

**NEW BULGARIAN UNIVERSITY  
ARCHITECTURE DEPARTMENT  
BULGARIA**

**Urbanization and town planning of Baquba**

**Autoreferate**

Autoreferate of dissertation work for the acquisition of educational and scientific degree "doctor" in the specialty "Architecture of buildings, structures, facilities and details"

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The PhD student was enrolled with an order of the Rector of NBU "New Bulgarian University" № 3-пк-48 from 21.11.2016 in the PhD program of independent preparation for State Enterprise "Architecture of buildings, structures, facilities and details". By order of the Rector of NBU "New Bulgarian University" № ..... from... July 10, 2019 the doctoral student was dismissed with the right of defense.

The dissertation work was discussed and proposed for defense of a regular meeting No... .. of 12.07.2019 at the Council of the Department of Architecture of New Bulgarian University.

### **Data on dissertation work:**

The dissertation contains 198 pages. Consists of content, introduction, three-chapter presentation, conclusion, two annexes, list of author's publications on the topic - 2, list of figures, photos and diagrams - 170, list of tables - 10, bibliography with 52 electronic and print sources.

The defense of the dissertation work before a scientific jury will be held on ..... 2020. at the NBU - Sofia.

# **Urbanization and town planning of Baquba**

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# **Introduction**

## **Labor relevance**

The relevance of the thesis is determined by the problems accumulated over the years in the development of the city of Baquba and its adjacent territory. The dissertation examines the growing problems of the city of Baquba and formulates the reasons for them. The incorrect way of implementing the spatial plan in terms of the development of the communication infrastructure, the population growth and the related need for restructuring on the territory of the city necessitate a critical analysis of urban development and urban development processes. The dissertation concludes the reasons for the failure of most development plans:

- Dependence on foreign companies such as the Greek Duxyades
- relying solely on engineering standards, not geographical ones
- lack of competence and scientific experience in planning local staff
- low level of material and financial support
- development plans are limited by updating previous plans without being implemented
- the inability of governmental local authorities to curb illegal construction and abuse and limit their spread
- inadequate legal framework governing the development of the territory.

The dissertation concludes that Baquba needs a new developed city center and a new transport network with ring boulevards to connect the old city center in the western part of the city and the new commercial, service and administrative buildings on the eastern part of the Diyala River, located to the main shopping street. The author of the dissertation makes a suitable proposal for a new location of the city center - on the west bank of the river Diyala. It is envisaged a site for a museum for the storage of historical exhibits, of which the area is extremely rich, as well as a hotel and recreation areas on the river bank, along with other service functions.

## **Research topic**

Baquba architectural and urban development through city restructuring, new zoning, new transportation network to be implemented within the framework of a new development plan.

## **Object of the study**

The urban and urban development of Baquba and its adjacent territories in the context of its ancient history to this day.

## **Subject of the study**

The problems of the development of the city of Baquba, expanding in all directions contrary to the urban plan, such as zoning of new neighborhoods and green areas and transport networks

connecting the new neighborhoods and the old part of the city. The problems of illegal construction at the expense of green spaces and the need to create new servicing administrative areas and recreation areas.

### **Purpose of the study**

Formulation of proposals on the regulatory framework for spatial planning and, in particular, the creation of a new urban plan to solve the problems of the city of Baquba, and formulation of conditions for the successful implementation of this plan in the anticipated future growth of the city.

### **Research Objectives:**

- Analysis of the historical development of the territories related to the city of Baquba
- Analysis of the spatial development of the city of Baquba in time (from ancient times it is located at the crossroads - on the Silk Road, and has a commercial and historical connection with other civilizations)
- Analysis of communication trade links with other cities (Baquba is the administrative and commercial center of Diyala province)
- Analysis of the role of the Diyala River, which divides the city into two parts, and the possibility of using the river to connect them to a new urban center with service buildings and facilities
- In order to achieve the right spatial plan, the directions of growth of the territory, the reconstruction of the new areas and the need for proper communication links, servicing and green areas are explored.

### **Scope of the study**

The study area is the city of Baquba - the center of Diyala province, with the time span including the historical period from the founding of the city to the present day.

### **Method of investigation**

A comprehensive approach is applied to achieve the goals and objectives of the work. An analysis of the historical development of the city of Baquba is used in the context of the overall historical development of the Middle East and its adjacent territories. A critical analysis of literary sources is made. On-site observations are made - ie. information obtained personally from the author's practical work is included. Personal observation and data collection are used by local residents, real estate bureaus are getting up-to-date information about the properties and the differences in their prices in the different neighborhoods. The methods of comparison and summary are applied. The scientific methods are used alone and in combination, depending on the specifics of the cases under consideration.

