli development plans in east Jerusalem suggests that they are being done to accommodate "natural urban growth."

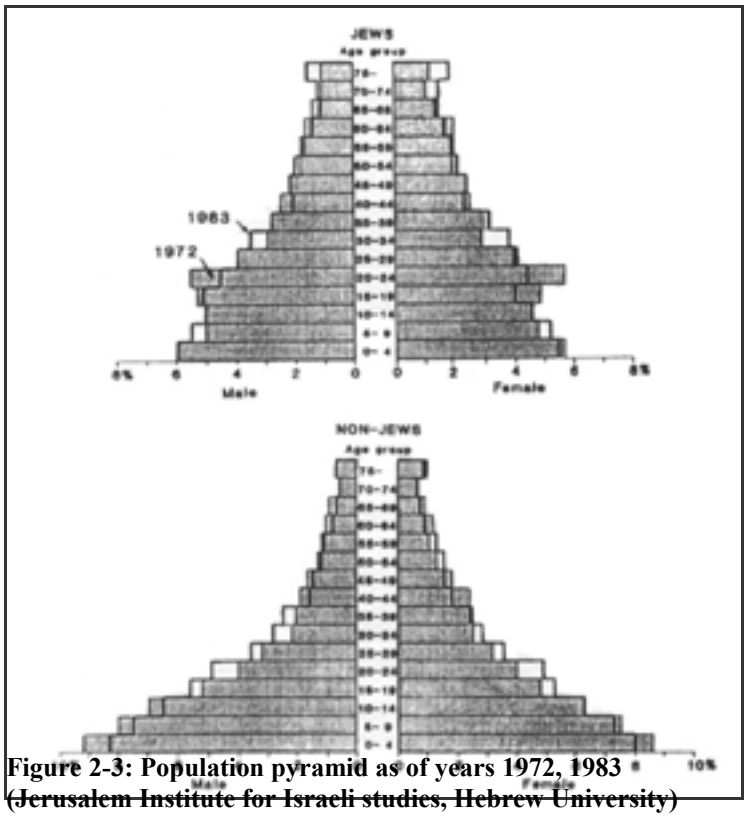


Figure 2-3: Population pyramid as of years 1972, 1983 (Jerusalem Institute for Israeli studies, Hebrew University)

Israeli facilitation of Jewish growth is one part of the picture; restriction of Palestinian growth is the other. The natural increase of the Palestinian population within Israeli-demarcated Jerusalem presents a problem to Israeli demographically based planning. From 1967 to 1996, the average annual

growth rate in the city of the non-Jewish (Arab) population has is between 3.3 percent (Bollens, 2000) and 3.5 percent (Coon, 1992) compared to 2.6 percent for the Jewish (Jerusalem Municipality, 1997). This owes, in part, to higher rates of natural increase among Arab Palestinians. As Figure 2.4 shows, the Palestinian population has been a younger one, on average. In 1992, its median age was 19.1 years compared to 25.9 years for Jews (Jerusalem Municipality, 1994). This may be due to the fact that the Israeli community is to a far extent shaped by immigration. As (Goldscheider, 1996) illustrates that "Israeli society has been shaped by immigration patterns more than most other countries" (Goldscheider, 1996). For Israeli policymakers, this situation means that it is not sufficient in maintaining the city's demographic ratio to concentrate only on the facilitation of Jewish growth. Indeed, Palestinian population and growth is "perceived as a demographic threat to Israeli control of the city" (B'Tselem 1995). Palestinian internal growth could potentially outnumber Jewish population growth. Due to these demographic parameters, Israel must "run to stand still" in order to maintain its 70 percent majority (Dumper 1997).

Israeli planners have thus worked to restrict through the planning apparatus the growth potential of Palestinian communities within Jerusalem. This has been accomplished through several tools:

- the expropriation of land by Israel;

- the restriction through "green area zoning" of Palestinian rights to development;
- the use of road building to restrict and fragment Palestinian communities;
- "hidden guidelines" within Israeli plans that restrict building volume in Palestinian areas; and
- the intentional absence of plans for Arab areas that would be needed for infrastructure provision and community development.

Table 2-1: Land Expropriation through Israeli methods (B'Tselem, 1995)

Method of restriction	Percent of land restricted
Land Expropriation	33 %
Green area zoning	40 %
off-limit due to road construction	6 %
Already built-up areas	10 %
Left for future expansion	**11** %

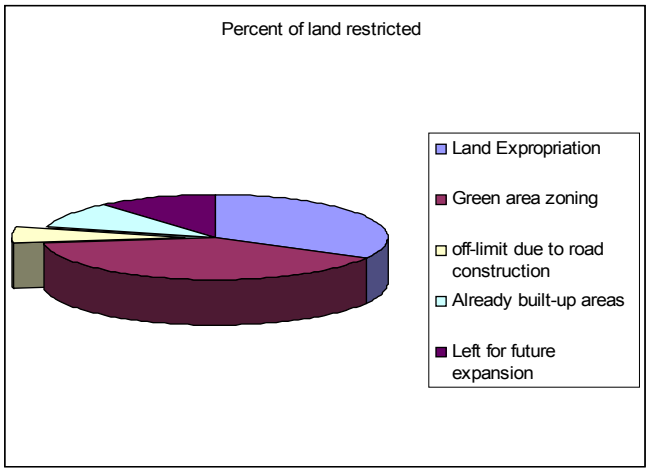


Figure 2-4: Percentage of land restricted by Israeli policies in East Jerusalem

B'Tselem, concludes that Israeli urban policy "is based, first and foremost, on creating a demographic and geographic reality that will preempt every future effort to question Israeli sovereignty in east Jerusalem." Such planning differentiates between Jewish growth and Arab growth, facilitating the former and restricting the latter.

2.3.3.2 Location of new Jewish Colonies :

Continuing the Israeli policy of sovereignty in Jerusalem, new Jewish colonies need to be built in the Eastern part of Jerusalem. These colonies should be positioned in locations that establish a Jewish presence throughout the city while at the same time protecting the security of Jewish residents against the Arab villages and residents in the city. This geographic reach is important in establishing "facts on the ground" that makes it hard to try to divide Jerusalem again between a future Palestinian state and the Israeli states. In the same course the Palestinian Academic Society for the Study of International Affairs, Jerusalem describes such actions as: "irreversible facts in the city that allow Israel to secure and maintain exclusive control."(PASSIA, 2000). Land has to be expropriated in order to build these new colonies. Table 2.2 below illustrates the expropriated land in east Jerusalem since 1967:

Table 2-2 Expropriated land in East Jerusalem since 1967

Colonie	Year	Built on Arab Land	Area (donums)	Jewish Population
Ramot Eshkol	1968	Lifta	985	5,902
Mt. Scopus	1968	Shu'fat, Issawiyya, At-Tur	1,048	1,278
Givat Shapira	1968	Shu'fat, Issawiyya	970	6,810
Atarot	1970	Qalandia, Beit Hanina	3,327	
Gilo	1971	Sharafat, Beit Jala, Malha	2,859	27,727
Neve Ya'acov	1972	Hizma, Beit Hanina	1,759	20,316
Ramot Allon	1973	Beit Iksa, Lifta, Beit Hanina	4,979	36,586
East Talpiot	1973	Sur Baher	1,196	12,916
Pisgat Ze'ev	1985	Hizma, Beit Hanina	5,468	37,570
Givat HaMatos	1991	Beit Safafa, Beit Jala	310	577
Har Homa	1991	Um Tuba, Sur Baher	2,523	
Rekhes Shu'fat	1994	Shu'fat	1,126	12,275
Old City			117	
Near Oldcity			101	
Road construction			1,214	
miscellaneous			134	
Total			**28,116**	**161,957**

(PASSIA, 2000 ; Bollens, 2000)

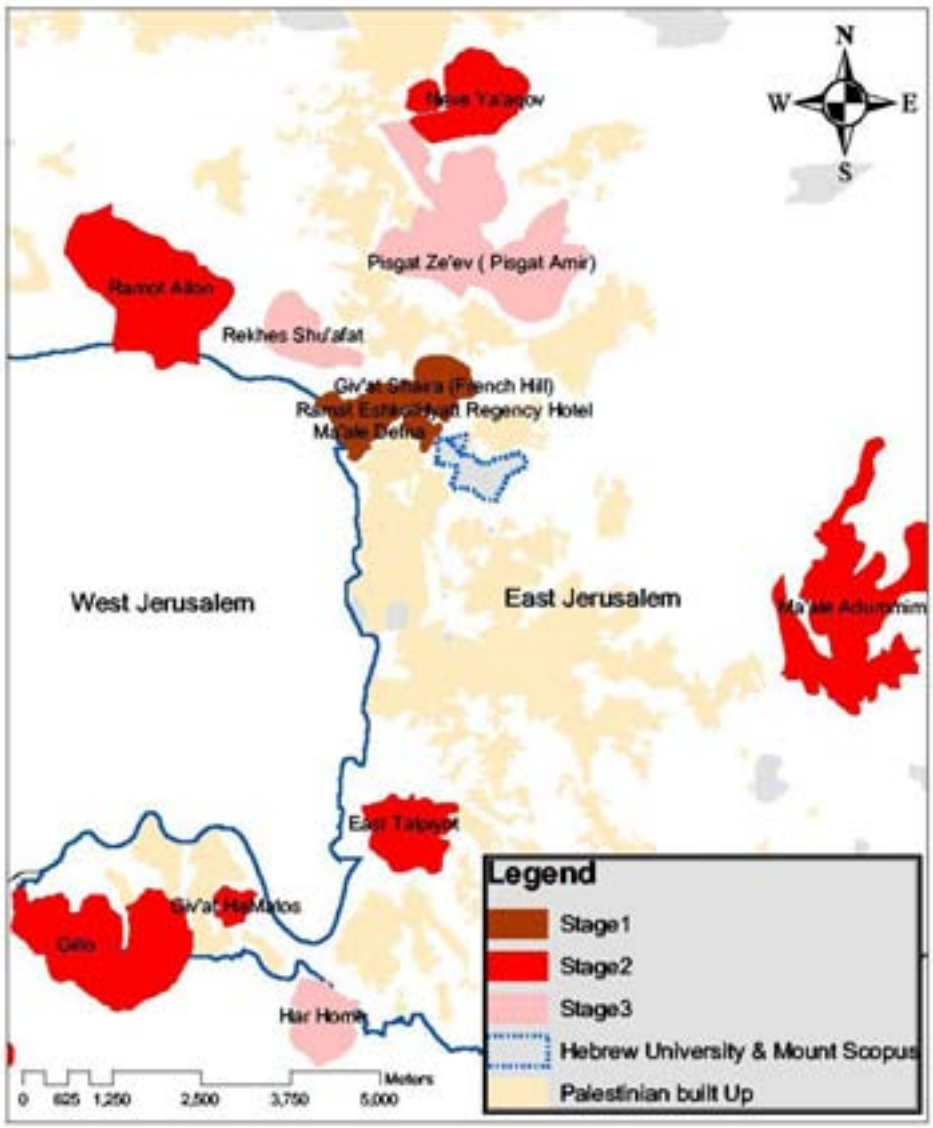
The Israeli law enables the expropriation of whole areas for "public" purpose with compensation. As can be seen in table 2.2 about 28,000 donums were expropriated by the Israeli government. That forms about 40% of the 70 donums annexed to Jerusalem city borders after the 1967 war by the Israelies. These expropriations by the Israeli government were done for "public purposes" as stated before; but, as (Benvenisti, 1996) observes, this is "a unique conception of the concept 'public." As of the approximately 160,000 residents is these colonies none are Arabs. Such manipulation of demographic proportions on land whose control was achieved

militarily is against international law, which states that “The occupying power shall not deport or transfer parts of its own civilian population into the territory it occupies.” When expropriation of private Arab property has occurred, compensation is required but is almost always not pursued by Arabs because they view the process as illegal. To pursue and accept compensation for these lands would be to validate Israeli claims of sovereignty (Bollens, 2000).

The location of the new Jewish colonies is significant. Much of the new growth could have occurred in west Jerusalem locations not as controversial under international law. Under this scenario, the demographic ratio could still have been maintained in Israeli- defined Jerusalem. New neighborhoods were thus located in East Jerusalem to expand the geographical reach of Israeli authority within the post-1967 municipal boundary and spatially fragment Jerusalem’s Arab neighborhoods from one another and from the West Bank(Bollens, 2000) (see Map 2.3).

The initial phase of Jewish actions connected west Jerusalem to Mount Scopus and the Hebrew University so as to assure a physical link. These colonies— Ramot Eshkol, Givat Hamivtar, Maalot Dafna, and French Hill— were built in and adjacent to the Arab Sheikh Jarrah quarter. The second phase of development created five huge colonies that encircled the urban core and claimed strategic hilltops— Ramot Allon (northwest), Neve Yaakov (northeast), East Talpiot (southeast), Gilo (southwest) and Ma’ale Adumim (east). Fully one-quarter of the city’s population

lived in these five communities in the early 1990s (Bahat, 1990). The third phase of construction was, when Pisgat Zeev connected Neve Yaakov to French Hill (Givat Shapira), reinforced through a north-south connector highway. The Har Homa colony in southeast Jerusalem, tightened and completed the Jewish colonial encirclement of Jerusalem's urban core, and disconnect Jerusalem from Palestinian Bethlehem to the south. The geography of these post-1967 Jewish colonies creates substantial obstacles to any possible future re division of the city between Palestinians and the Israeli state politically or physically. See map 2.4



Map 2-4: Colonization in East Jerusalem (Bollens, 2000)

2.3.3.3 Expansion of the economic base of the city.

In order to facilitate continued Jewish population growth in Jerusalem, economic growth has to occur both through attraction of Jewish labor from else where in Israel and a reduction of labor outflow to job-rich urban areas such as Tel Aviv. Economic planners in Jerusalem thus pursue government-sponsored industrial park development

and the improvement of transport networks connecting Jerusalem to the rest of Israel in terms of goods and labor. All of course on the expense of Arab Palestinian land by means of expropriation.

Moreover, the Israeli government has control over all natural resources, which are essential for economic development. Resources in Jerusalem in particular – and in Palestine in general – are limited. Anthony Coon illustrates the resources in West Bank as follows: “principally agricultural land, underground water and building stone." (Coon, 1992)

After the 1967 war Israelis controlled all of these resources (through military occupation). Coon describes the situation then as follows: ”Exploitation of all of these (the resources) is strictly controlled by the Israelis through the issue of permits for water extraction (which is fundamental to the prospects for agriculture) and quarrying.” (Coon, 1992). New deep wells have been bored and extensive irrigated areas have been opened up but these are for exclusively Jewish use. Four fifths of the underground water abstracted from the West Bank (including east Jerusalem) is used not by Palestinians but by Jewish colonies or pumped to Israel. (Coon, 1992).

2.4 The occupation wall:

2.4.1 East Jerusalem a separated city:

In spite of all of these policies, the travel movement between Jerusalem was still open to Palestinians until the year 1993. It was until then that Israel implemented a separatist closure policy by placing checkpoints between the West Bank and Israel and between Jerusalem and the West Bank. The closure policy applied to all Palestinians. Only persons carrying special permits were allowed to enter Israel and Jerusalem, and permits were normally issued to only a very small number of Palestinians. East Jerusalem was thus isolated from its hinterland and the rest of the West Bank for the first time after the occupation in 1967. In October 2000, at the outbreak of the Second Intifada, a decision was approved by Israeli Labor Party leader Ehud Barak, Israeli Prime Minister at the time. It was decided to establish a systematic array of barriers and other hindrances to control the entry of vehicles from the West Bank to Israel and East Jerusalem. These measures - which were implemented by the Israelis in the years 1993 and 2000 - could be clearly seen as preparatory stages for building the occupation wall. They were started to implement in 1993 in a relatively calm period; after the 1st Intifada which started in 1987 and long before the second Intefada which started – as mentioned above – in October 2000, that is seven years later. This puts a question mark on the Israeli claim that the

main purpose of the occupation Wall is a security one; to stop Palestinian bombing operations in Israel.

2.4.2 Beginning of the wall:

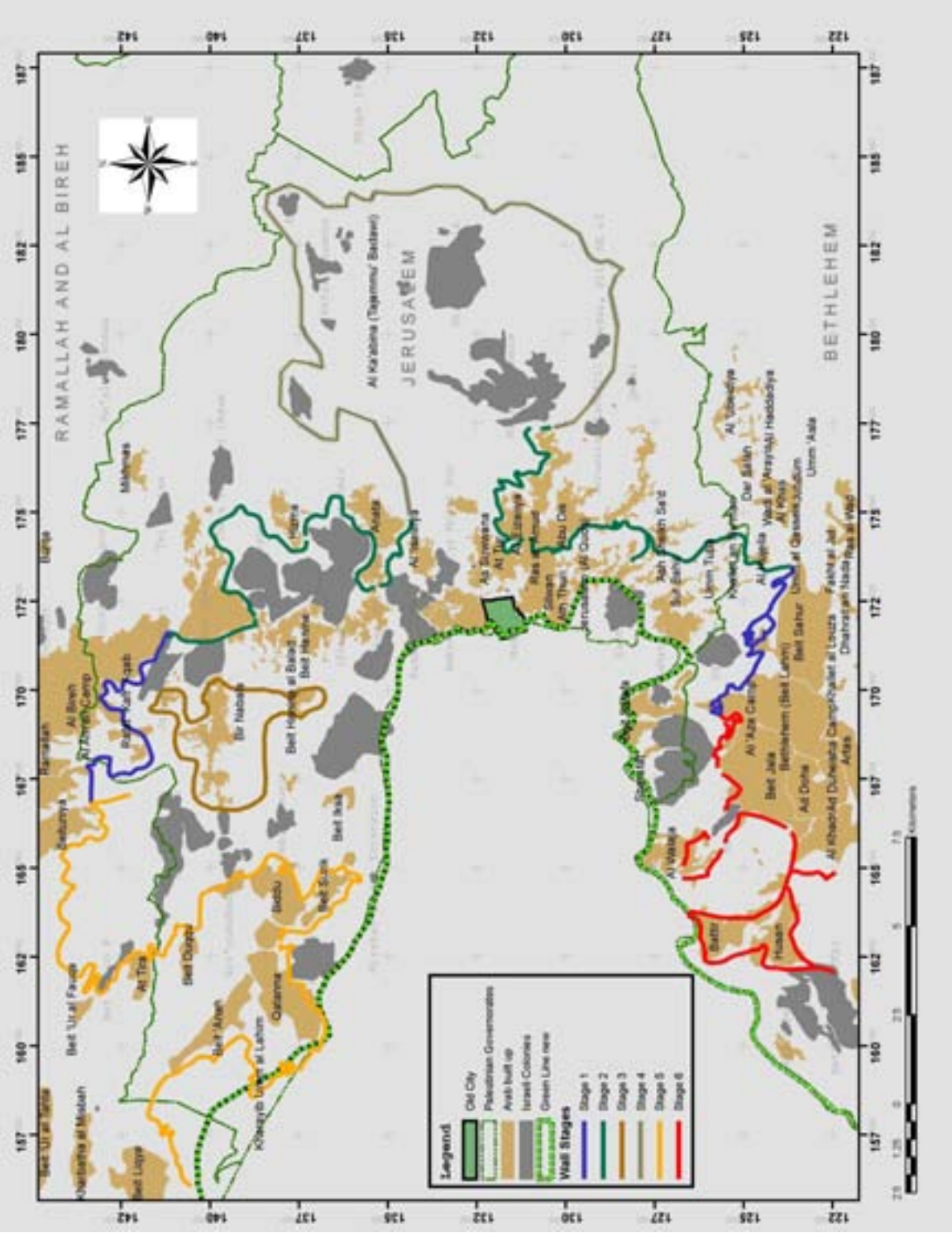
The Israeli cabinet approved construction of the occupation Wall in the year 2002. This decision was based on analysis and studies performed by the Israelis. One of the most important documents that the decision was based on: is a document submitted by (Akstein et al, 2004). This document discusses thoroughly that the only way the Israeli economy will survive and grow is through the physical economical separation by means of a wall that can forbid Palestinian labor and goods from reaching Israel. The security issue is just a justification in order to implement this wall. As a result of this decision, Israel began the constructing the occupation wall in august 2002 -a 138 kilometer (northwest stretch) - wall. The first stage of the occupation wall extends from the West Bank area near Salem Village (inside the Green Line) to the Elkana colony (southeast of Qalqilia). Construction of this section was completed in August 2003

2.4.3 The Jerusalem occupation wall (Jerusalem envelope)

The approval of the first stage of the Wall also included approval of construction of what Israeli spokespersons have come to call “the Jerusalem Envelope”. The plans initially included a 22-kilometer wall around East Jerusalem comprised of two

segments: the first, north of the city in the area extending from the Ofer military Base (southwest of Ramallah) to the Qalandiya Checkpoint; the second, south of the city in the area extending from Ras Beit Jala to Deir Salah Village southeast of Jerusalem. See map 2.5. Construction of the two segments was completed in July 2003, thereby isolating Palestinian East Jerusalem from Ramallah in the north and from Bethlehem in the south and excluding from the city the Samiramis and Kafr ‘Aqab neighborhoods which lie within the northern borders of Jerusalem municipality. (The population of Kafr Aqab alone is more than 10,000) (PCBS, 2005)

In August 2003, the Government of Israel approved construction of a second stage: a 64-kilometer segment to isolate Jerusalem along its eastern side. In early October 2003, Israel began constructing the second stage, the Wall from Deir Salah Village southeast of East Jerusalem running toward the north to Abu Dis and then eastwards toward Al ‘Eizariya. The length of this component is 17 kilometers. Another section extends from the south of ‘AnataVillage toward the northwest to exclude it from East Jerusalem the Shu’fat Refugee Camp and the Ras Khamis and Dahiyat As Salam neighborhoods, all of which are located within the municipal borders of the city and all have high population density (PCBS, 2005). This stretch continues northbound and toward the northwest to separate Ar Ram from East Jerusalem before ending at the Qalandiya Checkpoint. The length of this section is 14 kilometers. See map 2.5. It will isolate the neighborhoods of approximately Twenty Two thousand Palestinians

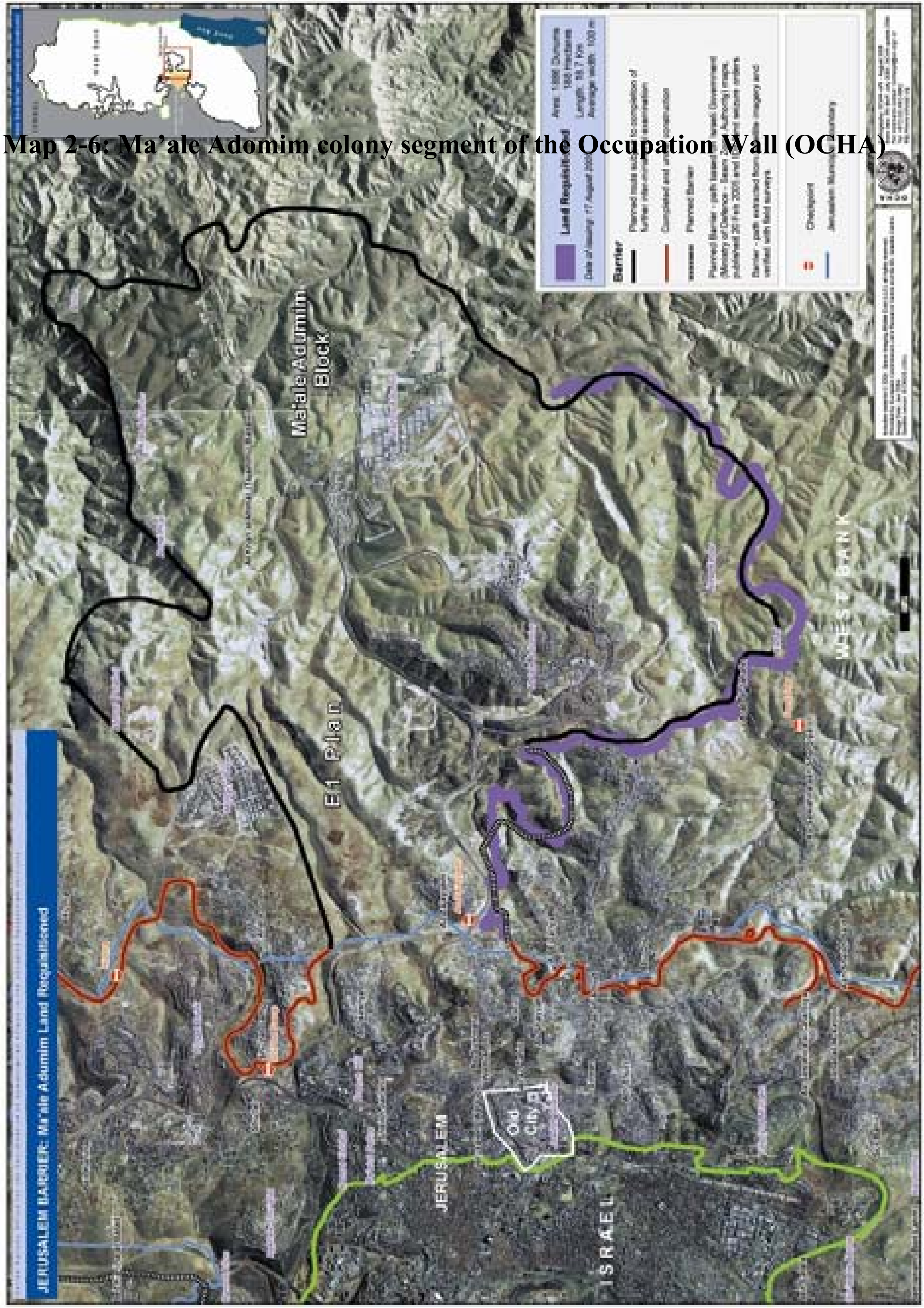


Map 2-5: Occupation Wall course and stages (Brooks et al, 2005; OCHA, 2005)

from East Jerusalem; and it will also separate the nine thousand residents of ‘Anata Village from the city. Moreover, the villages of Hizma (population approximately 6,000) and Az Za’ayyem (population 2,000) will be completely isolated from their entire surroundings. The same fate will befall the residents of Ar Ram and Dahiyat Al Bareed (with a combined population of 50,000 (PCBS, 2005). These latter communities will be “enclaved” by a wall that extends along the east, south and northern area perimeters, converting these towns into isolated islands; they were previously a vital commercial and service center serving East Jerusalem and its relationship with the West Bank.