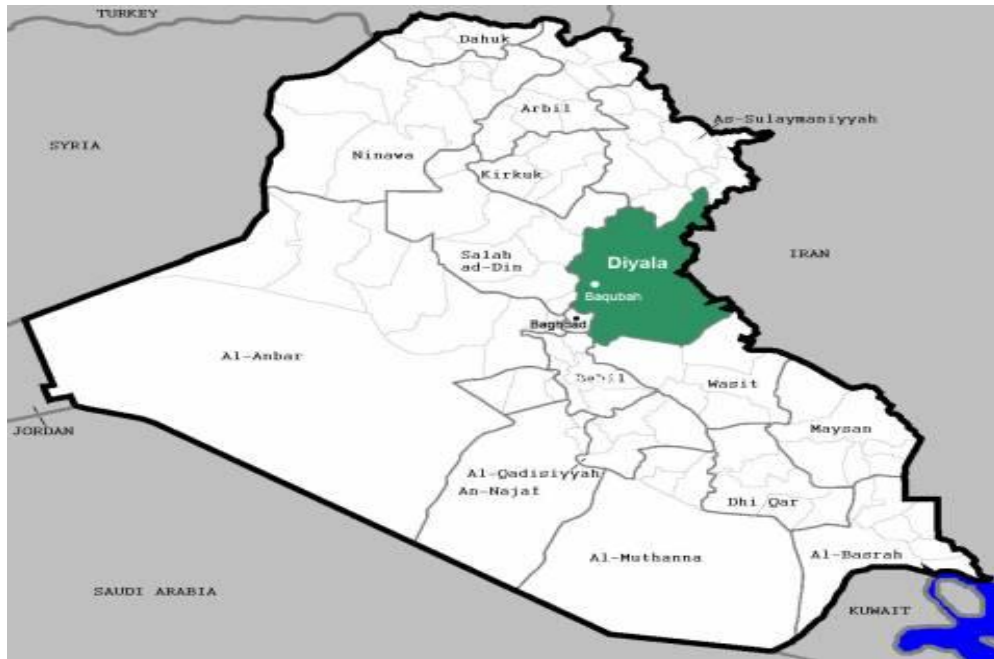


Figure 1: Diyala province, with the city of Baquba. Source: <https://www.google.iq/search?q=images+baquba+city>

### **Brief presentation of the content of the thesis**

The city under study in this doctoral thesis is the capital of Diyala province, located in eastern Iraq between the Tiger River and the Iranian border. The work aims to evaluate both the historical and architectural footprints and the potential for development of this settlement. The area was part of ancient civilizations in Iraq. In order to fully discover and understand the overall development of the city, it is necessary to show the development of urban planning in Iraq to the present day.

**Chapter 1** provides data on the prehistory of the area - those distant times in which there are no written sources, so that all assumptions made about life and civilization rely solely on archeological artifacts. Early, Classical and Late Antiquity is considered. A separate sub-chapter represents the ancient cities that passed from one civilization to another, from one conqueror to another, often with many layers of development. The same chapter deals with the medieval and pre-modern era, outlining the changes brought about by Arab conquest and the introduction of Islam as the dominant religion in the area.

**Chapter 2** presents the contemporary development of the area we now call Iraq, whether monarchy or republic. It is believed that the modern age begins with the First World War.

**Chapter 3** is intended for the urban development of Baquba in historical retrospect from the earliest times to the present era. Iraq's existing legislation on urbanism is being considered, and proposals are being made to improve it so as to ensure a natural and tradition-friendly development that develops the city's potential. Finally, conclusions are drawn about urban development opportunities.

# Chapter 1

**Total for the studied territorial area - historical significance, contributing to the scientific and artistic achievements of humanity. Emergence of urban development - factors of influence.**

The geographical area studied is of paramount importance for the subsequent development of humanity. Some of the first civilizations were born here, namely in the area called the "Fertile Crescent"<sup>1</sup> (see below the map in Fig. 2), the climate is favorable for the development of agriculture and crafts, for the accumulation of goods and division of labor within human communities. The division of labor leads to specialization, as well as to higher efficiency, and is inherent in social stratification. In this way, human communities of this type have gravitated around settlements - even during the Bronze and Iron Ages.

**Some of the first cities in the world to emerge in these lands, as well as rules for construction or "urbanism"** (although at that time there was no specific word for this discipline).

During the late Middle Ages, the period of development and prosperity of Europe ended, the Ottoman Empire conquered new territories and incorporated the Islamic religion into the great Arab empire. **Islam brings different precepts because it is a monotheistic religion requiring other religious functions within the city.** (mosque, madrasah, etc. appears). The arts and sciences flourish, mathematics<sup>2</sup> and astronomy have been developed together with Arabic literature - stories and poetry are intertwined with philosophy.