Stage three of the scheme for isolating East Jerusalem consists in consolidating the city’s suburban villages of Bir Nabala, Qalandiya al Balad, Al Judeira, Al Jib and Beit Hanina into an isolated enclave area. The total population of these villages is approximately 28,000 residents (PCBS, 2005). See map 2.5. Moreover, Al Walaja village southwest of Jerusalem will be transformed into an isolated area. Part of this village is located within the borders of East Jerusalem. A twenty-five kilometer wall circumscribes the two enclaves. See map 2.5.

In a later stage a new segment was approved. This segment annexes (Ma’ ale Adumim and Mishor Adumim) Israeli colonies and the areas surrounding it to Jerusalem. See map 2.6



Map 2-6: Ma’ale Adomim colony segment of the Occupation Wall (OCHA)

2.4.4 Other Segments of the occupation wall:

In a later phase, a fifth stage of the occupation Wall insolating Jerusalem inside the West Bank was officially approved in October 2003. This segment extends from the Elkana colony to the Ofer IDF Base south of Bitunia with a length of 186 kilometers (Brooks et al, 2005). See map 2.4. The construction is complete. The sixth phase of the Wall around Jerusalem was also approved in October 2003, and the construction has begun in August 2004. It extends from Ras Beit Jala (Har Gilo colony) to the Karmi'el colony southeast of Hebron with a total length of 135 kilometers (Brooks, 2005). See map 2.4.

2.4.5 Wall description and effects:

The Occupation wall – including its security roads and fences – is in average 40 to 60 meters wide, 4 to 12 m high. See pictures 2.1. Its total length is about 660 kilometers. It will have a direct impact on the lives of 850,000 Palestinians, or nearly 40percent of the Palestinian population of the West Bank who will live inside barriers or adjacent to the Wall. Studies by the United Nations office for coordination of human affairs suggests that current total area of West Bank lands affected by the Wall will reach 400,000 Donums. That is more than 7% of the West Bank Area. Palestinian organizations such as The Palestinian Environmental NGOs Network (PENGON, 2005) and the Applied research institute of Jerusalem (ARIJ, 2005), discuss that – when finished – the Wall allows Israel to annex sixty-six colonies,

inhabited by 322,800 colonists, or about 80 percent of the colonists' population in the West Bank, including the colonies built on East Jerusalem lands and its surroundings.

Concerning East Jerusalem the occupation wall will annex 3,500 dunams to the Israeli colonies within the municipal boundaries about. Construction of the Wall will lead to the annexation of vast empty land areas of occupied Palestinian lands between Israeli colonies and Palestinian villages.

Picture 2-1

More over the occupation Wall will place 40,000 Palestinian outside the city borders Jerusalemites who presently live within the city, separating them from the city and from the crucial public and personal services provided in it. In addition, 60,000 to 90,000 Palestinian Jerusalemites presently living in the Jerusalem Governorate areas that surround East Jerusalem (Ar Ram, Bir Nabala, Al 'Eizariya and Abu Dis) will be

isolated from the city. This will effectively reduce the percentage of the Palestinians from the total population of the Jerusalem Municipality. These actions also arise as an attempt to address Israel's inability to implement a 1973 decision to keep the percentage of the Palestinian population of the Jerusalem Municipality below 30 percent. (Brooks, Nasrallah, Khamaisi & A.Ghazaleh, 2005; PENGON, 2003; OCHA, 2005).

The occupation wall will also have heavy effects on the socio economic life in East Jerusalem, mobility and access problems will force lots of Jerusalemites and Jerusalemite companies to move out inside the wall (inside J2 area)[1], which will increase the problems of crowdedness inside (j2 area)[1], and evacuate areas in (J1 area)[1] outside the Wall, many will lose there jobs due to accessibility reasons. This will increase the unemployment ratio. The wall will also forbid lots of Palestinian workers [1]from reaching their working places inside Jerusalem, which will through its shadows heavily on the increasing unemployment ratio.

[1] J1 & J2 are classifications of Jerusalem Governorate areas. Areas outside of Israeli Municipal borders are considered (J2 areas), areas inside are considered (J1 areas)

2.5 Conclusion:

The present route of the Wall and its direct impact cast serious doubt on the central Israeli rationalization for the Wall—security. The level of Israeli control represented by the magnitude of the Wall, the quantity of land it consumes, the mass of the Palestinian population it constrains, and its linkage to geographic and functional space issues all combine to argue that the goal is much more ambitious than simple security. Seen in the broader and earlier context of demographic policies, land confiscations, home demolitions, closures, road blocks, and check points, the Wall is best understood as but the crowning phase of an integrated system of separation, control, and expropriation that has been proceeding for many years.

CHAPTER 3 : Theoretical Base

3.1 Introduction:

A major factor that contributes to urban growth is the natural population growth. Palestinian territories have a relatively high population growth ratio of about 3.5 % (PCBS, 2005). This makes urban growth a determinate demand and - as a result - land consumption. The occupation wall is consuming land which is important for future urban growth of Palestinian cities and towns. It is doing so by annexing it to the Israeli state out of its Palestinian Arabic context. In order to study the wall's effect on future urban growth, a future projection of current rates of land consumption for urban growth should be performed in the study area. This future urban growth is – in addition to population growth – affected by a number of factors. It could be summarized in: socio-economic, land use and land availability, and physical factors such as accessibility and topography.

This chapter examines a number of theoretical issues including: various definitions of planning that relate planning to urban growth, the need for urban growth, and future urban growth predicting approaches. A suitable integrated analysis framework is formulated through the review of the literature logically. This framework is used to structure the subsequent case study analysis of the Jerusalem city. Finally, this chapter examines a number of important urban planning models. The most suitable of these are applied in the context of the formulated integrated planning framework.

3.2 Definitions of planning:

It can be discussed that planning had come as a solution for the continued urban growth. In this perspective planning is defined as: “The new science of town planning … was driven by the need to find a model for growth that would deal comprehensively and ‘scientifically’ with the urban terrain.” (Blav & Platzer 1999)

Planning can also be seen as a set of tools to achieve the desired goals: “Planning is best thought of as a process that uses a variety of tools … to achieve envisioned and desired goals within the natural and built environments.” (Henderson 1997); cited in (Laurini, 2001)

3.3 Main assumption – population growth:

The main assumption in this research is that there will be a future urban growth occurring in the context. If an area experiences a change in population then the existing urban landscape will be subsequently affected.

It can be discusses that land use change is strongly related to population growth (Theobald & Hobbs 1998). Areas experiencing growth will consume further land for urban and rural activities. Areas in decline will not consume land for urban activities or will do so at a much lower rate than growth areas. Note, the distinction is made between consumption land and requirement land. An area in decline may require

additional urban land but due to the limitations imposed by the nature of the socio-economic decline may not have the fiscal means to acquire and actually consume the required land. (Theobald & Hobbs 1998)

In Palestine in general, including Jerusalem – the research context – a relatively high population growth ratio of about 3.5% (PCBS,2005) is noticed. Therefore a tremendous future urban growth should be expected based on the above discussed literature reviews.

Predictive models such as population forecasting are important in the monitoring of urban growth (Ward et al, 2001). Analysis of population projection information enables existing land zones to be revised to meet the demands of the projected future population trends. Thus, through the use of population forecasting the planner can focus on long term planning rather than short term planning, (McCloy, 1995). Therefore, the analysis of future population levels within Jerusalem city provides an essential component of this research.

3.4 Need for future urban growth planning:

(Laurini, 2001) has linked urban problems to a disease. Urban growth if left unchecked will occur chaotically without appropriate planning mechanisms. That will result in detrimental consequences to both the built and natural landscapes. To help influence and regulate where this growth should occur, there is a need for urban and

regional planning taking into account the community needs, land use, and the pressures on the existing natural environment.

3.4.1 Urban Sprawl

(Wood, 2000) discusses that the uncontrolled growth in our cities - known as urban sprawl - is similar to uncontrolled cell growth in the human body known as cancer. It is destroying the very fabric of society. "Sprawl" has been defined as development in a "leapfrog" pattern, development containing commercial strips and large expanses of separate land uses … , lacking "functional open space," or disregarding "established principles of lot size and street geometry." (Henderson, 1999). Growing smart, or not at all, (Henderson, 1999) discusses thoroughly that this decentralization degrades the environment, costs too much, and lowers the social quality of life. In Abu Dis village case these three impacts are clearly obvious; The environment is damaged due to the expansion over agricultural lands, one of few limited natural resources in the West Bank. It costs too much in terms of connecting infrastructures and building in steep sloped areas. And finally it lowers the social quality of life through forcing people to build in far away areas, because the occupation wall is not leaving enough space for people of Abu Dis to build proximate to their families. As it will be discussed later that urban growth of Abu Dis is (family oriented). See (annex 1: Interview)

3.5 Future urban growth predicting approach:

One can argue that there can never be one true-all embracing planning approach that explains what planners do and who they are. Instead it is needed to acknowledge the usefulness of a variety of theories, depending on the context and depending on the purpose of the planner (Sandercock 1998).

3.5.1 The rational decision theory and Spatial Scenario Planning Approach:

The rational decision theory (also known as the rational planning approach) was first advocated by a number of planning theorists during the 1960s and 70s including (Yehezkel, 1963; Willer, 1967; and Faludi, 1973). The approach is based upon the recognition of the basic nature of planning as a methodology of rational thought and action (Yehezkel, 1963). It is argued that the rational approach is one of the most suitable planning approaches when integrated within a GIS (Batty, 1993), (McGuigan & Downey, 1999). Decision rules that can be logically expressed can be translated into quantitative rules that GIS programming languages and software can easily interpret. The generic rational planning approach is depicted in Figure 3.1 and consists of three key phases: problem formulation; evaluation of conditions; and the planning solution.

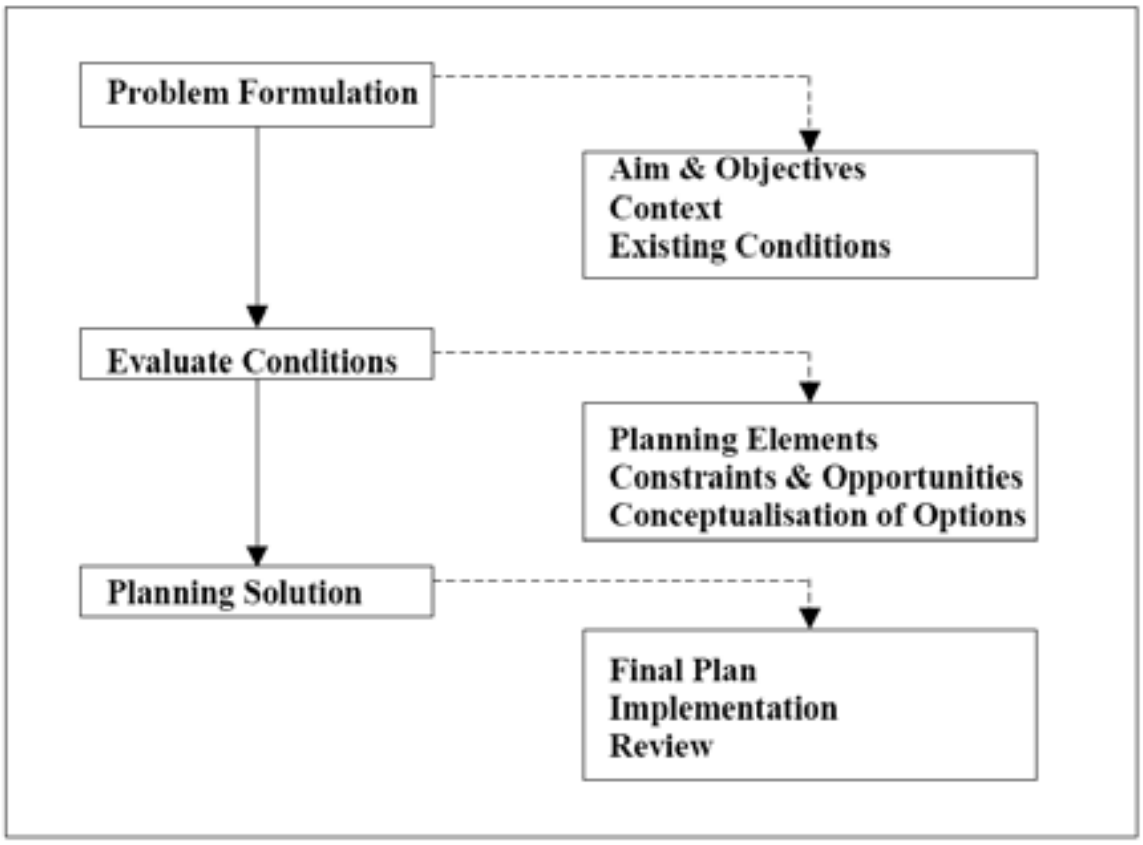


Figure 3.1

(Batey, 1984) presented his two-tier approach for planning which was based upon the rational planning approach. The scenario planning approach also incorporates Batey's two-tier system and enables an integrated approach where both strategic policy (aspatial) and detailed map based plans (spatial) are incorporated into urban and regional analyses.

"Spatial scenario planning offers different views of the future based on different assumptions or underlying trends on what might be the optimum spatial outcome."

(Stillwell et al, 1999). Spatial scenario planning usually focuses upon map representations developed through the employment of analytical 'what-if' functions and spatial modeling usually undertaken in a GIS.

Having in mind that the main aim of this research is to measure the effect of the occupation wall in Jerusalem on urban growth, it is most suitable to use the 'continued growth' scenario to predict future urban growth trends for the context area. (Landis, 1995) and (Klosterman, 1999) discuss that 'Continued growth' scenarios are frequently prepared by urban planners in order to formulate a viable planning scenario which may serve as a benchmark against which to measure other alternative scenarios. The other scenario that will be measured against it is the occupation wall scenario. Main urban growth factors should be reflected taking into account the occupation wall effect.

3.5.2 Trends Projection:

The trends projection technique is a form of a linear model and continued growth scenario approach. In linear urban planning models relationship between the variables are expressed in linear equations as defined by (Lee, 1973). They include linear regression models, which has a combination of factors considered important to the attractiveness of any spatial zone for locating a particular land use function (Brooks, London & Henry 1993). (Colenutt, 1968) was one of the earliest critiques of linear

models. He discussed the advantages and disadvantages of a group of allocation models which included land use allocation models, retail potential models, income projection models, and recreation models. The disadvantages of linear models (Colenutt, 1968), included that urban planning allocation linear models were of low theoretical content, and that the models were simply extrapolations of significant statistical regularities. However, (Colenutt, 1968) puts forth overriding advantages of linear models which are:

- When used properly they can work well and force the planner and model builder to think carefully about their problem; and
- They are simple to construct and operate.

Summarizing the previous we can say that the trends projection technique is a linear model that offers a means of disaggregating regional datasets, such as population projections and employment rates, in order to project the future demand of land for urban areas. One limitation of the trends projection technique is its assumption that land use change is strongly correlated to population growth, this assumption is supported by (Theobald and Hobbs, 1998).

There are principally two components to the trend projection technique:

1. Computing quantity of land required to accommodate projected future populations and regional employment; and

2. Spatial allocation of this land to suitable areas based upon an accessibility index an land use allocation parameters.

When applying the trends projection technique for computing future urban land quantity required in Jerusalem, the main inputs into the model are population and industry sector employment figures. Peckol and Erickson (2000) have employed a trends projection technique in their analysis of industrial land supply and demand in the Central Puget Sound Region of Washington - USA. To establish the demand for future industrial land a simple linear equation was used - see equation 1.

$$L_i = (Eg_i \times Er_i) \div Cr_i \qquad \textit{Equation 1}$$

(Where L is Land required, i is the land use, Eg is employment growth, Er is employment ratio (total m^2 per employee), Cri is the coverage ratio)

Similar equations will be adapted and used in this study that can utilize and use local data available and our special condition being under occupation.

The second component of the trends projections technique is the allocation of future urban land required using spatial analysis. For example, Bell, Dean and Blake (2000) built the projections for urban planning (PUP) model. This model uses an

accessibility index and adjacency scores and land class scores in order to create a potential cost surface. The PUP model was designed to forecast the pattern of dwelling construction and population growth in the urban fringes of metropolitan Adelaide – USA. (Bell et al, 2000) discusses how this model provides an excellent example of how a number of models can be integrated for spatially allocating projection residential land use demand. However, it is noted that the model focuses on residential land use projections only, and does not include other land use types such as industrial, commercial and other supporting land uses. An accessibility index, similar to the one used in the PUP model, is used in the allocation procedure for formulation of the 'continued growth' scenario.

Weaknesses of the trends projection technique include that it is a top-down structured modeling approach, it uses simplistic mathematical modeling, and it does not take into account policy levels. Strengths of the model include that it provides a simple technique that planners can use and decision-makers can understand.

3.6 Conclusion:

This chapter discussed from a theoretical point of view, issues that play an essential roll in the contest of this research. It was clarified why urban growth actually occurs, and that it is a natural result of population growth. It was clarified also that planning is essential for proper urban expansion. And that urban expansion without proper planning would result in urban sprawl. Urban sprawl – if it occurs – will burden the

urban environment both economically and socially. The rational planning theory was also discussed and it was clarified how it is considered as a best planning approach when combined with GIS.

Continued growth scenarios and trends projection techniques was also discussed in this chapter and it was clarified that ‘Continued growth’ scenarios are frequently prepared by urban planners in order to formulate a viable planning scenario which may serve as a benchmark against which to measure other alternative scenarios, and that’s why it is used in this research.

CHAPTER 4 : Methodology

4.1 Introduction:

The main objective of this research is to measure the effect of the occupation wall on the urban expansion of East Jerusalem. The occupation wall in East Jerusalem - which comes as a continuation to these policies - is dramatically cutting off land from Palestinian urban areas, whose inhabitants already live in overcrowded conditions due to the expropriation of land and demolition of buildings through organized Israeli policies.

In order for the researcher to be scientific and unbiased, the analysis in this research has been approached rationally. Both aggregate and disaggregate data had been used. All data had to be quantified or disaggregated so as to be able to measure effects of the wall scientifically. A trends projection technique has been used through this research which is compatible with the rational planning theory.

East Jerusalem resides under Israeli policies such as colonies, biased building regulations, green areas and road land expropriation. In order to make a quantitative analysis under such complicated conditions a further simplification to this research had to be done; a sub case study has been chosen inside East Jerusalem; Abu Dis has a unique importance through most of the Palestinian villages of East Jerusalem. Its

closeness to East Jerusalem city center and having most of the PNA institutions of east Jerusalem makes it the most suitable sub case study.

Within such a complicated context, the GIS comes as a strong analysis tool that can through spatial analysis finish tasks of selecting best places for urban growth many times faster than can be done manually, and certainly accurately. GIS can also give quickly information about areas or numbers of certain criteria applied by the user. This has been very helpful during the analysis stage.

4.2 Research design

This research is a single case study approach. Case study approaches often gain their strength from the ability to use more than one analysis method to support the same assumption or theory, or to answer the same question. Qualitative and quantitative approaches might be used jointly in a limited area spot of land- the case study. With such variation of approaches, data sources usually include some mixture of direct observation, decision-makers interviews, newspaper accounts, census statistics, and local government documents and reports.

Critics might object that a "sample" of one case offers slim basis for generalizing results to other cities. If statistical inference were the goal, that would indeed be a real limitation. However, case studies have a different aim, which is to gain insight into

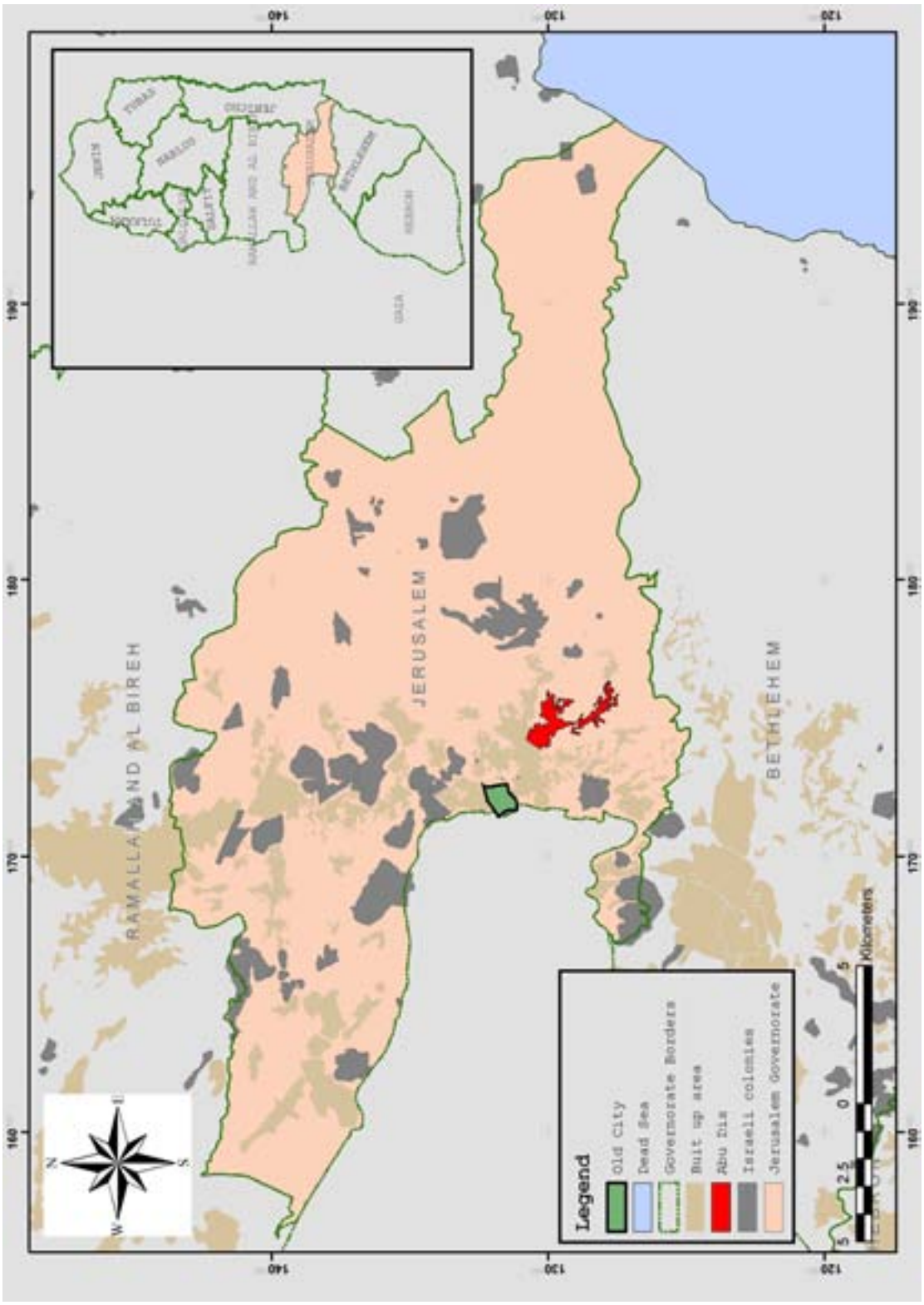
the conjunctural patterns linking many variables in one city and to describe them accurately in terms that might apply to other cities (Stone, 1989: 255-256).

Another response to the "sample of one" criticism is to point out that there are many opportunities within a single case study to "expand the number of observations" available for testing theory (King et al 1994; Lieberson, 1991). Typically, numerous variables are measured over many units and levels of analysis; in this case: village level, existing building uses and local government units.

4.3 Selection of the research settings:

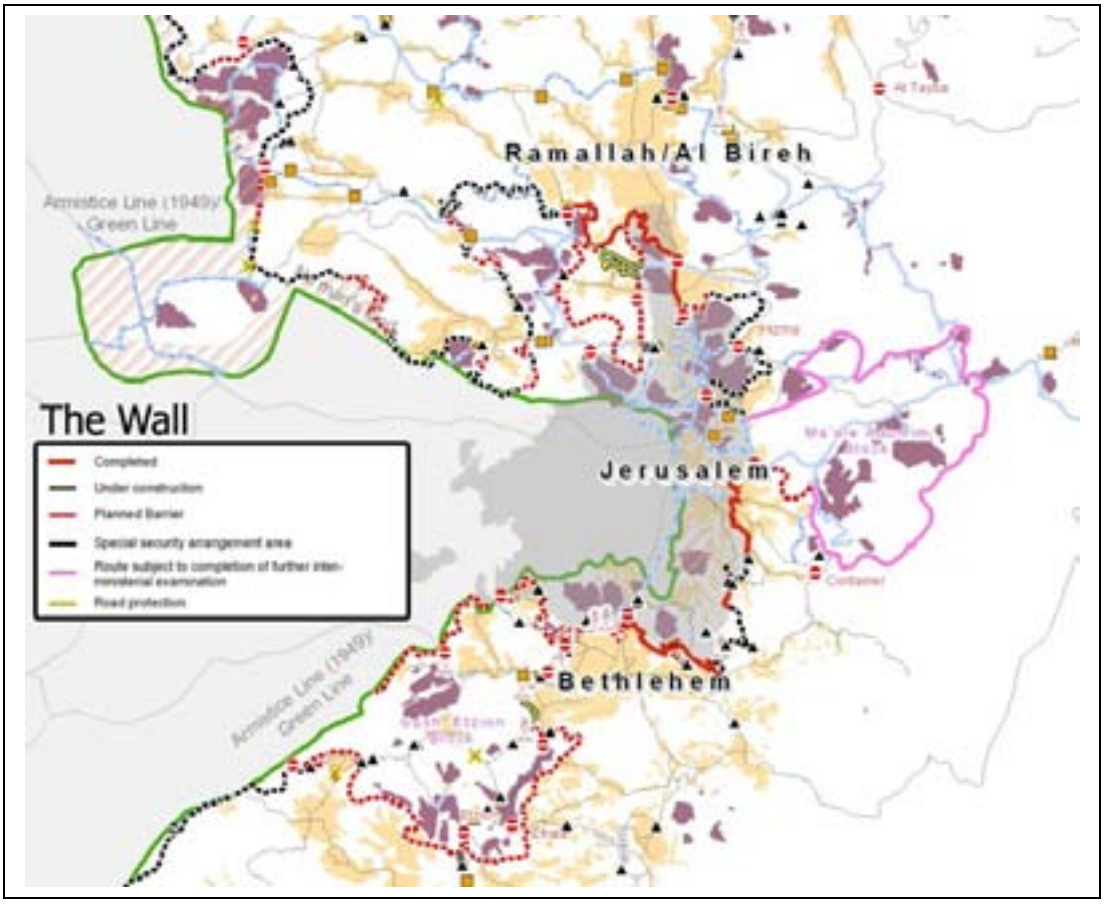
East Jerusalem was selected as the case study of this research because of its unique religious, social and geopolitical importance to Palestinians in specific, and Arabs in general. Moreover, being the core of the Palestinian Israeli struggle, Israel has always tried to dominate East Jerusalem through policies that encouraged Jewish existence and superiority and at the same time tightened conditions over Palestinian existence. Another reason for selecting East Jerusalem as the setting of this research; is because East Jerusalem is most affected by the occupation wall between all the major cities of Palestine; it is surrounded from all sides by multi layers of the occupation Wall. See map 4.2. That comes as a continuation to previous Israeli policies aiming to take control over the city, which has been discussed earlier in details in the previous chapter. But east Jerusalem is a wide area; Jerusalem governorate (Palestinian

perspective) occupies about 345 square kilometers in which the occupation wall runs more than 165 km (PCBS, 2005). See map 4.1. Israeli policies and regulations, The density of Israeli colonies, and the overall political situation, in addition to accessibility problems – all of these factors implies that the researcher will need more time and resources in order to carry on such a study on the entire East Jerusalem area than it is available for this thesis. For all of the forwarded



Map 4.2: Location map – Jerusalem Governorate & Abu Dis Village

above a sub-case study (Abu Dis village) is chosen that can be analyzed within the available resources and time frame for this research.

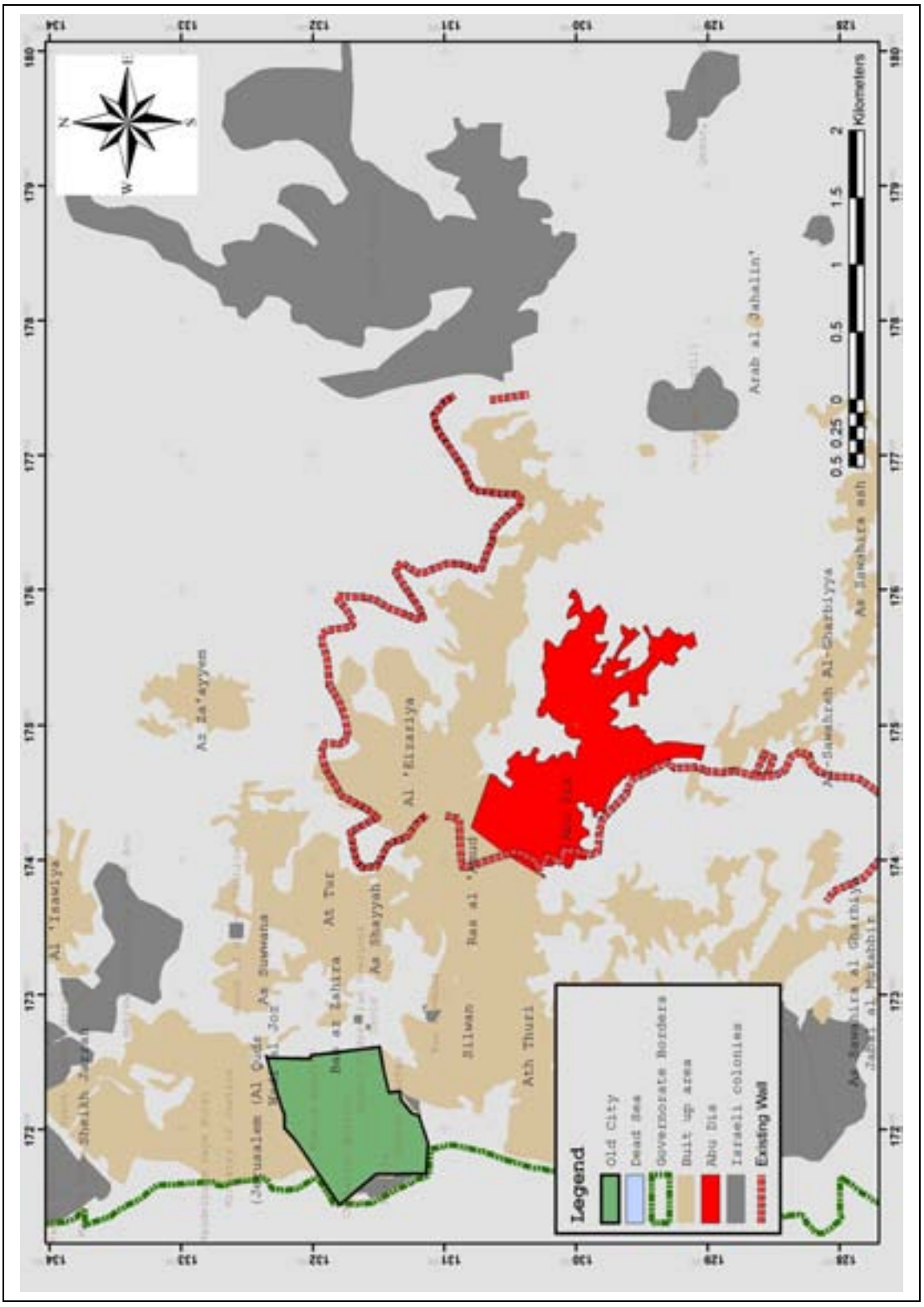


Map 4.2: The Wall around east Jerusalem (OCHA, 2005)

4.3.1 Abu Dis village:

Abu Dis is located on the eastern outskirts of Jerusalem, approximately two kilometers from the Old City. The village lays between Al Eizariya in the North and

Sawahira Al Sharqiya in the South. The Israeli colony of Maale Adumin borders Abu Dis on the eastern side. Abu Dis was selected to be this research sub-case study because of its importance. Its proximity to Jerusalem contributed greatly to that importance; Abu Dis lies adjacent to the east of Bab Al-Amoud neighborhood; a central neighborhood in Jerusalem city. The importance of Abu Dis had greatly increased before the current Intifada. Even the establishment of three checkpoints around the locality did not prevent --although certainly restricted and delayed-- access to, through or from Abu Dis over the past three years. In fact, almost all of the National Palestinian Authorities' offices dealing with Jerusalem affairs and suburbs related issues are located in Abu Dis. Furthermore, about 4,000 students receive their higher education at the Al Quds University campus in the village. In general, the local population (11,672) (PCBS, 2005) almost doubles for the daily influx of students and employees who commute from their place of residence (UNRWA, 2004). Being on the only way which connects Ramallah and other northern towns with the southern West Bank, the local council chairperson estimates that 50,000 vehicles pass daily through Abu Dis, heading towards Bethlehem and Jericho.



Map 4.3: Abu Dis village location

4.4 Data collection process and field work:

Because East Jerusalem is the core issue in the Arab – Israeli conflict, a tremendous amount of Data can be found documented about it. The Palestinian Central Bureau of Statistics (PCBS), the United Nations office for humanitarian affairs – humanitarian information in the occupied Palestinian Territory (OCHA – OPT) publications, Previous studies on East Jerusalem's villages performed by local urban planning firms, and base aerial photos from aerial photogrametry companies, in addition to different books and NGO's publications, are all sources of data that has been used for the purpose of this study. This study comes as a thorough analysis of these data in order to project rationally the effect of the wall on the urban growth of Jerusalem, which hasn't been analyzed rationally and thoroughly before.

4.4.1 Data collection:

Two kinds of data are collected; aggregate data and disaggregate data. Aggregate data can be defined as non spatial data or data that is not connected directly to a space. Disaggregate data - on the other hand – can be defined as data that is directly linked to space (spatial data). All data, concerning population growth and economical sector growth, - In short all Aggregate Data concerning the Urban growth - were obtained from The Palestinian Central Bureau of Statistics (PCBS). The (PCBS) is an official department of the National Palestinian Authority, and the one department responsible for making all consensus surveys in Palestine.

A large amount of Data concerning the Occupation wall was found published by many resources including many NGO's. Thus the researcher found that the United Nations office for humanitarian affairs – occupied Palestinian Territory (OCHA – OPT) was the most reliable of these resources; they are part of a national organization, unbiased and they had the chance to make on ground surveys for the exact path of the wall. Most of the occupation wall data – if not all - were obtained from this resource.

The Disaggregate Data – on the other hand – was obtained from three layers of sources (from old to new): The first layer is a study of Abu Dis village carried by a local urban planning firm (Arabtech – Jardaneh - Babel) in 1997, for the benefit of Abu Dis local government council and the Ministry of local government. This study included detailed maps of buildings and roads, year of construction and use of buildings, these data is needed for this research for allocating future urban growth area. An important limitation of this data is that it is old and outdated and thus missing new data. From here comes the importance of layer two and three.

The second layer of Data is an aerial photo of Jerusalem dated September 2005. This aerial photo was obtained from a local aerial photogrammetry firm (Sky Company). From this layer of data, missing buildings could be located up to that date and also installed within GIS, but it lacks attribute data. The third layer of data had to be

prepared by the researcher through field work. All missing attribute data from the second layer, in addition to allocating all new data elements and their attributes founded after September 2005 up to date.

An interview was made by the researcher with Engineer Ahmad Ayyad from Abu-Dis local council, and Engineer Ihab Al-Afandi from the joint council of Abu-Dis, Al-Eizariyya, and Al-Sawahra Engineer. Data obtained from this interview was - first of all – helpful in giving weights for disaggregate data layers in GIS spatial analysis process. This was made possible through throwing light on urban growth trends of local inhabitants and what are the most important factors taken into consideration when thinking of building new homes. Secondly this data was important for helping the researcher to detect some building uses such as new industrial and commercial uses. Finally data from this interview was supportive for the researcher findings; for example: current growth trends advocated by the councils' engineers are the same areas found by the researcher, of course only areas east to the occupation wall.

Finally data concerning village boundaries was obtained from local government ministry.

4.5 Analysis methods:

4.5.1 Trends projection technique:

Trends projection technique is used in this research to make predictions of future urban growth. This technique is used to project trends of land use change based upon existing trends. This is essentially a 'continued growth' scenario that takes a business as usual approach based upon existing regional and urban trends. 'Continued growth' scenarios are frequently prepared by urban modelers in order to formulate a viable planning scenario and/or a scenario which may serve as a benchmark against which to measure other alternative scenarios (Landis, 1995; Klosterman, 1999b).

The trends projection technique applies a set of rules derived from the existing knowledge of a particular area in order to predict future land allocations. The allocations are based upon land and its competing usage. Land usages are determined by area-based coefficients reflecting trends and rules.

The scenario is developed using a trends projection technique involving two steps:

1. Disaggregating data on socio-economic trends to predict future land use requirements; and

2. Forecasting patterns of change using land use transition rules and accessibility indices.

4.5.2 Components of model

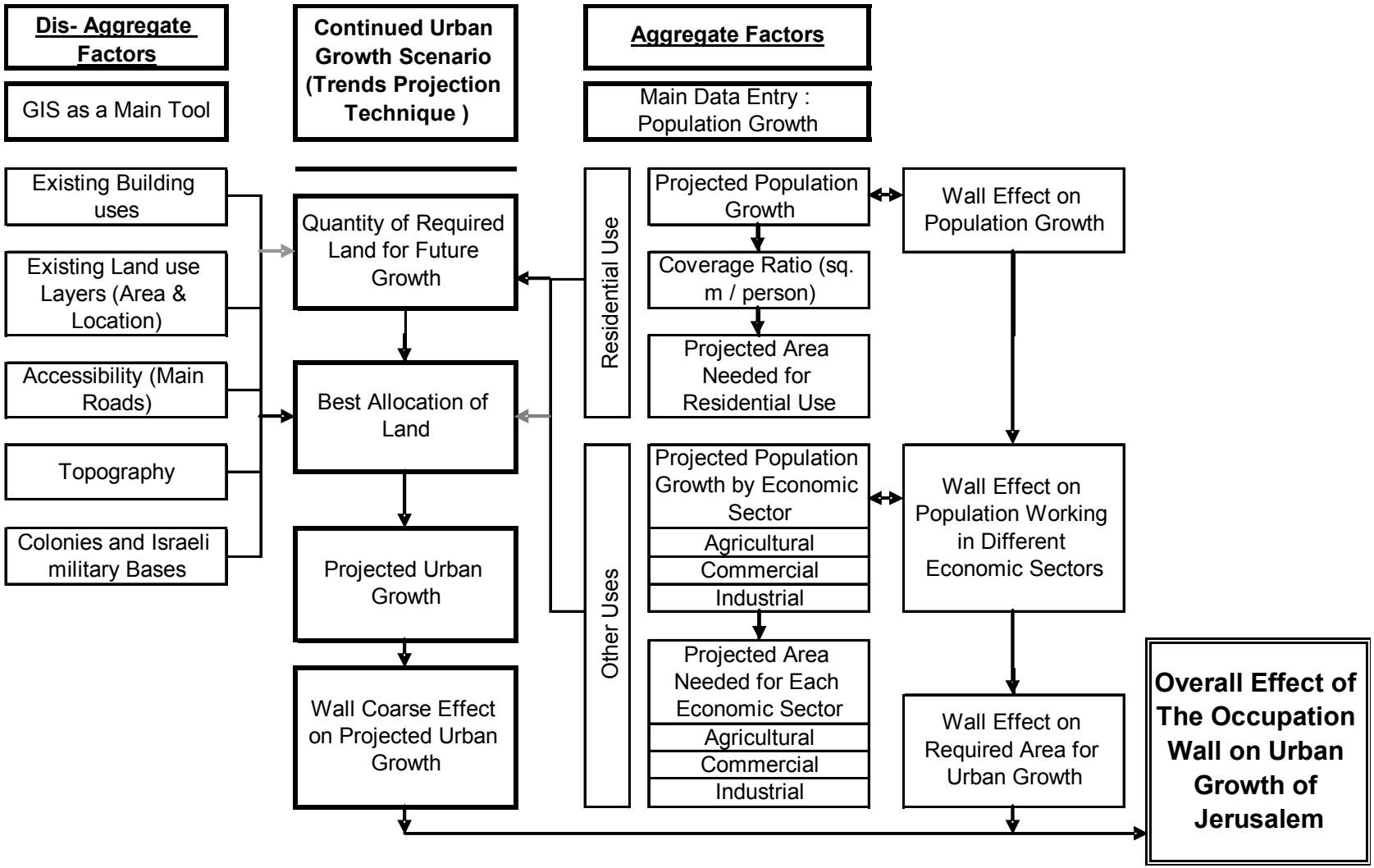
There are two model components used in formulating the 'continued growth' scenario :

1. *Land use requirements analysis component:* predicts the future demand of land area required for particular land uses.

2. *Land use allocation component:* uses transition rules and spatial analysis to predict the pattern of land use change and where land use allocation occurs.

The trends projection framework as applied to Jerusalem is shown in Figure 4.1.

Figure 4.1: Frame work of the research process



4.5.2.1 Land use requirements analysis component:

This model component is mainly dependent on disaggregating the aggregate inputs of socio-economic data. These data used into the model include:

1. Projected population growth;
2. Projected employment growth by economic sector;
3. Breakdown of dwelling type; and
4. Projected total number of dwellings.

The population growth is the core input dataset. It is used to project the total employment growth and the number of additional households and subsequently, the total number of dwellings units required to accommodate the expected population growth. These aggregate inputs are used as area-based coefficients in calculating future urban land use requirements. The trends projection technique suggests that if a certain number dwelling units resides now on a known land area, then the future projected number of these dwellings must have the same - dwellings to land – ratio.

The projected employment growth parameter works on the basis that the job growth of specific industry economic sector will determine how much additional land is required to be allocated for related land uses of that sector. For example, if we have now are ‘n’ people are working in commercial activities, and these people use ‘L’ land area for that activity.

Those people are expected to be ‘1.2 n’ after a certain period of time; then they will need subsequently ‘1.2 L’ of land area for commercial activity during that period of time.

4.5.2.2 Land use allocation component:

To determine the most suitable location of the projected land demand with respect to land supply in Jerusalem, an accessibility index, and a land use / compatibility matrix, have been used.

Accessibility is a widely used spatial analytic measure defined as the relative ‘nearness’ of one locality to another and has been extensively used in a wide range of land use and transportation planning studies (Guitierrez et al 1998; Jiang et al 1999; Bell et al 2000). The accessibility index is based upon the premise that the location of a particular land parcel maintains an intrinsic value based upon its relative distance to certain attractors such as urban centres (Yeh & Li 1998).

An accessibility index has been formulated for the ‘continued growth’ scenario in Jerusalem to assist in deciding which land parcels to assign to a particular land use. Accessibility is measured using two parameters: distance to the existing built up area; and distance to major roads. The accessibility index has been formulated within a GIS, using spatial analyst application. The weightings of importance for each of the two attractors are as follows: and distance from similar building uses and distance from major commercial roads.

- **Topography (potential deflection)**

Topography is a major factor shaping the future urban growth. Steep slopes, wadis and natural water streams are all topographical factors that limit future expansion

- **Colonies:**

For the purpose of this research studying the impact of the occupation wall on future urban expansion, colonies will be dealt with as existing expansion limitations. Not going through legal or political issues.

4.5.3 GIS as an analysis tool:

Planning, in general, uses spatial information in undertaking many core planning activities (Stillwell et al 1999). From here an essential need for linking spatial to aspatial data emerges. There are various techniques for linking aspatial data (socio-economic, population, other) to spatial data (plans) in order to formulate and evaluate spatial planning models. One of these techniques was illustrated by Berry (1964). He illustrates how these spatial variables and their associated characteristics could be inserted in a matrix comprising a number of 'geographical data files'. This three dimensional 'geographic matrix' is shown in Figure 3.2. Each row accounts for a characteristic, and each column for a place, with the third dimension presents the temporal nature of the data. (Berry, 1964) also discusses the containment of indicators within the geographic matrix, containing sub-categories. For example, economic Data can be subdivided into: resources, agricultural, and commercial.

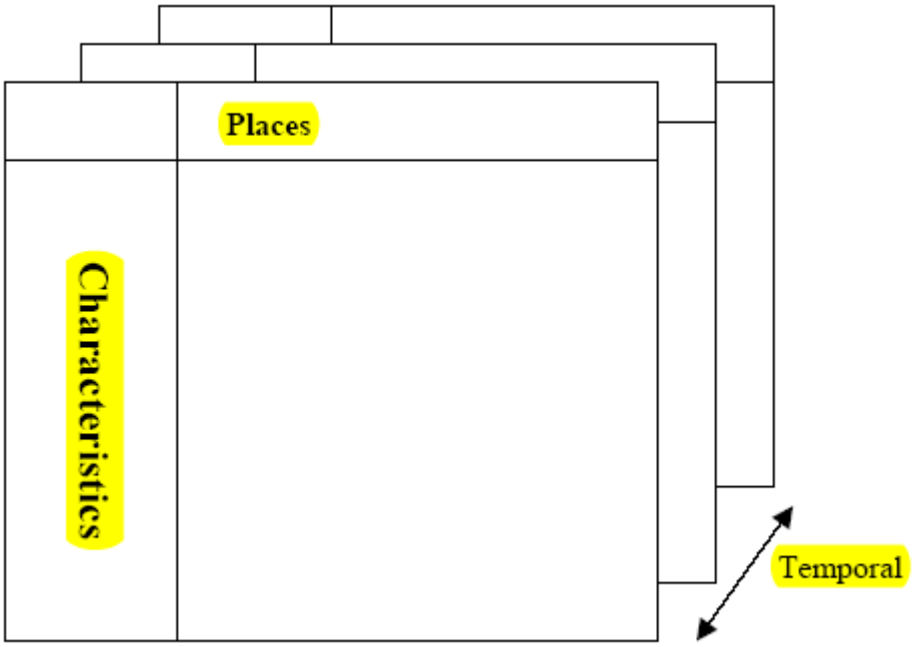


Figure 3.2 – Geographical Matrix

After the invention and use of computers a new set of digital tools for planners have emerged. Since the 1980s a great adoption of GIS technology in the urban and regional planning community has occurred (Scholten & Stillwell, 1990). The fact that strategic urban and regional planning requires the design and use of tailor-made information systems that can link aspatial and spatial datasets contributes to this great adoption (Nijkamp, 1993). (Garner and Holmes, 1994, p85), state: "for the first time geographers have at their disposal a new set of powerful computer based tools and procedures specifically designed for handling spatial data, namely GIS."

GIS is a computer system that uses two types of Data:

1. Attribute (aspatial) Data that is stored in databases (tables) and,
2. Spatial data that is stored as maps

GIS provides automatic likening of spatial and attribute (aspatial) data as shown in Figure 3.3. This has lead to the formulation of more extensive spatially referenced datasets, making GIS an essential tool for planning tasks such as urban growth monitoring and modeling, code enforcement and permit tracking (Klosterman 1999).

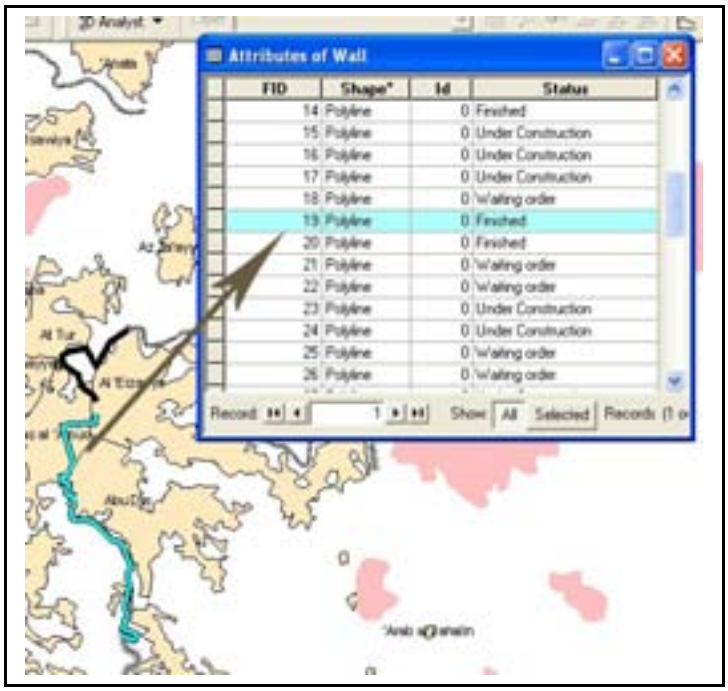


Figure 3.3

GIS can be used to store, sort, analyze and present spatial data. Planning data can be collected and stored within the GIS geographic database. Once collected a large range of spatial analysis tools can be applied to create new information layers. These spatial information layers can be presented in the forms of maps (plans), reports, and charts.

(Kostreva & Orgyczak, 1999; EPA, 2000) discuss that GIS can be used to explain: events; visualize trends; protect outcomes; and strategize long-term planning goals

It can be concluded that GIS provides a wide range of tools for undertaking a multitude of urban and regional planning tasks. For example, in urban modeling GIS can be used to perform spatial analysis of multiple land use data layers based upon sieve mapping overlay techniques, eventually predicting urban growth trends. Subsequent chapters of this research will incorporate the use of GIS in the fore-mentioned modeling tasks, to predict future urban growth trends of Jerusalem area, in order to study the effect of the occupation wall upon it.

4.6 Conclusion

This Research has been performed rationally and systematically. All Data have to be quantified, disaggregated and analyzed systematically using GIS and trends projection techniques. The main concept behind this, is having a non biased scientific research that will be more convincing to the reader. It is hard for a Palestinian researcher – such as any Palestinian – to be considered un-biased in such a research. Though he himself is much affected by the occupation Wall.

CHAPTER 5 : Wall Effect on Urban growth of Abu Dis

5.1 Introduction:

This chapter consists mainly of two parts: In the first part the researcher will try to calculate required land area for urban growth in the given time framework. In projecting future urban growth, land-use comes as a main factor: In order to forecast total future urban growth, residential, commercial, industrial and agricultural sectors must be taken into consideration. Forecasting future urban growth should be done for each sector alone. Trends projection is used here as the main technique for forecasting future population. Coverage area (sq.m / capita), is used as the basis for forecasting required area of land for future urban growth.

The second part of this chapter deals with the allocation of calculated area of land required for urban growth. In allocating calculated areas, potential site and sieve analysis methods are used – as explained in chapter 4 - as main techniques. GIS is a very helpful and powerful tool used here in more than one process: calculating areas, visualizing deferent building and land uses, as well as the powerful tool: spatial analysis that can apply multi-criteria potential site and sieve analysis for deferent layers of data in a fraction of the time done manually.

5.2 Required land area for future urban growth

For calculating required land area for future urban growth for Abu-Dis village, the trends projection technique is used. This technique is explained thoroughly in chapter three of this thesis. In summery this technique assumes that the growth of a certain urban area will continue in the same rate as it was going in the previous years. It is a kind of linear projection of current urban growth trends. This technique assumes a "continued growth" scenario and it is frequently prepared by urban planners in order to formulate a viable planning scenario which may serve as a benchmark against which to measure other alternative scenarios (Landis 1995) and (Klosterman 1999); in this case: measuring the effect of the occupation wall. A planning time frame of (20 years) is studied. The target is year 2026.

5.2.1 Natural population growth Projection

Key population data about Abu-Dis village was obtained from the Palestinian central bureau of statistics. Table 5.1 summarizes population from the year 1997 – 2006:

Table 5-1: Population and population growth of Abu-Dis village

Year	population	Population growth ratio
1997	8,975	
1998	9,350	4.2%
1999	9,756	4.3%
2000	10,174	4.3%
2001	10,649	4.7%
2002	10,858	2.0%
2003	11,215	3.3%
2004	11,574	3.2%
2005	11,932	3.1%
2006	12,290	3.0%

Palestinian central bureau of statistics (Jerusalem year book 1,2,3,4,5,6,7)

It can be noticed in table 5.1 the big drop in population growth ratio in the year 2002, the year when the construction of the occupation wall begun. This point will be discussed later more thoroughly.

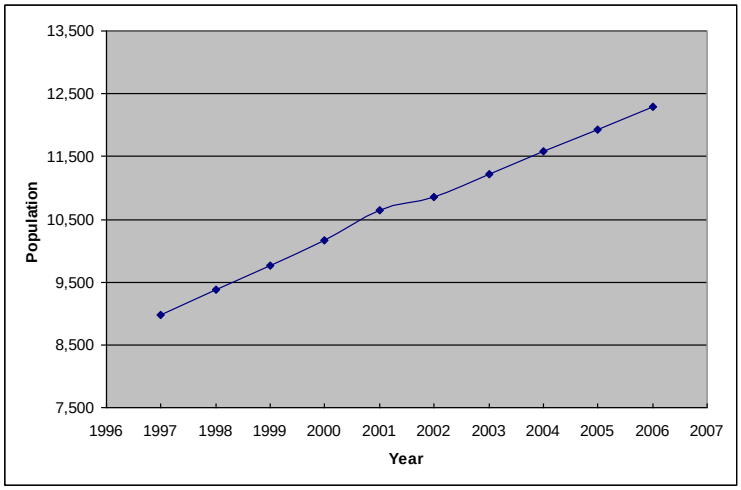


Figure 5-1: Population growth in Abu-Dis village

Linearly Projecting population to a 20 year range (year 2026) the future population is forecasted. See figure 5.2

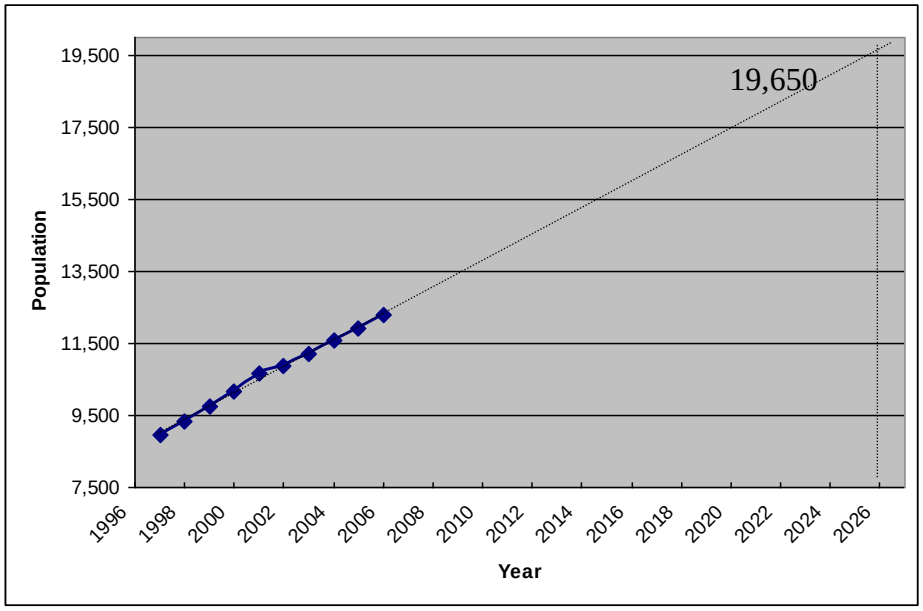


Figure 5-2: Projected population of Abu-Dis village

The following equation was used to forecast future population:

$$(P2-P1) / (Y2-Y1) = (Pf-P1) / (Yf-Y1) = (Pf-P2) / (Yf-Y2)$$

Were: P1 is the population year 1997

P2 is the population year 2006

Pf is the population forecast year 2026

Y1 is year 1997

Y2 is year 2006

Yf is year 2026

As a result of the above discussed process, Abu-Dis forecasted population for the year 2026 is **(19,650)** inhabitant, with an increase of about 60% of the current population.

5.2.1.1 Wall effect on population growth

The Occupation Wall has a dramatic effect on the population growth ratio of Abu-Dis. Figure 5.3 shows that the population growth ratio in Abu-Dis has stayed in the range of 4.2% to 4.7% from the year 1998 until the year 2001 when the construction of the wall began. It can also be observed from table 5.1 that the growth ratio had dropped dramatically from 4.7 in 2001 to 2.0% in 2002 (the year when the construction of the wall has begun), a little up to 3.3 then continued to drop to 3.0% by 2006. This can be explained by the fact that: when the Israelis began to build the occupation wall, many Jerusalemites who had resided in Abu-Dis - running away from high taxes and other Israeli policies inside occupied Jerusalem – had had to return to Jerusalem city or they were to lose their Jerusalem (blue) ID’s.

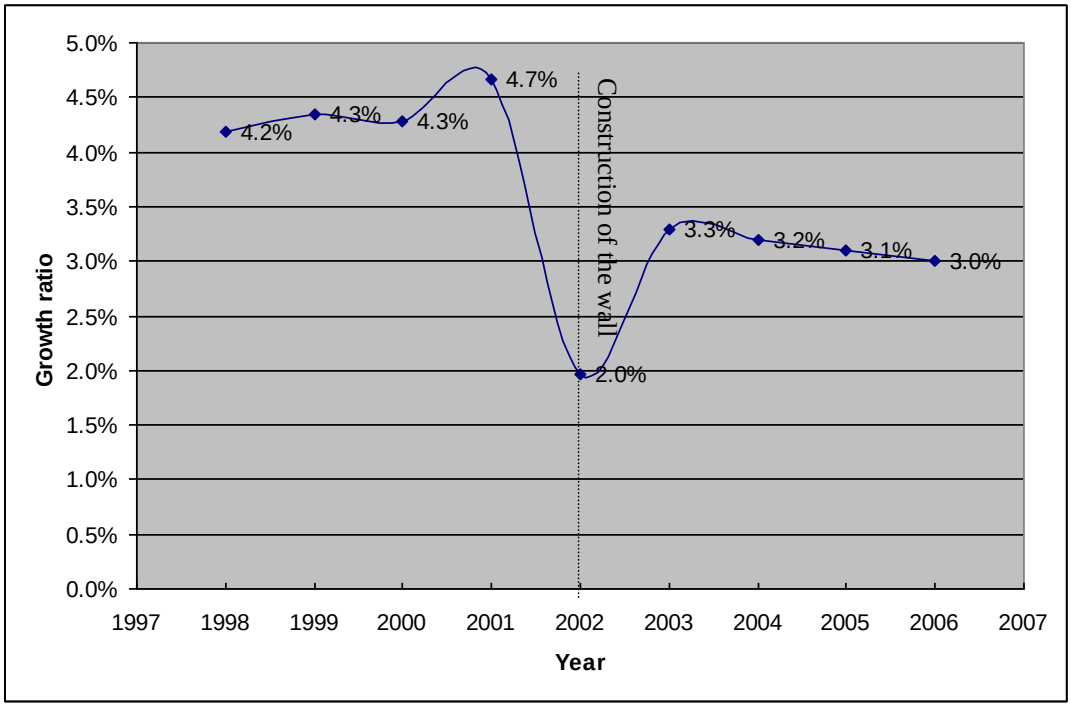


Figure 5-3: Wall effect on population growth

Many apartments were left empty or rented to university students who don't participate like full families in population growth. See Annex 1: Interview

For reasons of comparison only, assuming that there were no occupation wall effect and that the population growth ratio is to remain above 4.2 % , then the population growth of Abu-Dis village should be calculated according to the composite ratio equation :

$$Pf = (Pn \times (1+R/100)^{y}).$$

Were: Pf is the population forecast year 2026

Pn is the population 2001

R is population growth ratio

y is number of years from 2001 to 2026

Applying this equation to calculate population 2006 and 2026 respectively :

$P_{(2006)} = (10{,}649 \times (1.042)^{5}) = 13{,}081$ Inhabitants compared to 11,932 now, population cut by almost 10%

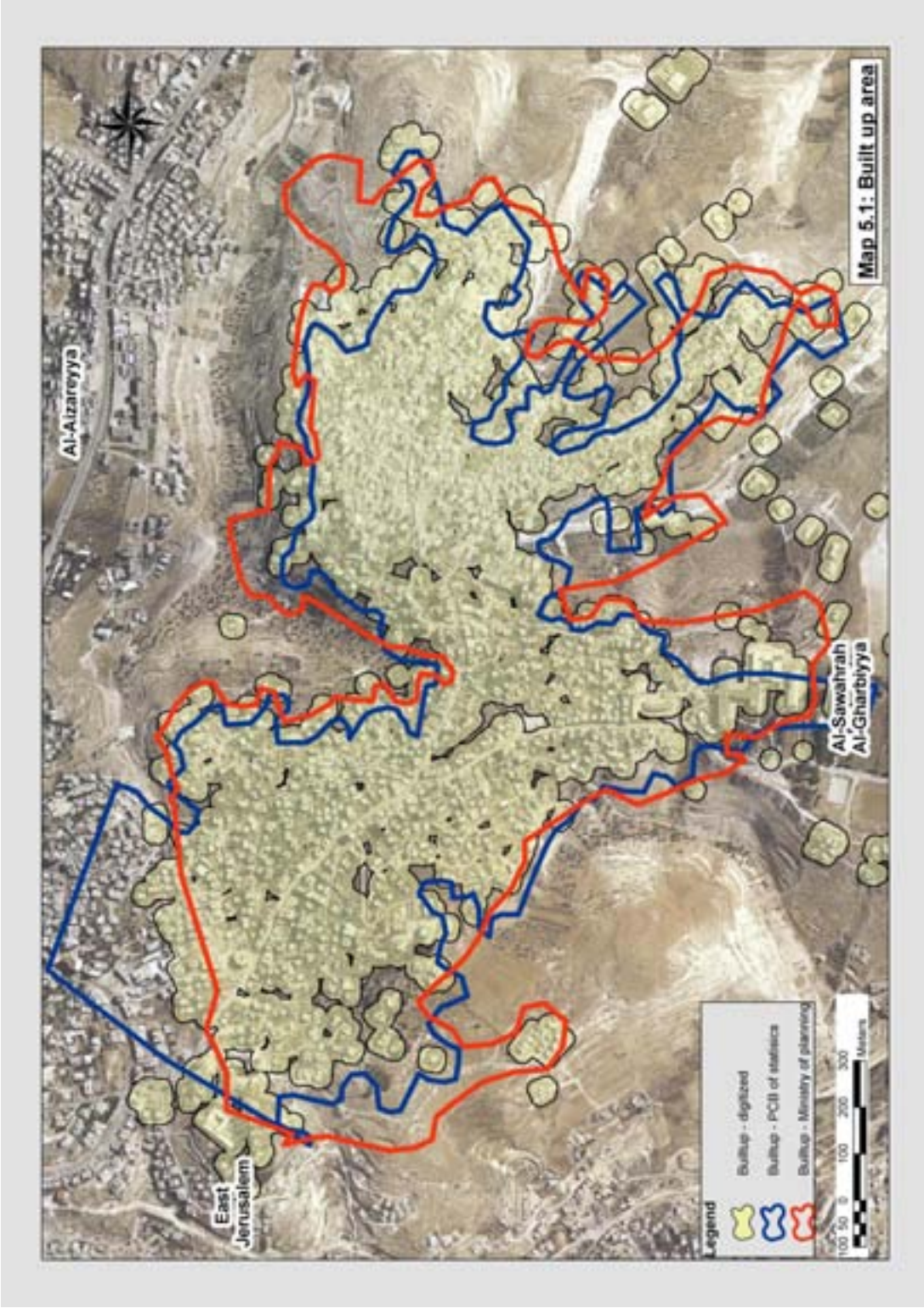
$P_{(2025)} = (10{,}649 \times (1.042)^{25}) = 29{,}785$ Inhabitants compared to 19,650 forecasted, population cut by almost 35%

Results can be summarized that the Occupation Wall has already cut the population growth of Abu-Dis by 10% and it will cut population growth by almost 35% within the next 20 years.

5.2.2 Current built up area

The total built up area of Abu-Dis village provided by different Palestinian official departments is slightly different from each other. While data obtained from the Palestinian Central Bureau of statistics suggests the total built up area of Abu Dis village is only 1,400 Donums, data obtained from the Ministry of Planning suggests it is 1,616 Donums. The researcher digitized the area and calculated to be 1,590 Donums. See map 5.1. The Palestinian Central Bureau of statistics' data seem to exclude newly built up areas at the south east of the village, as it is calculated from an old base map (1997) of the West Bank. The Ministry of Planning's data (1,616

Donums) is almost consistent with the researcher calculations. The total built up area of Abu Dis village includes residential, public, commercial and industrial uses but it does not include agricultural land as it lies beyond the built up area.



Map 5.1: Built up Area

5.2.3 Existing land use area analysis

For the purpose of projecting future urban growth, a break down of the current land uses is needed. Each land use is projected alone for future urban growth using trends projection technique within the continued growth scenario approach (See chapter 3). The existing land uses is broken down as follows:

- Residential and public uses
- Agricultural land use
- Commercial land use
- And industrial land use

Knowing that all map data layers (disaggregate data) was only available for the researcher in hard copy, missing all computerized data. The researcher had to insert and arrange all data in a geographic information system (GIS) for further analysis. Data insertion is a time consuming process and takes a long time of work. Existing villages' boundaries, buildings, roads, valleys, agricultural lands and the rout of the occupation wall, all had to be digitized from the new aerial photo purchased by the researcher from local aerial photogrametry company. This aerial photo is relatively new, dated September 2005, and has a good accuracy as it is at a scale of 1:1,000. After that attribute data concerning mainly the use of building, had to be inserted in GIS database tables. These attribute data is used for visualizing existing building uses. See map 5.2. Land around each building use was digitized, forming – at the end – the

existing land use map. See map 5.2. This digitizing was used within GIS system to calculate existing land uses areas. The table below shows existing land use areas.

Table 5-2: Coverage ratio by existing land use

Existing Land use	Current Area (Donums)	Coverage ratio (sq. m / cap.)
Residential and public land uses	1,426	119.5
Agriculture	232	19.4
Industrial	16	1.3
Commercial	149	12.5
Total	**1,823**	
Total excluding agriculture	**1,591**	133.4

It can be noticed that the summation of the land uses – excluding agriculture – is 1,591 donums which is very close to the value for the built up area obtained from the Ministry of Planning (1,616 Donums). Values in table 5.2 are calculated values supported by documentary data from the Ministry of Planning. These data along with population and population density data are used within this research as the base for projecting required land use future growth areas.

5.2.4 Land required for residential and public uses

For calculating the required land area for future urban growth, a population density for built up areas (m2/person) is established from current conditions. This density is compared to other neighboring villages and cities in the west bank and in the region, in order to be able to suggest a future population density for the urban growth scenario.

5.2.4.1 Projected population density

The following table summarizes population densities for built up areas for East Jerusalem villages:

Table 5-3: population densities

Urban area	Arae (Donum)	Population 2006	Population Density (sq.m/cap.)	
Al-Jdireh	225	2153	105	Highest density
Kufr Aqab	1171	10565	111	
Abu Dis	1616	12290	132	
Al-Ram & Dahiyat Al-Barid	3648	25975	140	
Anata	1408	9764	144	
Hizma	904	6187	146	
Al-Jeeb	724	4711	154	
Jaba'a	507	3287	154	
Qatanna	1192	7607	157	
Al-Zayyem	392	2495	157	
Um-Allahem	59	378	157	
Al-Eizareyya	2881	17656	163	
Beit Surik	712	3874	184	
Beir Nabala	1152	6180	186	
Beddo	1341	6462	208	
Beit Iksa	332	1593	208	
Rafat	487	2155	226	
Biet Inan	991	4327	229	
Biet Duqqo	388	1624	239	
Biet Hanina Al-Balad	409	1406	291	
Qalandia	347	1171	297	
Mukhmas	567	1906	298	
Al-Sawahra Al-Sharqeyya	1666	5287	315	
Al-Sheikh Sa'ad	911	2442	373	
Beit Ijza	257	681	377	
Al-Qubieba	1031	2099	491	Lowest density
Average			217	

(Ministry of Planning data)

It can be noticed from the previous table that Abu Dis village has one of the highest population densities in East Jerusalem. More over, knowing that Jerusalem governorate has the highest population density among all other West Bank Palestinian governorates (PCBS 1997), it can be concluded that Abu Dis village has one of the highest population densities in the west bank.

Comparing Abu Dis village to Israeli most crowded cities Tel-Aviv, West Jerusalem and Haifa, it can be concluded that Abu Dis - which is a village with only 1 to 4 storey buildings, and not a crowded major city with high rise buildings like Tel Aviv - is more crowded than the most crowded city in Israel. See table 5.4

Table 5-4: Population in major Israeli cities.

City	Population Density (sq.m/cap.)
Tel Aviv	139
West Jerusalem	177
Haifa	237

(Israeli central statistics department 2005)

From the previous analysis, one might discuss that being a crowded West Bank village; Abu Dis projected future population density should be lowered. More area should be provided per capita in any future urban growth projection. It also could be discussed that a future population density of about 217 sq.m per capita (East Jerusalem region average population density. See table 5.3) should be - at least -

made available for any future urban growth planning. That might be logical. But looking from another point of view; projecting future urban growth assuming the same population density for Abu Dis will provide a stronger argument for the occupation wall effects; If the occupation wall will have effect on the village growth when it is already crowded – cutting off a certain percentage of land required for future urban growth within a crowded scenario – then a strong reply to on any suggestions for a more population dense solution to survive the occupation wall effect would be; that the village is already one of the most crowded in Palestine and yet – severely – effected by the occupation wall. And if we were to propose a lighter population density for growth projection of the village, it will need more land for future urban growth, and then the occupation wall will have a bigger impact on the village. For all of the discussed above, and for the purpose of this thesis; the population density will be assumed to remain the same in the future urban growth projection.

5.2.4.2 Projected residential area

Because the purpose of this research is to try to assess the effect of the occupation wall on urban growth, and not to make a land use plan for Abu-Dis, the residential area is dealt with as a whole that includes all public services and open spaces between buildings needed. Residential area needed for urban growth in the year 2026 is calculated on population density basis according to the trends projection technique and as per the discussion in the previous section: in the year 2005 (The year of the

aerial photo) we had 11,932 persons living on 1,430 Donums (residential and public use areas) in Abu-Dis village. That gives every person anout 120 m^2 of residential and public use area.

Residential Land use required $_{2026}$	= Population $_{2026}$	× 120 m^2
	= 19,650	*× 120 m2*
	≈ 2,350	*Donums*
Extra Residential Land use required $_{2026}$	***≈ 900***	*Donums*

5.2.5 Land required for other uses

For calculating land required for urban growth per economic sector, the same trends projection technique of coverage ratio is used. Population density (or coverage ratio [sq.m / cap.]) is assumed to remain the same for the above discussed reasons in the residential and public use projection.

5.2.5.1 Economic potential for Abu Dis village

- Commercial potential:

Being on the main road which connects Ramallah and other northern cities with all southern cities of West Bank, the local council chairperson estimates that 50,000 vehicles pass daily through Abu Dis, heading towards Bethlehem and Jericho. Not to mention that, about 4,000 students receive their higher education at the Al Quds University campus in the village. These two factors in addition to its location near to Jerusalem city give Abu Dis village a high commercial potential. This potential is concentrated on main streets and in the – already exist – commercial center of the village.

- Agricultural potential:

As discussed earlier in chapter 2, the only three natural resources in the West Bank are water, agriculture and building stone (Coon, 1990). As for Abu Dis village, agricultural land is the main natural resource available. Abu Dis inhabitants – like all of the Palestinian villagers – are originally farmers, who don't lack experience in agricultural work. Agricultural land should be conserved and expanded if possible in future urban growth projections.

- Industrial potential:

On a lower level of importance than commerce and agriculture, Abu Dis village has an industrial potential that is found in the area of the concrete factory to the east and some little handy craft workshops. The local council has a vision to make a small industrial zone to the east, around the concrete factory being able to serve surrounding villages as well: Al-Eizareyya and Al-Sawahreh.

5.2.5.2 Projected population growth by economic sector

Data of population per economic sector for Abu-Dis are only available on the Jerusalem governorate level (areas J2). Table 5.5 illustrates the population ratio working in deferent economic sectors from the total working population, in area (J2) in Jerusalem governorate years from 2000 to 2004:

Table 5-5: Percentage of population working in each economic sector

Economic sector	Percentage from working population				
	2000	**2001**	**2002**	**2003**	**2004**
Agriculture	2	2.7	1.9	1	1.3
Industry	14.6	14.4	13.9	12	12.4
Commerce	28.2	27.9	27.9	26.5	26.6
Labor force percentage	38.7	38	35.8	38.4	38.5

(Jerusalem statistical book 7)

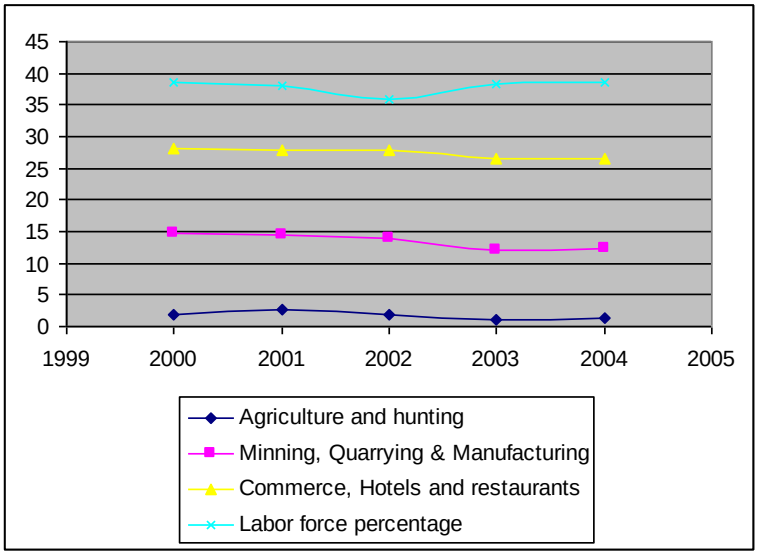


Figure 5-4: Percentage of population working in each economic sector

It can be observed from table 5.5 and figure 5.4 that percentages of people working in deferent economic sectors (from the total population) are almost constant over years for each economic sector, with minor changes. In other words: people working in deferent economic sectors grow in the same growth ratio of the whole population. No economic sector is expanding on the expense of the other.

5.2.5.3 Projected area needed for each economic sector

The table below (table 5.6) shows the coverage ratio (population density) and the projected area needed in the year 2026 for each economic sector, assuming the population density is to remain the same and all economic sectors growing in the same ratio until the target year, as discussed earlier.

Table 5-6: Additional area of land required for each economic sector's growth

Population 2005	**11,932**
Population 2026	**19,650**

Economic sector	Current Area (Donums)	coverage ratio m2/P	Projected area (donums)	Additional Land Area (donums)
Agriculture	232	19.4	382	150
Industry	16	1.3	26	10
Commerce	149	12.5	245	96

5.2.6 Wall effect on projected area required

For the purpose of comparison only, we have projected the population for the year 2026 before in this chapter to be 29,785 discarding the occupation wall effect. Table 5.7 shows land areas required assuming the situation in Abu-Dis remained the same (No occupation wall).

Table 5-7: Comparison to no wall assumption

Population 2005	**11,932**
Population 2026	**19,650**
Population 2026 (No wall assumption)	**29,785**

Economic sector	**Current Area (Donums)**	**coverage ratio m2/P**	**Projected area (donums)**	**Projected area (donums) (No wall assumption)**	**Percentage projected (Wall) / projected (no Wall)**
Agriculture and hunting	232	19.44	382	579	66%
Minning, Quarrying & Manufacturing	16	1.34	26	40	
Commerce, Hotels and restaurants	149	12.49	245	372	

We may summarize: that the occupation wall by cutting population growth, will cut the needed area for urban growth by 34%.

5.3 Allocation of future area of urban growth

Before allocating land required for urban growth, it is essential to show the existing land use situation of Abu-Dis, See map 5.2 for more details.

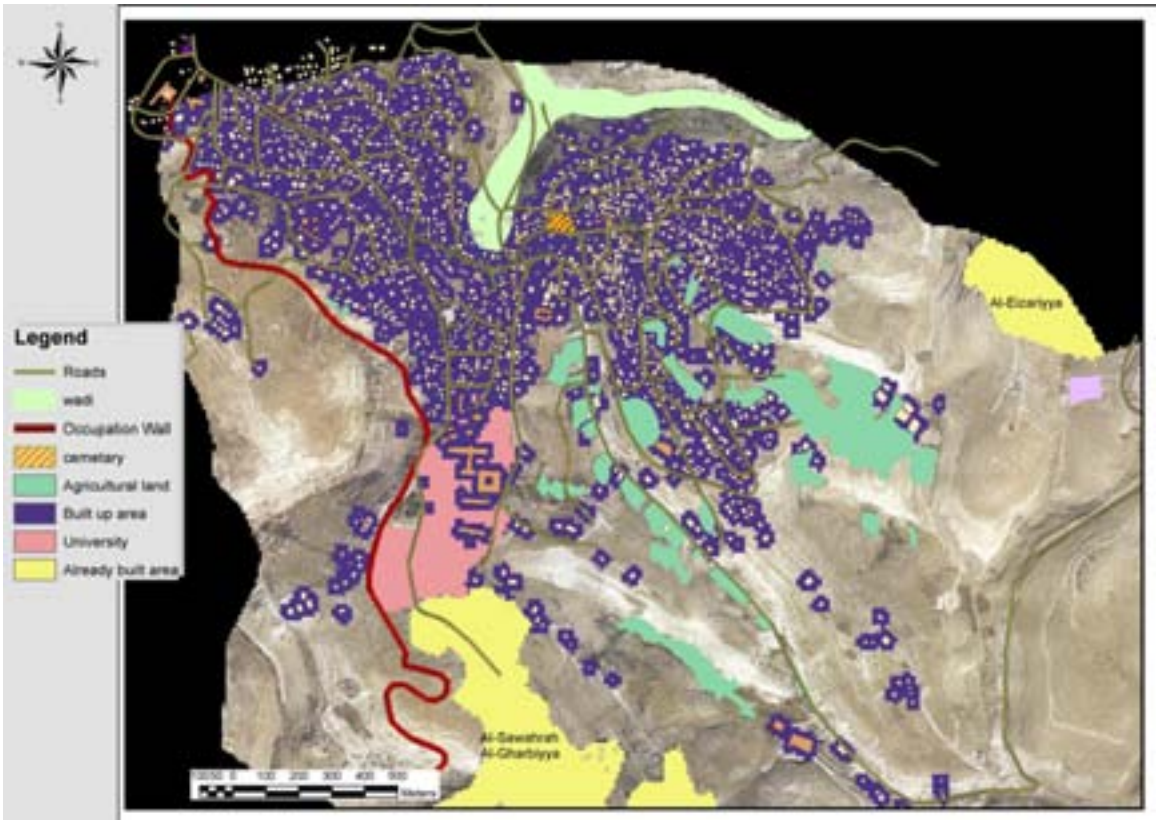


Figure 5-5: Existing land use situation of Abu-Dis

As it is shown in figure 5.5, areas in black are outside village lands. (West bank village lands are based on data purchased from the ministry of local government). Black areas to the north are considered Al-Eizareyya village lands, and to the west are Jerusalem city lands (ministry of local government data). These areas are considered

areas not suitable for Abu-Dis urban growth as they are probably needed for the groeth of Al-Eizariyya village and Jerusalem city, which there isn't place for them to be studied within this thesis. The yellow areas represent built up areas from Al-Sawahra and Al-Eizareyya villages inside Abu Dis lands. The valley represented by light green color is an area planted with olive trees, and has water movement in rain season, so also considered not suitable for expansion.

Picture 5.1: The Valley

The area has steep slopes. This is a major factor for urban expansion, taking into account the high cost of road construction and infrastructure connecting, not to mention high cost of building process itself on steep sloped areas.

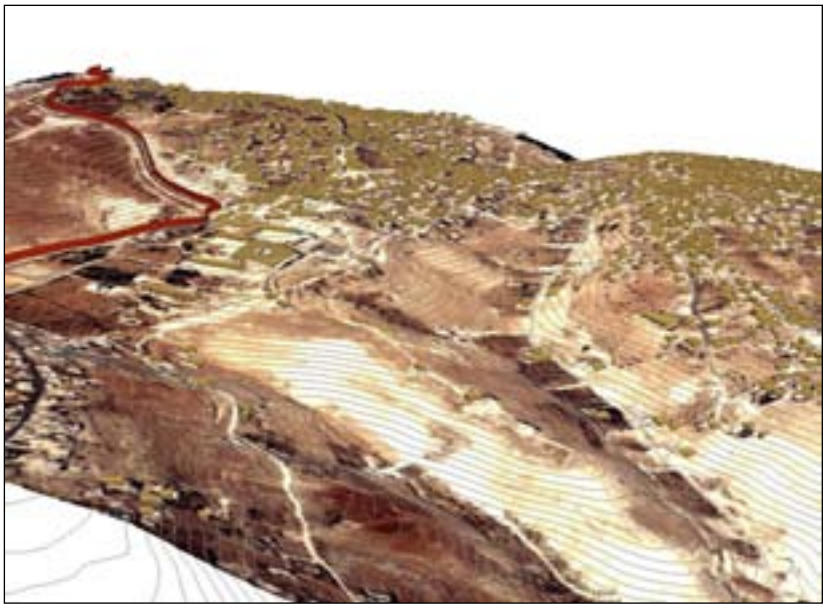


Figure 5.6: 3 Dimensional visualization created by GIS

Picture 5.2: The Occupation Wall

For allocating future urban growth, each one of the residential, commercial, agricultural and industrial land uses should be allocated alone. The agriculture land use growth area – being the only natural resources that exist in Abu Dis - should be allocated first, so land required for agriculture is reserved from other land uses to expand over. Commercial land use growth area should be allocated second, because of the important commercial potential of Abu-Dis discussed earlier over the industrial use. Industrial land uses growth area will be allocated after agriculture and commercial land uses having a lower potential in the city. Residential land use (including open, public and services areas) should be allocated last, because it is better to expand residential land use where it is least suitable for commercial, industrial, and agricultural land uses to expand.

In the process of allocating each land use, GIS spatial analyst extension is used, implementing a potential site and sieve analysis by dividing the study area (Abu-Dis village land) into a matrix of small squares (a raster theme). Each square is given a weight of suitability for the studied land use. The larger the weight, the more suitable the location. This process is re-performed for each criteria item. For example: once for the nearness to similar land use, and another for suitability of the slope and etc. Matrixes are then multiplied by a factor representing the importance of each criterion. This will result in a set of matrixes of suitability for every land use. These matrixes are then summed spatially again using the same spatial analyst, resulting in a major

suitability matrix for the studied land use. The required area then is selected from the sells having the highest overall weight from this suitability matrix.

5.3.1 Allocation of agricultural land use growth

For allocating agricultural land use future growth, criteria that consist of 2 items are used:

5.3.1.1 Potential site analysis

- Proximity (Distance) to existing agricultural land

Land is classified for suitability for agricultural growth by its proximity to existing agricultural land. Weights are given on a scale from 10 to 1 for every 25 meters of distance from existing agricultural land. The closer to existing agricultural land, the more suitable. See figures 5.7, 5.8

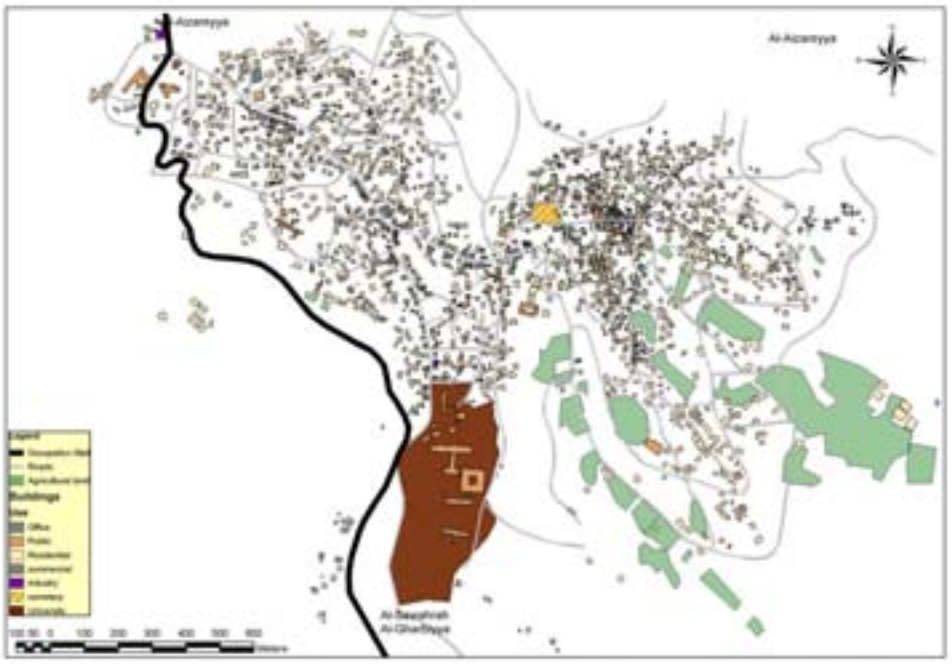


Figure 5-7: Existing agricultural land

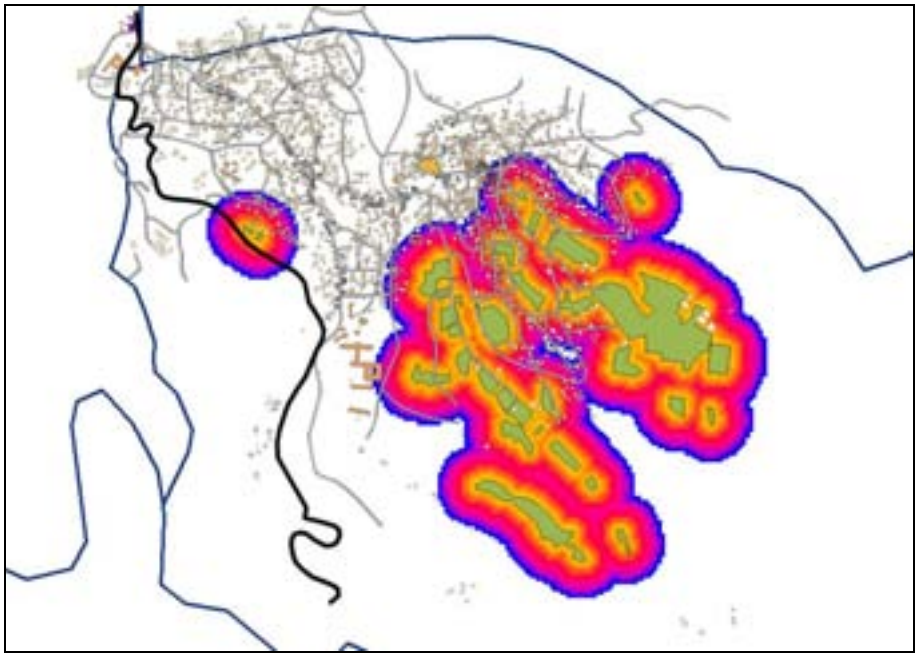


Figure 5-8: Distance to existing agricultural land

5.3.1.2 Sieve analysis

All already built up areas and areas outside village lands are sieved (excluded). See figure 5.9

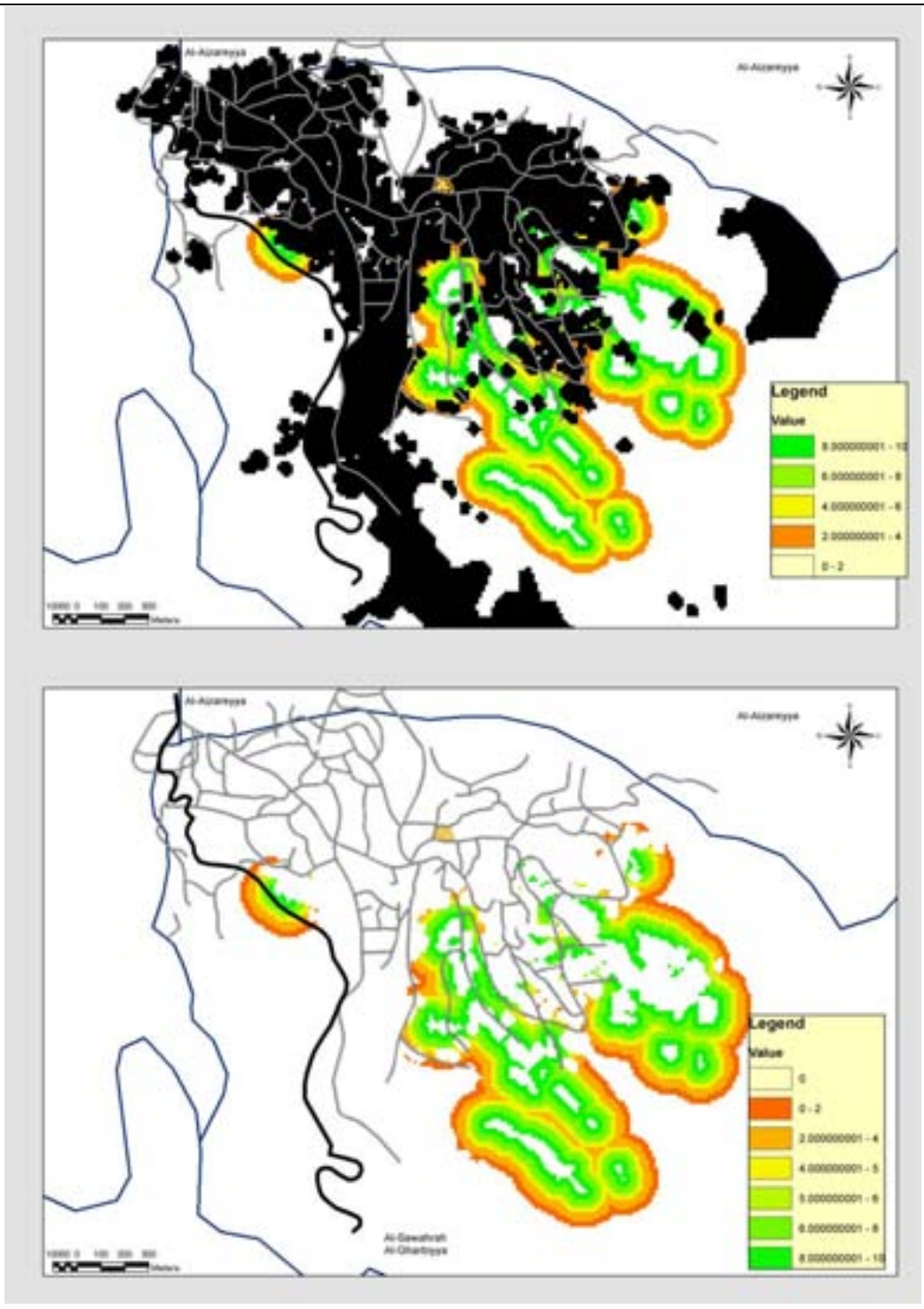


Figure 5-9 Sieving all already built up areas

5.3.1.3 Selection of area required

For selecting the required land area, a (zonal statistics) table for the resulting theme is used. This table is provided by GIS spatial analysis and it contains areas of specific weights from the resulting theme. See table 5.8

Table 5-8 zonal statistics table

VALUE	AREA (m^2)	Cumulative Sum of areas until current row (m^2)
10	4,520	4,520
9	124,051	128,571
8	98,940	227,511
7	63,783	291,294
6	68,973	360,267
5	94,252	454,519
4	87,221	541,740
3	63,783	605,523
2	51,730	657,253
1	68,136	725,389
0	13,253,400	13,978,789

The required area for agricultural growth calculated before is 140,000 sq. m. See table 5.5. Area of allocated land is selected starting from highest suitability value. If this area is enough for future expansion, then this is the required area. If not, the greater suitability value less than current value is added to the previous selection, and so on until the required area is fulfilled. In this case we take suitability values from 10 to 8 having an area of about 227,500 sq. m. See figure 5.10

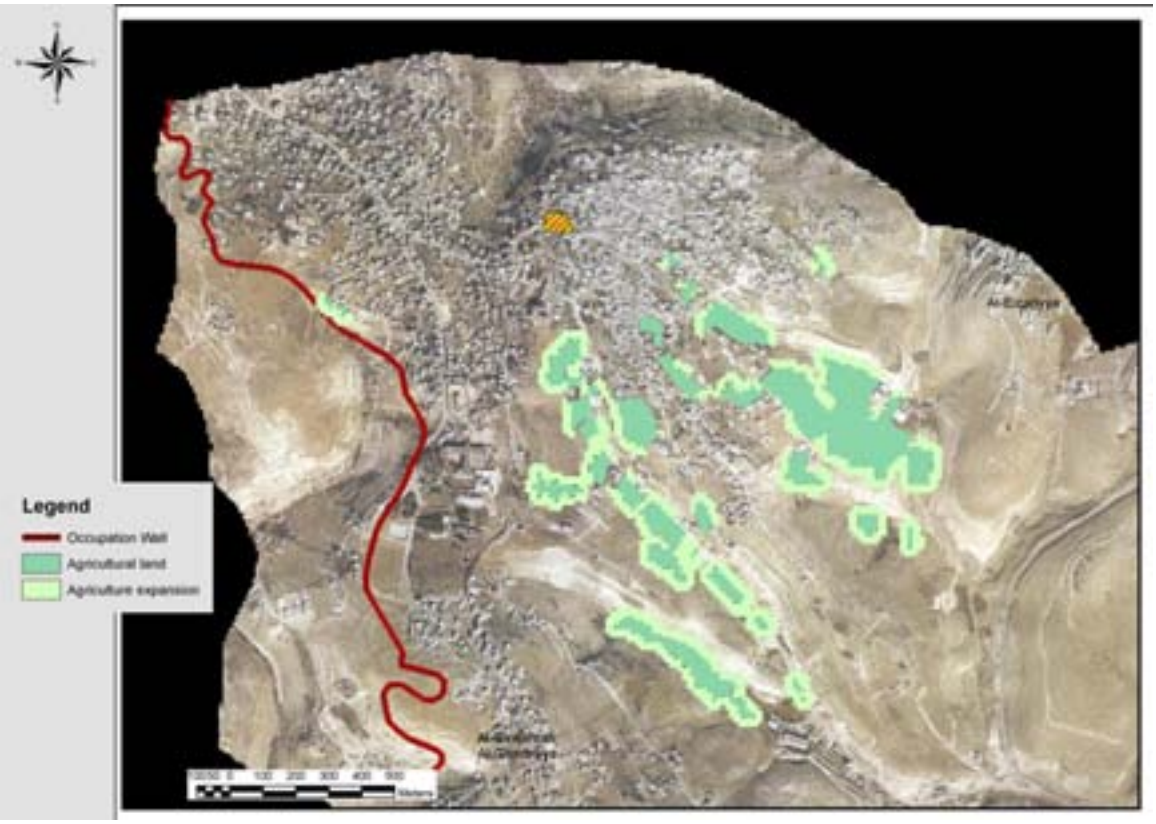


Figure 5-10: Resulting agriculture growth areas

5.3.1.4 Conclusion

The resulting agriculture growth area is a belt around existing agricultural land of about 75m, only excluding built up areas, and connecting some fragmented areas of existing agricultural land together. See figure 5.12. This result is rational from two points of view; first: because areas nearer to existing agricultural land will probably have similar soil types and is most suitable for agriculture land growth. And second: the infrastructure for agriculture such as irrigation pipes will work more efficiently and less costly (see sprawl theory in chapter 2), in addition to the fact that agricultural machinery will also work more efficiently not having to move them to relatively far away agricultural land.

5.3.2 Allocation of commercial land use growth

For allocating commercial land use future growth, criteria that consist of 4 items are used:

5.3.2.1 Potential site analysis

- Proximity to main streets

One of the factors that give land a commercial potential in Abu Dis village is proximity to main roads. The movement of passengers on these main roads; going to Abu Dis, or just passing through, makes adjacent land best for commercial land use. Areas within 15m (approximate width of buildings) from main roads are given a weight of 5. Areas 15 to 30m far from roads are given a grade of 2.5, and areas farer than that, are given a weight of 0. See figure 5.11

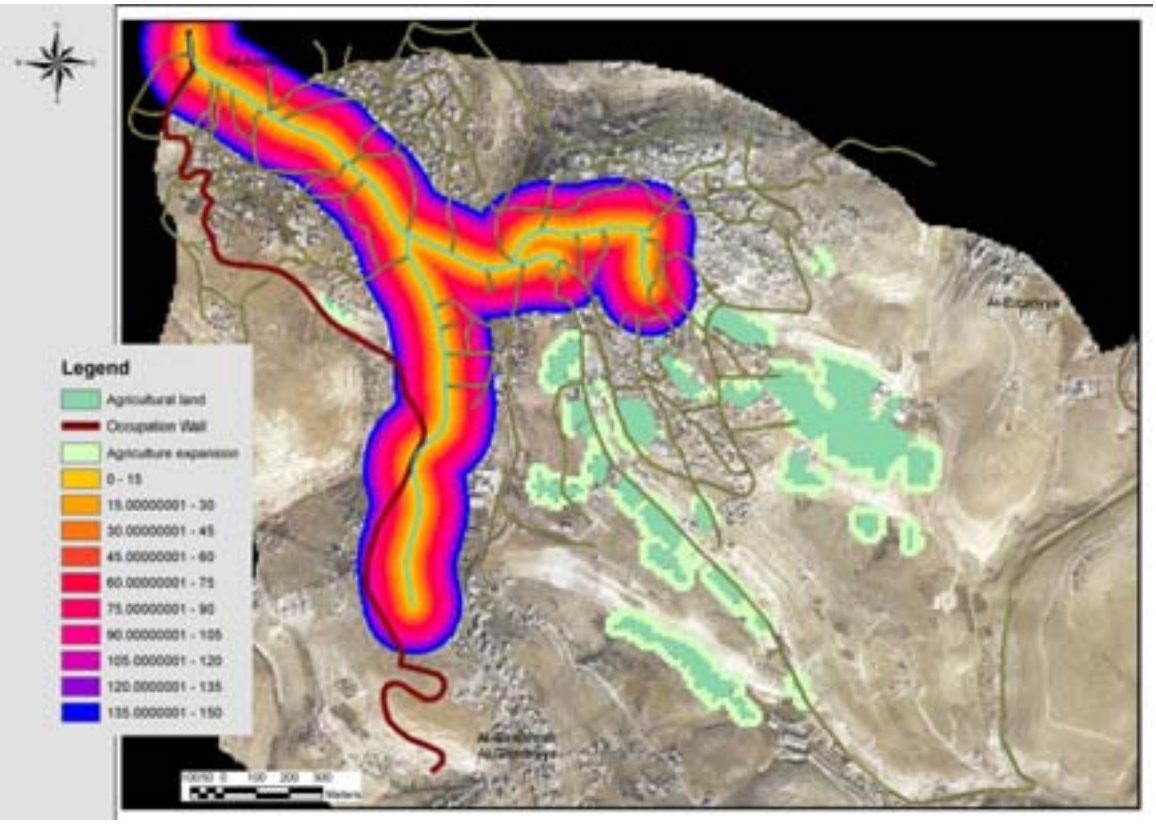


Figure 5-11: Distance to existing commercial roads

- Proximity to existing commercial land use

The second factor affecting commercial growth allocation is proximity to existing commercial land uses. As in the case of agricultural land, land is classified for suitability for commercial growth by its proximity to existing commercial buildings. Land near existing commercial buildings is more likely to have other commercial buildings than land far from it. Weights are given on a scale from 10 to 1 every 25 meters of distance from existing commercial buildings. The closer to existing commercial buildings, the more suitable the location. See figure 5.12

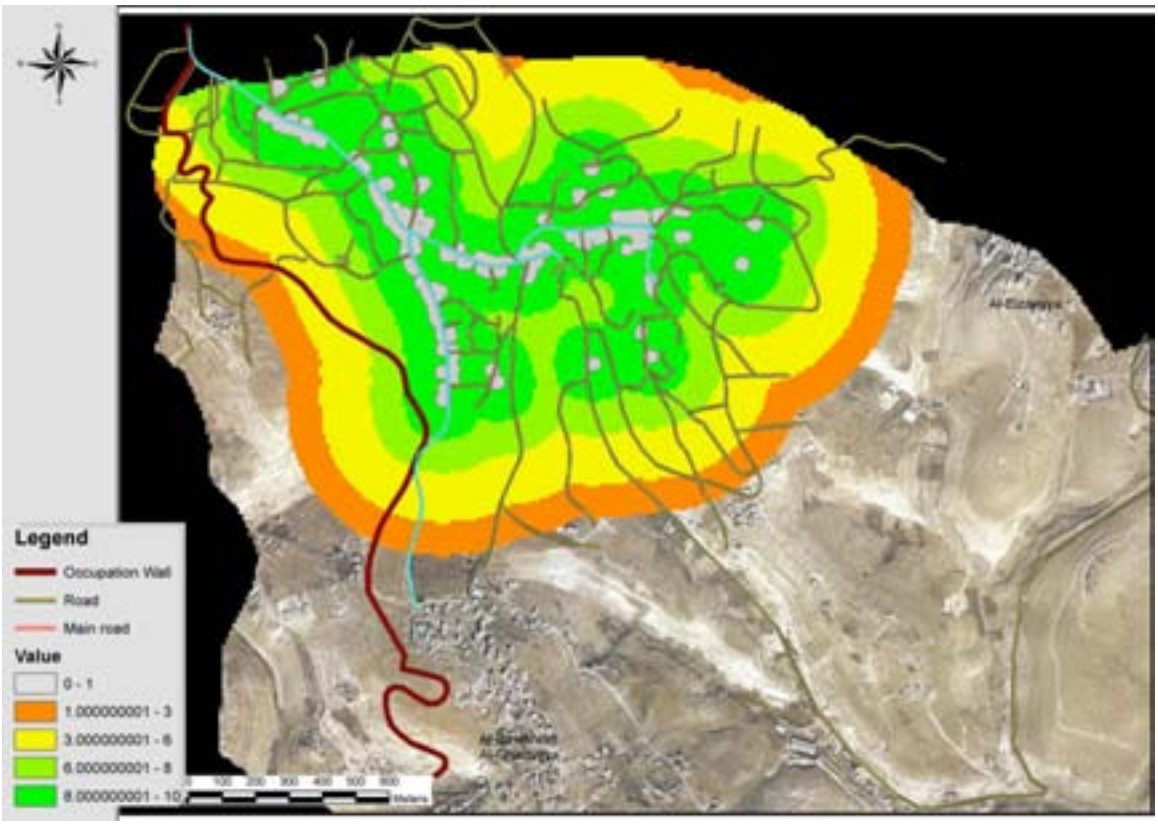


Figure 5-12 Distance to existing commercial land use

- Topography

Topography of Abu-Dis is divided on slope basis. See figure 5.13

0-15% sloped land, where vehicles can move easily is considered most suitable and given a weight of 5

15-30% sloped land, where existing buildings already exist on such slope – is considered less suitable and given a weight of 0.0

30-50% sloped land, is considered least suitable and given a grade of -5

More than 50% slope is considered a cliff and unsuitable for buildings therefore sieved from suitable lands for urban growth.

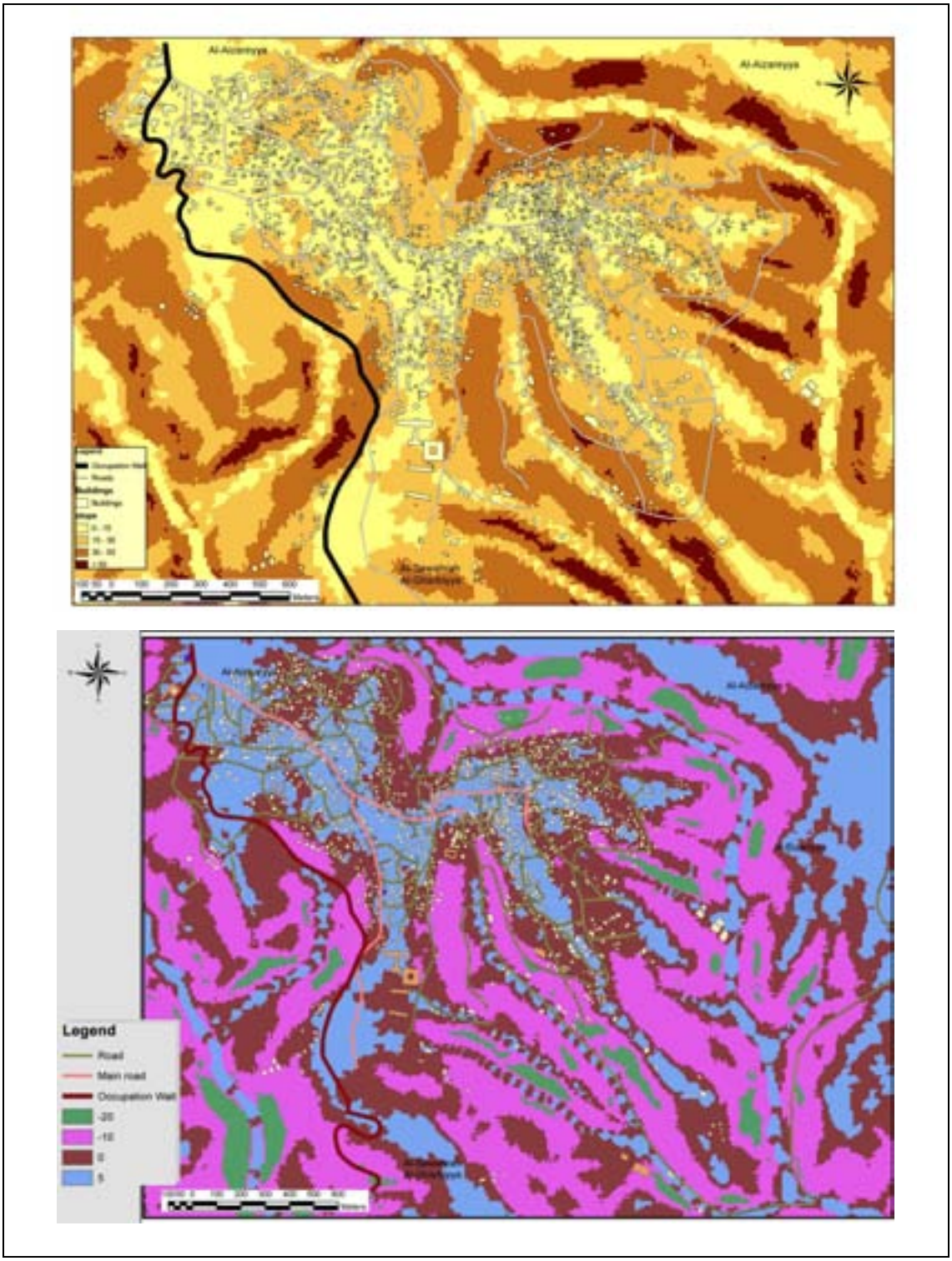


Figure 5-13: Slope and slope weighting

Spatially summing the previous themes, the result is shown in figure 5.14

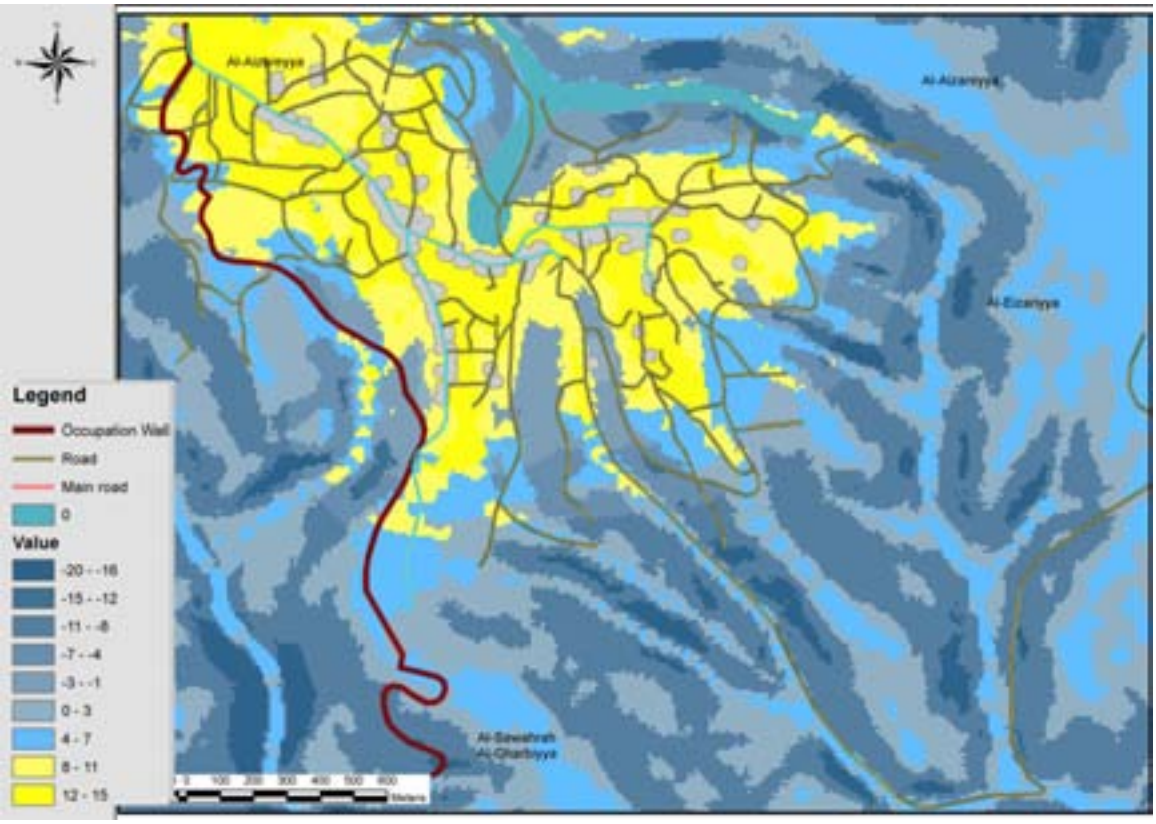


Figure 5-14 Resulting theme

5.3.2.2 Sieve analysis

Outside already built up and agricultural land and agricultural land growth area (Sieve analysis)

All already allocated land uses are excluded from the selection also by giving them large negative weights. See figure 5.15

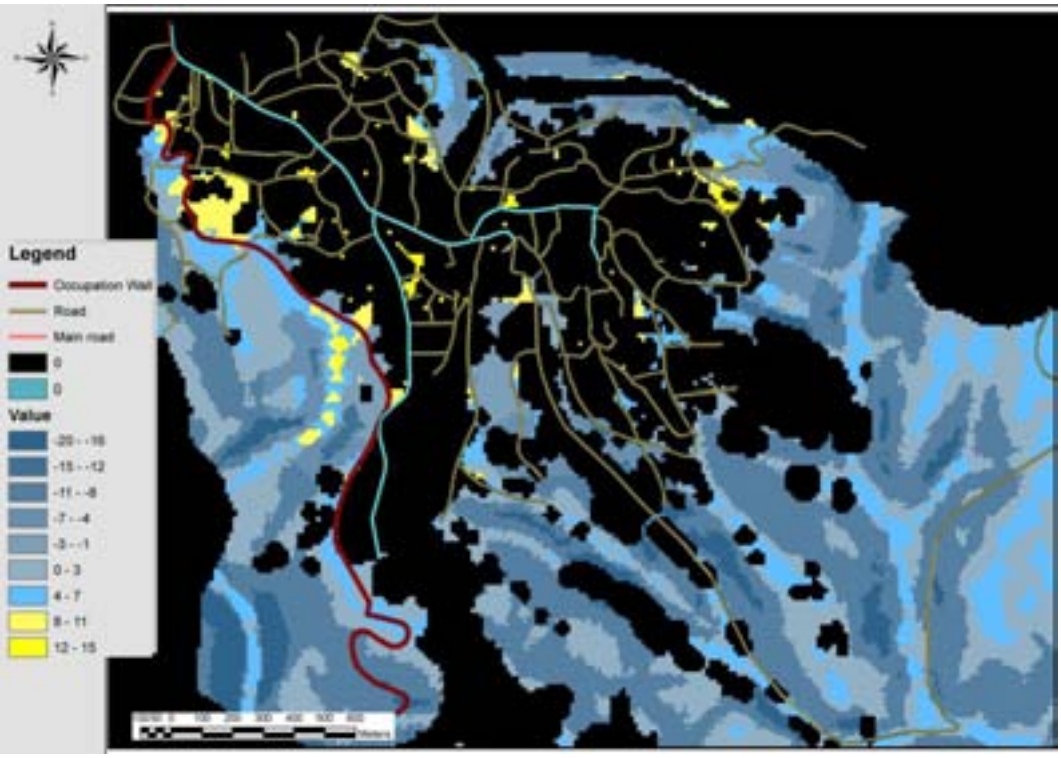


Figure 5-15

5.3.2.3 Selection of area required

The same technique used with agricultural land is used. Table 5.9 shows the zonal statistics provided by GIS.

Table 5-9 zonal statistics table

VALUE	AREA (m^2)	Cumulative Sum of areas until current row (m^2)
15	7,199	7,199
14	4,855	12,054
13	4,520	16,574
12	6,696	23,270
11	15,737	39,007
10	10,714	49,721
9	22,600	72,321
8	36,663	108,984

Suitability values between 15 and 8 are chosen having a summed area of 108,984 sq.m, slightly higher than the required area of 96 donums. See table 5.5

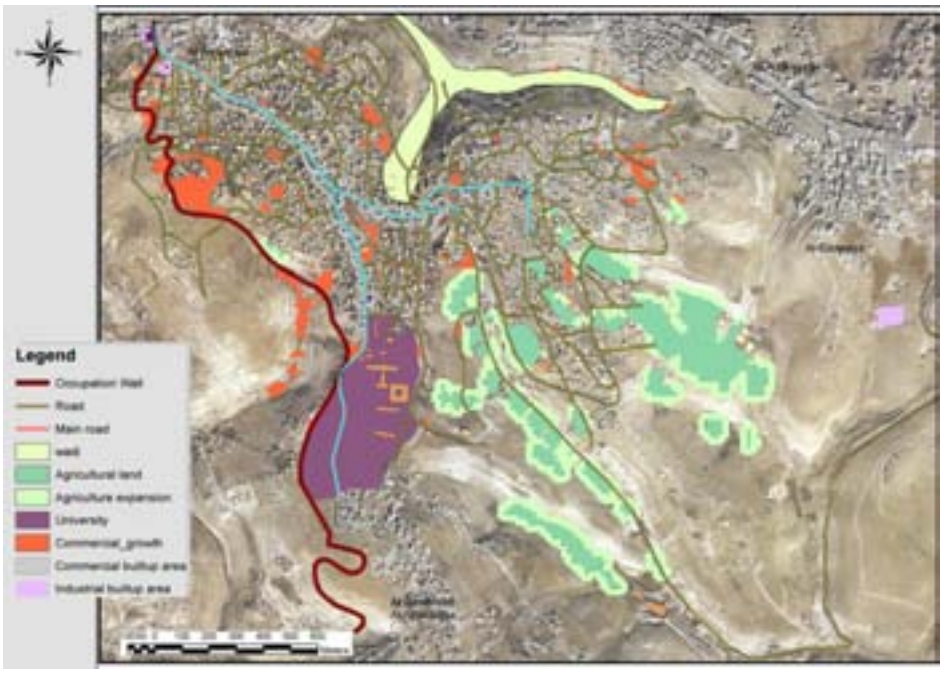


Figure 5-16 Land required for commercial and agricultural uses growth

5.3.2.4 Conclusion

The growth of the commercial land use is effected by three factors: proximity to main roads, proximity to existing commercial land use, and good topography. Proximity for main roads even though being a strong factor, but it had less effect on choosing areas suitable for commercial use growth. That is because areas around these main roads – with only few exceptions – are already built up areas. But using this factor in the analysis was important in locating lands that are still empty near main roads these lands are most likely to be used commercially in the nearest time frame. The two other factors – proximity to existing commercial land use and topography – were more efficient in determining more lands available for commercial land use than the first factor. Two determined areas are notable on the results having a relatively bigger area than other allocated areas. See figure 5.16. They are located on the west side of Abu Dis village: the first to the north; totally surrounded by the occupation wall. And the other is laying in the middle section of the wall and to the west. Most of this area is totally torn out from the village by the wall.

5.3.3 Allocation of industrial land use growth

The criteria used for the industrial use includes distance to existing industrial land uses and reclassification of slope, then sieving all already used lands. See figures 5.17 to 5.18

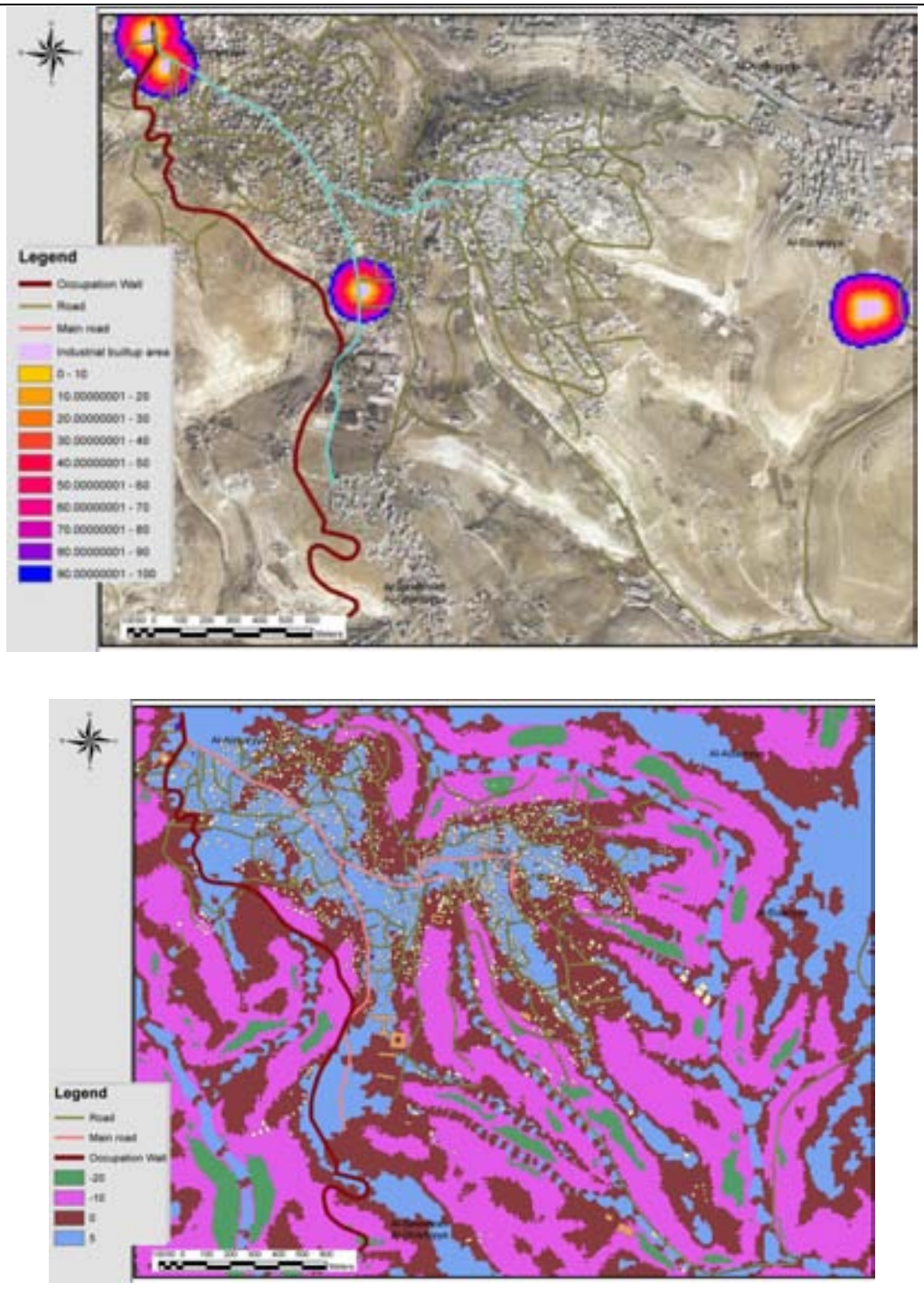


Figure 5-17: Allocation of industrial use (Upper: distance to existing industrial landuse, lower: Slopes)

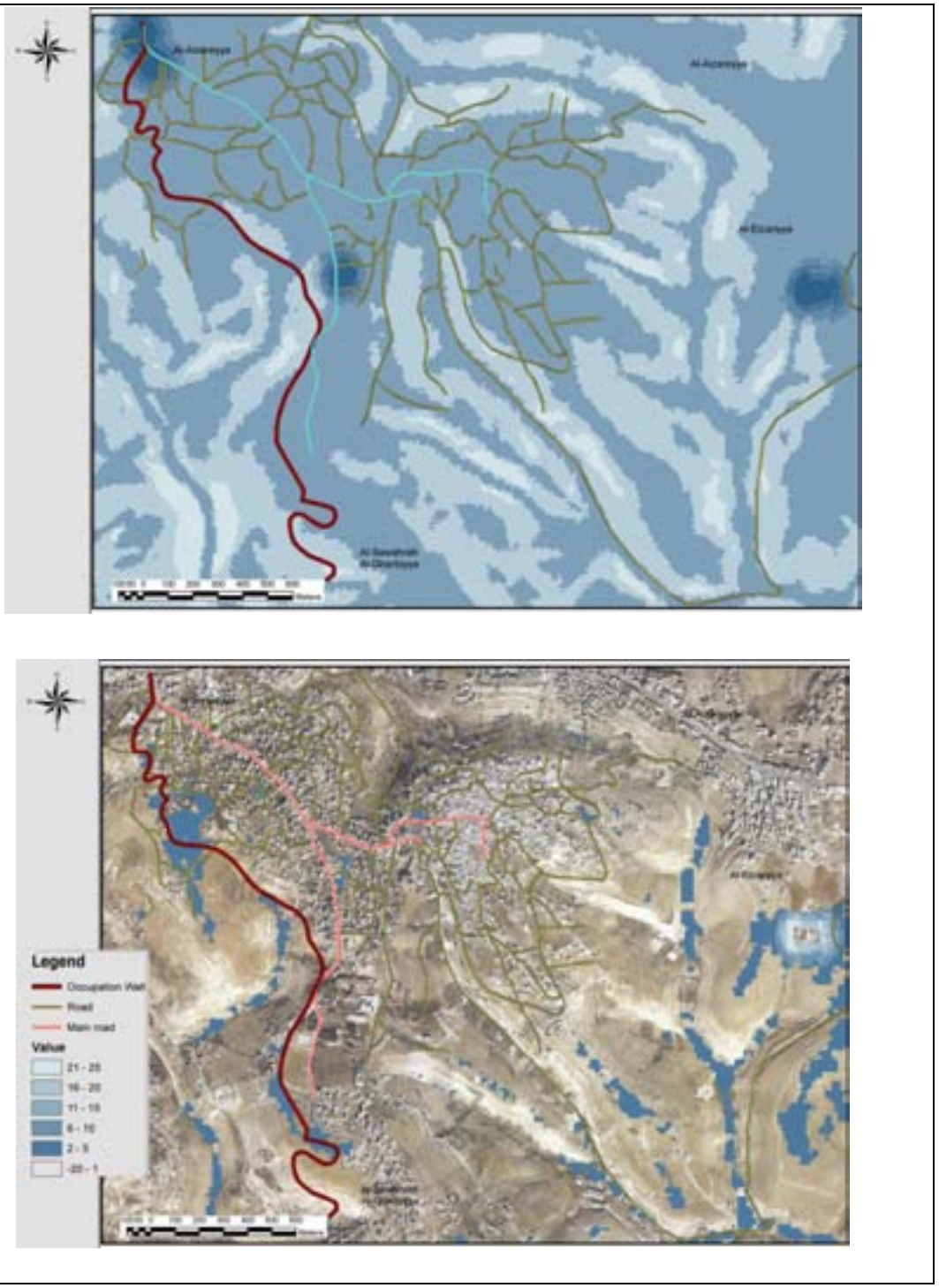


Figure 5-18: Summation of themes and sieve

Table 5-10: zonal statistics table

VALUE	AREA (m^2)	Cumulative Sum of areas until current row (m^2)
25	1,507	1507
23	2,009	3516
21	1,674	5190
20	2,511	7701
19	2,511	10212
18	2,176	12388
17	4,018	16406
16	1,842	18248

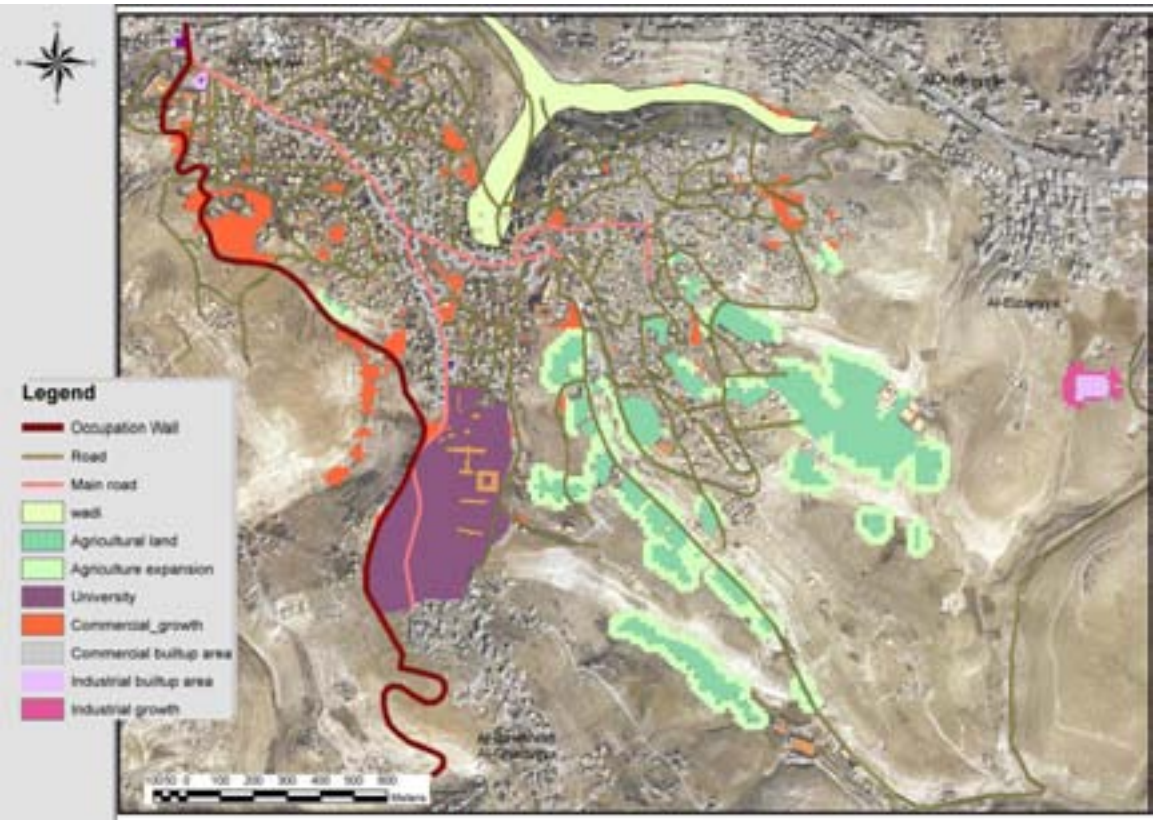


Figure 5-19 Land required for commercial, agricultural and industrial uses growth

5.3.3.1 Conclusion

The result is very consistent with the vision and orientation of Abu Dis village local council and East Jerusalem joint council. See interview. This area to the east surrounds the existing concrete factory in the village and is meant by the previously mentioned councils to be the industrial area of the city. If the these local councils are to decide that this is an industrial area, then the resulted projected area may not be

enough, but as a continued urban growth scenario, and for the purpose of assessing the wall effect on urban growth, it will be assumed that growth will continue at the same ratio it has been doing until now.

5.3.4 Allocation of residential and public land use growth

The residential land use is the main urban growth component, having the largest growth area and containing all necessary public services and open areas necessary in residential neighborhoods. Criteria used consist of 3 items:

5.3.4.1 Potential site analysis

- Proximity to existing residential land use

The nearness to existing built up area means nearness to infrastructure and nearness to existing public services. From another point of view people of Abu Dis tend to build there houses near family houses (family oriented). (interview with Abu Dis local council and east Jerusalem joint council). Weights are given on a scale from 10 to 1 to distances on a 100 m interval. The closer to built up area, the more suitable the location. Based on the fact that urban residential growth is family oriented, the proximity to existing buildings factor has been multiplied by 2 to give special importance. Figure 5.20 illustrates the distances from existing buildings, and its weighting.

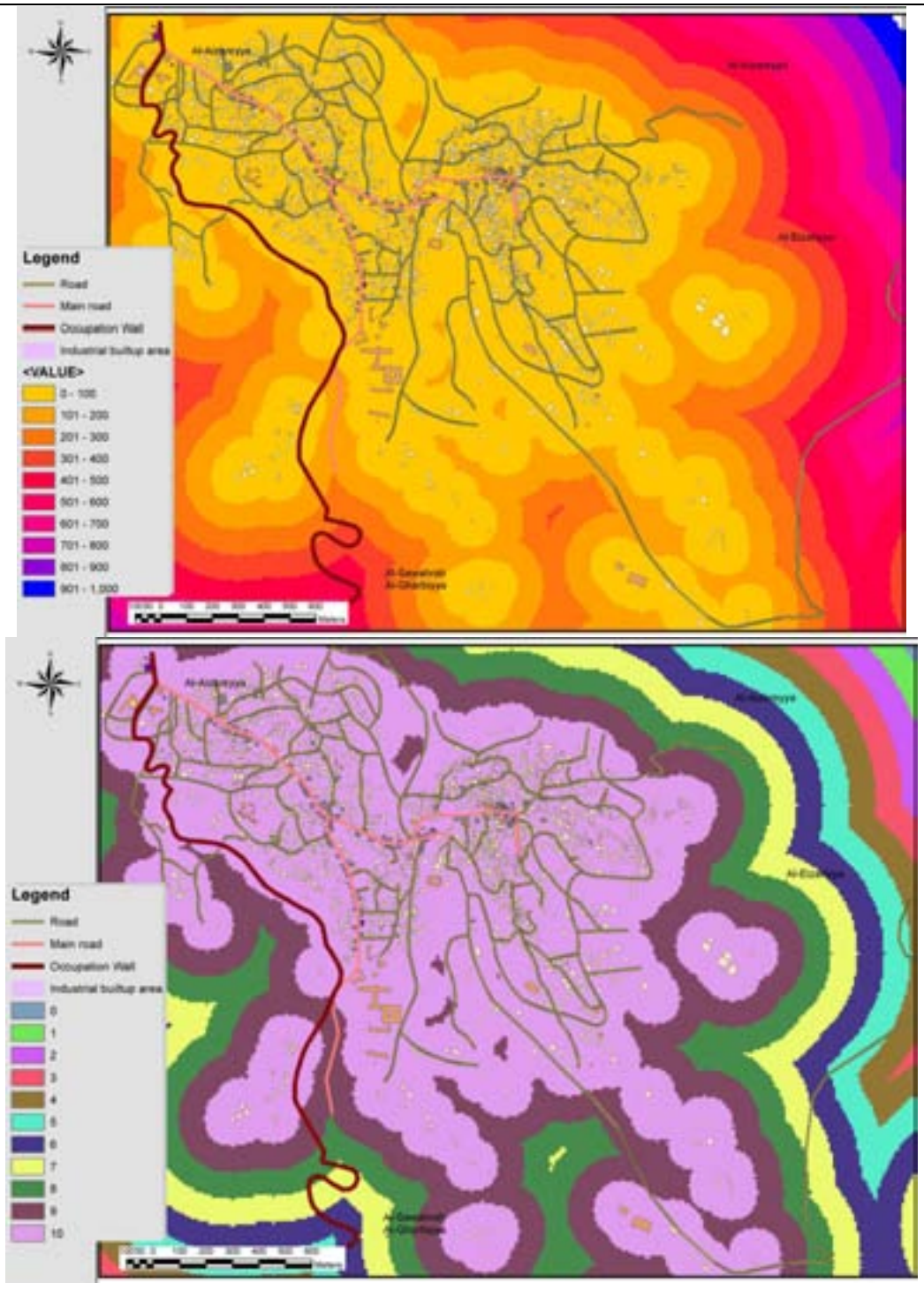


Figure 5-20: Distance to existing buildings (m) and distance weighting

Topography of Abu-Dis is divided on slope basis.

Slope is used the same way before. See figure 5.13

Figure 5.21 shows the resulting theme from spatially summing the above themes

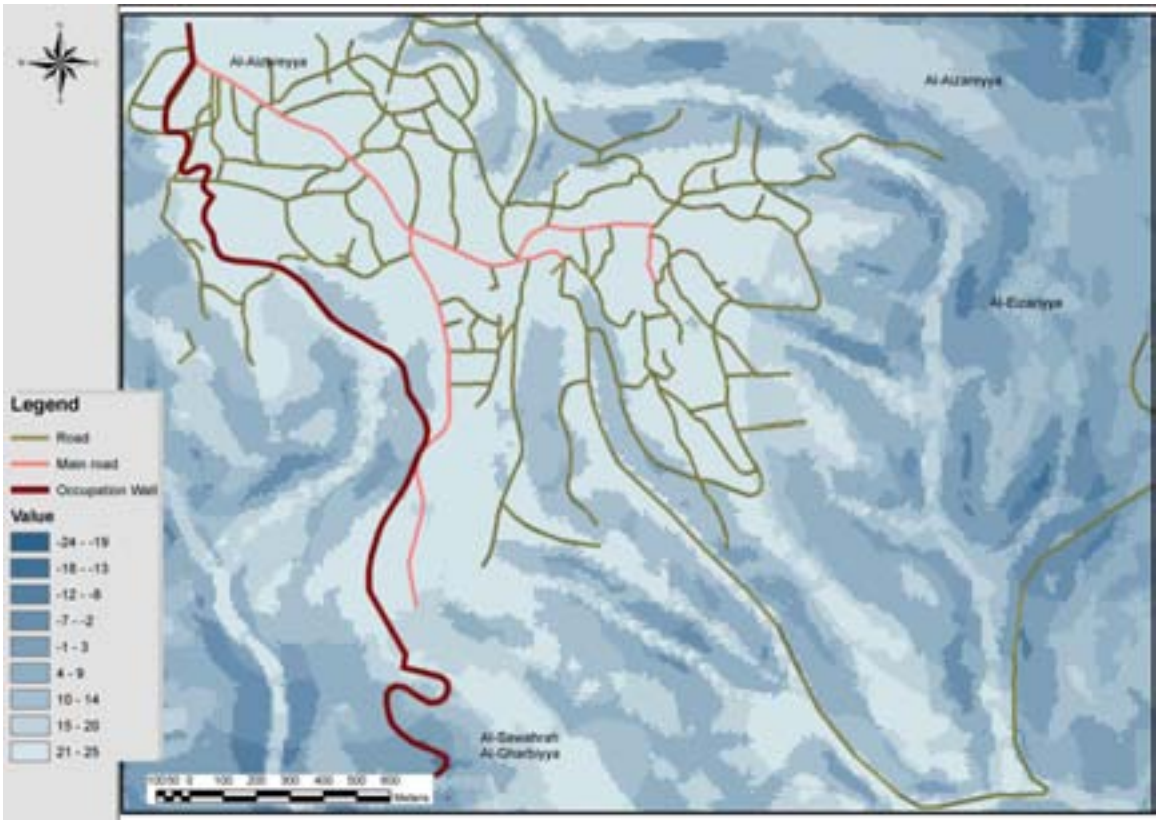


Figure 5-21 : spatially summing distance and slope.

5.3.4.2 Sieve analysis

Outside all already allocated land uses. All already allocated land uses are excluded from the selection also by giving them large negative weights. See figure 5.22

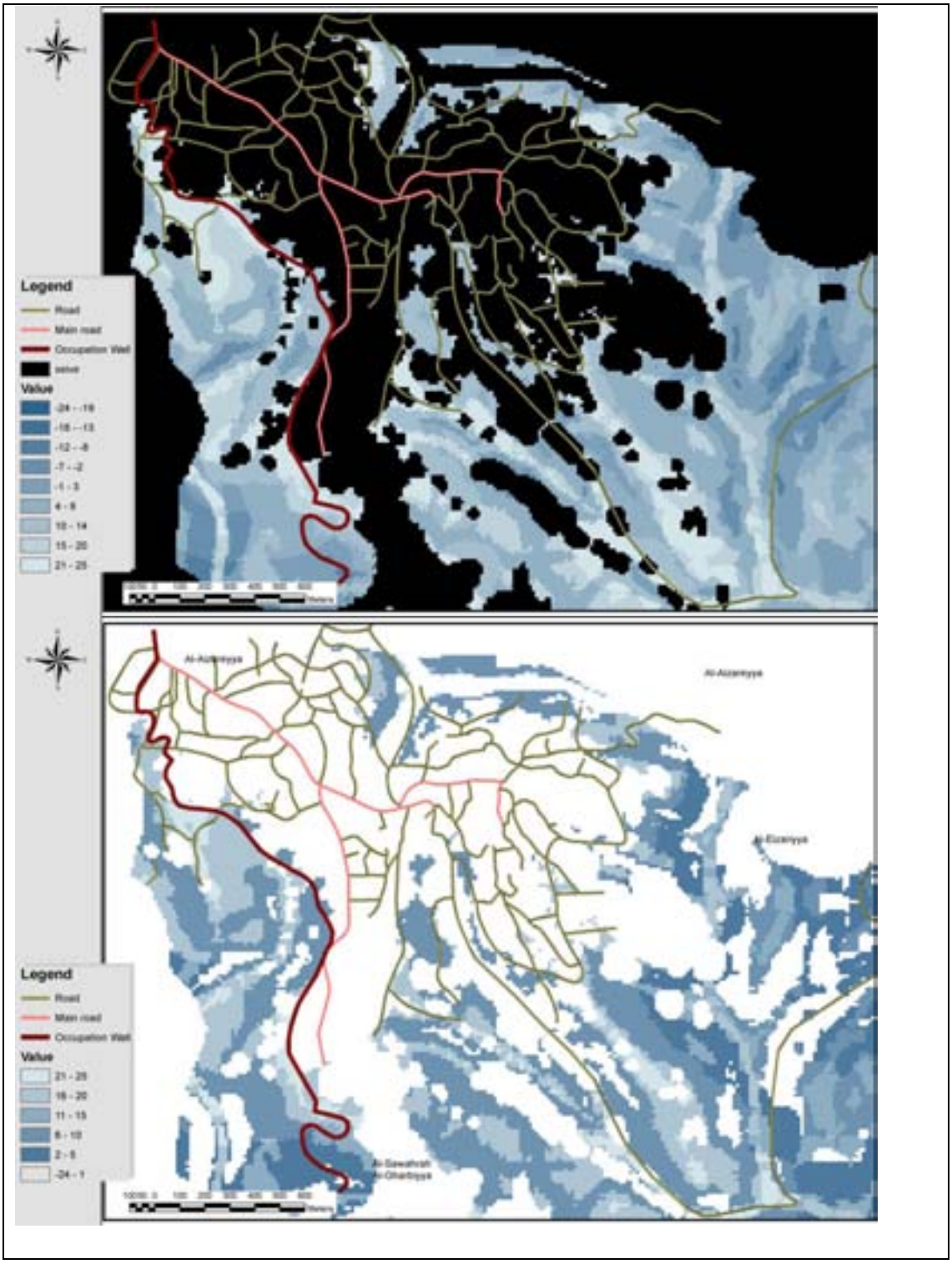


Figure 5-22: Building sieve analysis (Sieving all previously uses occupied area)

5.3.4.3 Allocating required area

Table 5-11: zonal statistics table

VALUE	AREA (m^2)	Cumulative sum of areas until current row (m^2)
25	77,176	77,176
24	18,248	95,424
23	52,400	147,823
22	167	147,991
21	49,888	197,879
20	319,084	516,963
19	96,261	613,224
18	311,718	924,942
17	84,542	1,009,485
16	168,415	1,177,900

Area of 924,942 sq.m having suitability values between 18 and 25 is selected.

Maps 5.3, 5.4 show respectively the current and urban growth projected situations of Abu-Dis village using the trends projection technique.

5.3.4.4 Conclusion

Two main factors effected the allocation of the residential and public use growth areas. The first is proximity to existing similar land uses. This factor assures that infrastructure for residential and public land use such as roads, water and waste water networks and electricity networks will work more efficiently and less costly (see sprawl theory in chapter 2). From another point of view, this factor is also consistent with the fact that residential urban growth in Abu Dis village is family oriented; that is people from the same family tend to build beside each other. See interview.

The second factor affecting the allocation of the residential and public use growth areas is topography; Steep slopes not only put cost burdens on the real estate owner, but also on the local council, and public service providers (electricity and water), having to deliver infrastructure services to these steep sloped areas and cliffs.

The resulting allocated areas for residential and public land uses' growth can be noticed in two main directions; the first to the southern area which the building has already started; most of the newly issued building permits from the local council are in that area. See interview. The second direction can be noticed west of the occupation wall, already torn out from Abu Dis village. Building in that direction already exists but now – of course – stopped by force of occupation; no Palestinian official party can give building permissions there.

5.3.5 Final comments

The final map for the projected land uses contains void areas that has no urban use, all of these areas are steep sloped areas with slopes mostly more than 50% (cliffs). These areas are not suitable for urban growth or may say very costly for real estate owners and public infrastructure providers. See chapter 3, discussion about sprawl.

5.4 Wall coarse effect on projected urban growth

The following table summarizes the allocated future growth land for each urban land use and the area of that land that has been cut out by the wall, see table 5.12

Table 5-12: urban land cut by the wall

Land use	Allocated land for urban growth (Donum)	Allocated land for urban growth west of the wall (Donum)	Percentage
Residential	925	350	38%
Commercial	108	25	23%
Industrial	10	0	0%
Total	**1043**	**375**	**36%**

5.5 Conclusion

First of all, the wall is cutting more than one cluster of residential houses which is already built and inhabited by locals of Abu-Dis village.

Second the Occupation wall has currently at this time already cut the need for urban growth – through cutting population growth – by about 10 %, and will cut this need for growth by 34% within the next twenty years.

Third, the wall is cutting more than 36% of required land for urban growth – already cut 34% by limiting population growth – which lies on the west side of the village, leaving only 64% of the land required for urban growth which is already cut to 66% of its – normal condition – area needed for growth. The occupation wall is leaving for Abu Dis village 66% of 64% of the area needed for urban growth. With a simple calculation, the occupation wall is leaving for Abu Dis about 42% of the area it need for normal urban growth. Keeping in the mind that the continued growth scenario – that was used to project urban growth – has assumed that Abu Dis will remain one of the most crowded villages in the West Bank and East Jerusalem, it can be concluded that the occupation wall will have a major destroying effect on this crowded village that will only have less than half of the land required to stay as crowded as it is today.

If this occupation wall will continue to exist, it will leave Abu Dis inhabitants with two choices:

The first is to expand on lands far from existing built up areas and infrastructure or lands that are very steep sloped (more than 50%). This choice is almost impossible, because of the heavy financial burdens on the local public service providers, such as water, electricity, road infrastructures. And also the heavy financial burdens on the inhabitants themselves, trying to build in areas that lack access roads and need big budgets for site leveling, excavations and retaining walls for steep sloped areas. The inhabitants will find the second choice easier; that is to build on the expense of agricultural lands. Destroying the agricultural land (232 Donums), which is already not enough for a portion of the land needed for urban growth (more than 900 Donums). And taking into account that this wall is forbidding most –if not all – workers inside Israel from reaching their work locations leaving them on the unemployment list – taking all that into account Adu Dis village inhabitants will find themselves in a crowded environment, with no place to build and no financial income resource, forcing them to leave out of the village. This is totally consistent with the Israeli policies discussed in chapter two, which aims at reducing the ratio of Palestinian Arabs to Jewish Israelis in Jerusalem to the minimum they can.

CHAPTER 6 : Conclusion and recommendations

6.1 Introduction:

This thesis has investigated the Israeli occupation wall around Jerusalem city. A continued growth scenario model was applied to a case study near the city in order to project future urban growth. The aim was to scientifically assess the effect of the occupation wall on this projected future urban growth of Jerusalem by measuring quantity and ratio of lands required for urban growth, that was has been cut out by the occupation wall.

The first part of the analysis used mainly socio-economic disaggregate data in order to calculate the area of lands required for future urban growth within different land uses. The second part of the analysis used mainly aggregate data through a GIS spatial analysis. This part was concerned in allocating the area of lands required for future urban growth for these different land uses.

A case study approach has been used. The case study was selected to be Abu Dis village due to its proximity to Jerusalem city and its importance amongst neighboring villages. And due to lack of time and resources for comprehensively study the wall effect on Jerusalem area as a whole.

Benefit from thesis is to be a reference for decision makers and a point of awareness for public people to alert the disasterus effects of the occupation wall upon urban growth of Jerusalem city.

6.2 Main findings:

- The main reason behind building the occupation wall is more, an economical-political one, than a security reason as claimed by the Israeli government, as per the document submitted by (Prof. T. Akshtine, Prof. D. Tsidon, V. Dar and A. Telman, 2000). This document discusses that the only way the Israeli economy will survive and grow is through the physical economical separation by means of a wall that can forbid Palestinian labor and goods from reaching Israel.

- The Israeli occupation wall around Jerusalem comes as a continuation to existing Israeli policies in the city since 1948. These policies aim to enhance Israeli control over the city by: stabilization of Jewish-Arab demographic proportions to (70% Jewish : 30% Arabs), Location of new Jewish Colonies, and Expansion of the economic base of the city. These policies can be summarized in: the expropriation of land by Israel, the restriction through “green area zoning” of Palestinian rights to development, the use of road building to restrict and fragment

Palestinian communities, “hidden guidelines” within Israeli plans that restrict building volume in Palestinian areas, and the intentional absence of plans for Arab areas that would be needed for infrastructure provision and community development.

- The Occupation wall has caused a lot of Palestinian families from Abu-Dis village, to immigrate to its west side, so as to protect their existence in Jerusalem and their blue ID’s. This immigration has effected the population growth and thus the land needed for urban growth for the village. Land needed for urban growth is reduced by a ratio of 34% within the next 20 years.

- The wall is cutting more than 36% of required land for urban growth – already cut 34% by limiting population growth. Leaving only 64% of the land required for urban growth which is already cut to 66% of its – normal condition – area needed for growth. The occupation wall is leaving for Abu Dis village 66% of 64% of the area needed for urban growth. With a simple calculation, the occupation wall is leaving for Abu Dis about 42% of the area it need for normal urban growth.

- The occupation wall is affecting agricultural lands in Abu Dis village directly by annexing them to Israel, and indirectly by leaving no choice for local inhabitants to urban expand but over these lands. Agriculture is one of only three natural resources in the West Bank besides building stone and water.

- The occupation wall is affecting the socio-economic aspects of the local inhabitant's lives severely. Lack of income resources and over crowdedness are all reasons causing people to emigrate from areas affected by the wall. In addition to people immigrating to the west side of the wall, in order to protect their blue ID's. All this immigration causes areas to be evacuated from Palestinian inhabitants which serve the Israeli policies trying to annex more lands that contain least inhabitants.

6.3 Recommendations

- It should be emphasized that the existence of the occupation wall as a reality on the ground should be rejected due to its disasterus effect. This rejection should be active on both levels; public people and decision makers. Especially concerning the decision makers, the wall

existence should be rejected in any political agreement between the Palestinians and the Israelis in the future.

- Agricultural lands should be preserved against any urban expansion, regulations and public awareness programs can help protect these lands.

- Providing facilitations to inhabitants who has rough steep sloped lands and have the well to built upon it. This comes in the same course of protecting agricultural lands.

- Economic infrastructure and Palestinian independent employment opportunities should be made available for local inhabitants in order to minimize economical effects of the occupation wall.

6.4 Further research

- The socio-economical effect of the occupation wall on Jerusalem from the point of view of Palestinians living on the other side of the wall that is annexed to Israel.
- Effect of the occupation wall on Palestinian and Israeli economies. A comparison study.

- The effect of the occupation wall on immigration in the West Bank.

Annex 1: Interview

Annex 2: Existing documentary maps used in analysis

Interview:

Interview with Abu-Dis local council Engineer Ahmad Ayyad and Engineer Ihab Al-Afandi joint council of Abu-Dis, Al-Eizariyya, and Al-Sawahra Engineer:

Q: Data from PCBS indicates that the yearly population growth rate in Abu-Dis has dropped in 2002 from 4.7 to 2 then has stayed around 3 until now. How do you as a local governance council explain that?

A: Before the year 2002 many of Jerusalemites used to reside in Abu-Dis, so they can keep their blue ID's living beside Jerusalem, and at the same time stay away from high rental fees and taxes (Arnona) and other Israeli policies inside the city of Jerusalem. After the Israeli Gov. have announced the beginning of the wall in 2002, and that Abu-Dis will be torn apart from Jerusalem city, Jerusalemites started leaving Abu-Dis being forced to live inside Jerusalem in order to try to keep their blue ID's. Apartments left blank were rented to Jerusalem University students, who – of course – are not families and don't participate in population growth like families who have give birth to children do.

Q: Are there any statistics of the areas built or building licenses issued in Abu-Dis over the past few years?

A: Yes, we have it on spread sheet software, but licenses issued may only represent 10% of actual built up areas. Open files for licenses represent the actual number of buildings. All open files before 2006 have been built.

Q: What are local inhabitants priorities when trying to build a new construction, is it suitable slope, nearness to infrastructure or what?

A: Well, People here in Abu Dis have deferent priorities. Urban growth here is family oriented. Each member of a family tends to build near his family. Though, people here usually don't go to build on high slope, say more than 30% because of the high cost of site leveling and there is no road infrastructure in such areas – with some exceptions – due to high economic cost.

Q: It is observed that there are very little industrial buildings in Abu-Dis and they are in between other land uses, is there any orientation in the council for suggesting any special areas for industrial land uses?

A: Yes, The council now will not issue an industrial use license unless in a suggested area to the east – will show it to you on map and field – where the cement factory is located.

Q: What are the trends of urban growth in your city?

A: After the wall, the trend now is to expand to the south east. We are using existing road there, infrastructure is found on these road that was established first by a European funded project. Expansion is happening on the sides of these roads but the topography of the rest of the area is making beyond expanding difficult.

Q: On the aerial photo we observe buildings inside land of Abu Dis, but they are kept on Jerusalem side of the wall. Who are those people and how do they get public services?

A: Most of these people are originally Abu-Dis locals and residents. They are from Surkhi and Ayyad Abu-Dis families. Now they have been torn out of Abu-Dis by the wall. They can't reach Abu-Dis unless from faraway Israeli checkpoints. We can't provide public services to them now, I don't know who does.

Q: Do you have any remarks on the pervious planning scheme of Abu-Dis?

A: First of all it never reached the phase of approval from the ministry of local government, so it is not an official plan yet. And second, we as local council have the following remarks:

1. Some urban growth areas were put in steep sloped areas, where it is impossible for the council to put any road infrastructure.

2. Now it is out of date, many new buildings have been built, some may be built in the way of proposed roads or maybe other services.
3. No authority on land to keep the regulations

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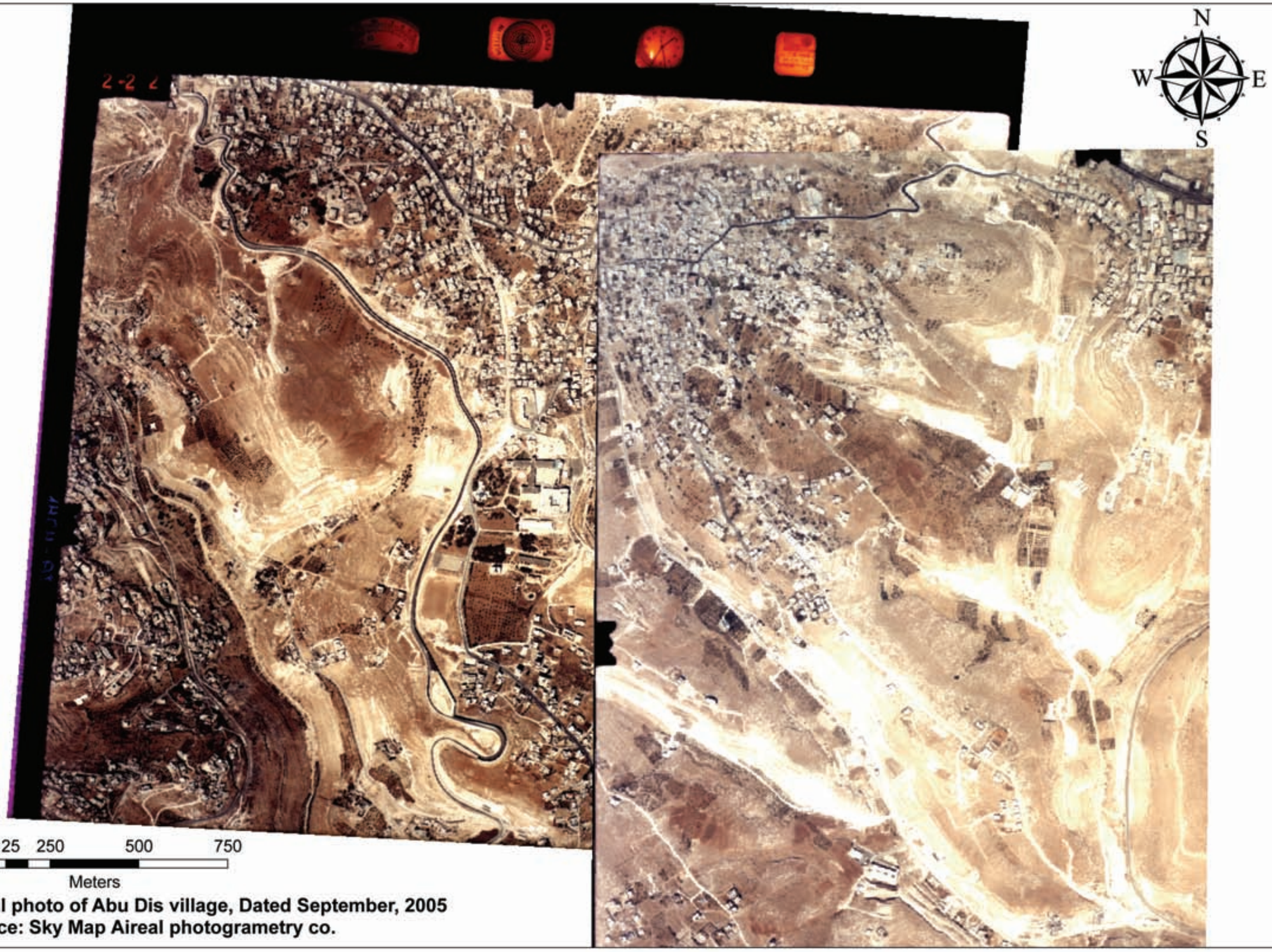


Aireal photo of Abu Dis village, Dated September, 2005
Source: Sky Map Aireal photogrametry co.

مشروع تنظيم هيكلي
تفصيلي أبو ديس

دليل الخارطة

خارطة استعمال الطابق الأرضي

- سكن
- تجاري
- حرف او صناعة
- مكاتب
- مباني عامة

GRAPHIC SCALE

1 : 5000

خارطة دليل الموقع

١ / ٥٠٠٠

ارتيك جردانة / بابل

مهندسون استشاريون ومعماريون

Building heights 1997
Source: Abu Dis Master plan study, Arabtech Jardaneh 1997

Al-Eizariyya

Al-Aizareyya

Al-Sawahrah
Al-Gharbiyya

N
W
S

Legend

- villages-boundar
- Occupation Wall
- Road
- Main road

Buildings

Use

- Office
- Public
- Residential
- commercial
- industry
- cemetary
- Agricultural land
- University

100 50 0 100 200 300 400 500 600 Meters

Map 5.2: Existing situation

N
W
E
S

Al-Aizareyya

Al-Aizareyya

Al-Eizariyya

Al-Sawahrah
Al-Gharbiyya

Legend

- villages-boundary
- Occupation Wall
- Road
- Main road

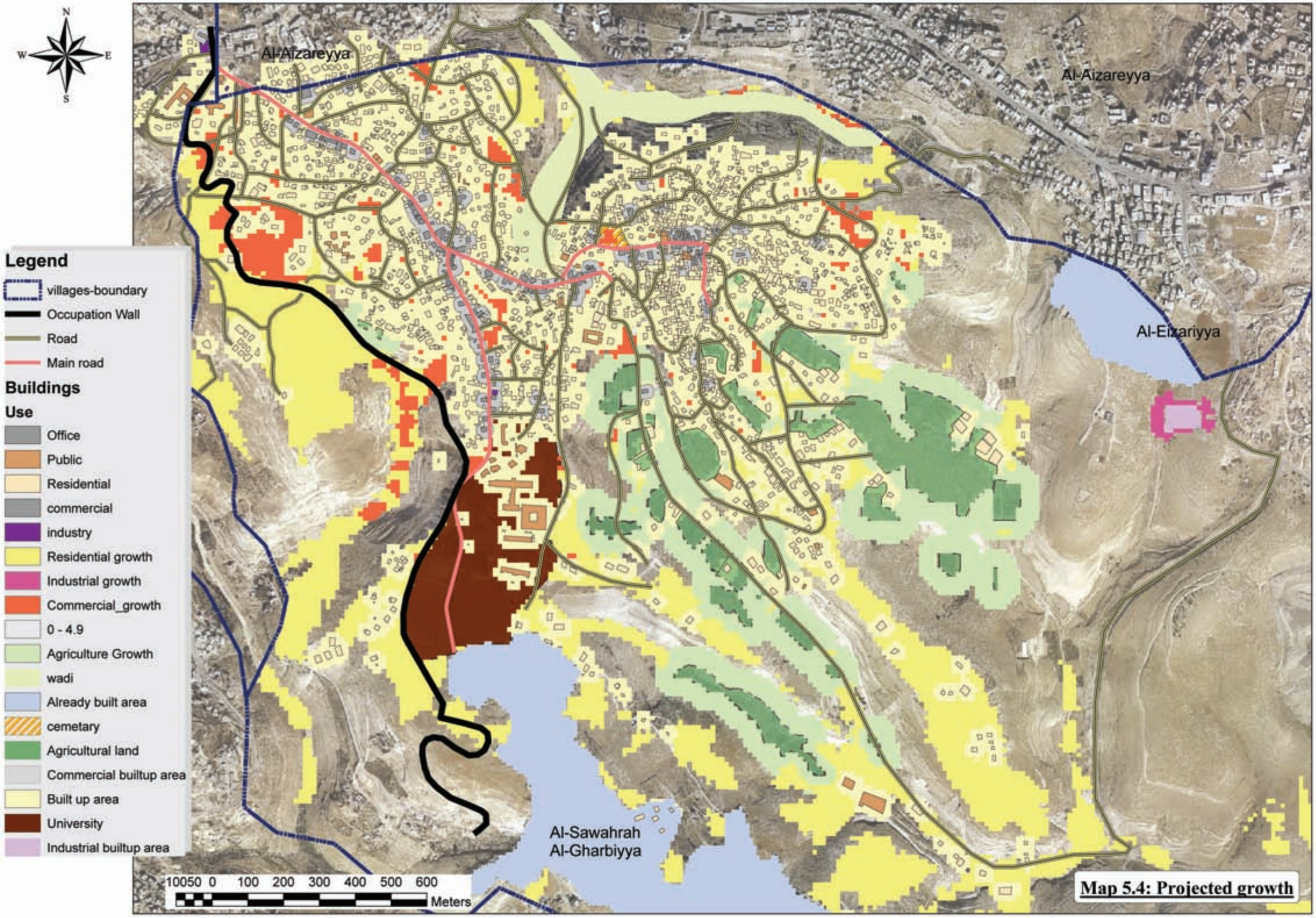
Buildings

Use

- Office
- Public
- Residential
- commercial
- industry
- wadi
- Already built area
- cemetary
- Agricultural land
- Commercial builtup area
- Built up area
- University
- Industrial builtup area

10050 0 100 200 300 400 500 600
Meters

Map 5.3: Existing built up and agriculture area



Map 5.4: Projected growth