Later, natural resources (especially oil) attracted European colonizers, especially the British, under whose mandate Iraq operated until 1932, when it became a monarchy.

Cities are formations that have emerged at some point in the evolution of human communities. Urban agglomerations have shown important benefits for society and the disadvantages of this type of settlement (eg floods, fires that can cause much more damage in a city than in a village) can be reduced or controlled.

## 1.1. Prehistory

### **The beginning of civilization, location, archaeological evidence of prehistoric settlements**

In this chapter, we look at the first two historical periods as follows:

- Neolithic (7000 BC - 5300 BC) - Hasun-Samara and Khalaf culture
- Chalcolithic - Copper Age (5900 BC - 2900 BC) - Ubaid, Uruk and Jemdet Nasr periods.
- Bronze Age (2900 BC - circa XI BC) - Sumerian, Akkadian, Babylonian and Assyrian empires.
- Iron Age (XI c. BC - ca.VII c. BC) - New Assyrian, New Babylonian and Persian empires

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<sup>1</sup> The word "Fertile Crescent" is a crescent shaped area - figure N0 2

<https://hubpages.com/education/Mesopotamia-The-cradle>

<sup>2</sup> The mathematics of the ancient Greeks (Eratosthenes, Euclid, Thales) is taken over by the Arab world, the words "theorem" or "geometry" are of Greek origin, "algorithm" and "algebra" come from Arabic.

<http://ro.wikipedia.org/wiki/Matematic%C4%83>.

### 1.1.1. Hasuna-Samara Culture

Hasuna, or Tel Hasuna, is an archaeological site in Mesopotamia, located in the area where ancient Assyria, Ninawa governorate, would later develop, and is now in Iraq. From an architectural point of view - there is evidence of habitation (but we cannot yet speak of urbanism and the city). Hasuna district is characterized by small villages with area up to 3.2 ha. The houses are made of clay, built around the central spaces

**1.1.2. The Uruk period-** in Mesopotamia, it lasted from the Copper-Bronze to the Bronze Age after the Ubaid period and was followed by the Jemdet Nasr period. Later, the name of the period was given to the town of Uruk.

**In terms of urban planning-** at the end of the Uruk period city life appeared in the true sense of the word.

**Uruk was the largest city in the world** at that time. He gave it to humanity **the first monumental structures in the history of architecture**. Most of the buildings in the ancient Middle East were inspired by these prototype structures. The best example is **ziggurat**.

It is a pyramidal structure of floors built of unsecured bricks, covered with baked bricks, with access to the upper ramp by steps. Most often on the last ramp there was an altar of god patron saint of the city.

**From a social point of view** - it has been observed for 800 years **the transition from small, mainly agricultural settlements to larger and more complex urban centers with a stratified society, adjoining administration and own military force. Geographically, its influence is expanding through settlers and traders**, while neighboring settlements also evolve gradually, creating a similar economy and culture.

Cities developed by the Uruk model are organized with a clear management of social stratification, which is well illustrated in the study of archeological artifacts (for example, ceramic vessels that were most likely used for the general population or for sharing food for construction workers). Cities in the area are growing, some reaching as much as 1 km<sup>2</sup> and a population of 10,000-20,000 people at the end of the period.

At the end of the Uruk period, corresponding to the early Bronze Age, a cuneiform letter also appeared.

**1.1.3. The Jemdet Nasr period** was developed in southern Mesopotamia (present-day Iraq) between 3100 and 2900 BC. The name comes from the Jemdat Nasr archaeological site, which was discovered and classified as a distinct development period. The Jemdet Nasr period is defined as strong against Ubaid and Uruk.

- from a social point of view - social inequality and a strong bureaucracy
- from an archaeological point of view - black and white and polychrome ceramics with geometric images and figures (trees, birds, fish, goats, scorpions and snakes)
- culturally, it is considered to be the period when the cuneiform letter was formed. All of the earliest cuneiform clay tiles come from Uruk, IV millennium BC.



## 1.2. Ancient Mesopotamia - Early, Classical and Late Antiquity

### Urban development - economic, religious, political, social stratification

Sumerians are the first society to create a city as an integral space.

*The city appears to have a need to create a clear goal within the resident community, and its construction is supported by the gods.*

*This is the time of the great cities of Mesopotamia (Ashur, Babylon, Nineveh). At that time the city defined its main functions:*

#### *1. Protective function. The city's security system consists of two structures:*

*- rectangular in plan - formed by two enclosed walls: the first in the center, located on the left bank of the Euphrates (according to its old current) with an internal enclosure area of between 450 and 500 ha. and the second was built on the right bank of the Euphrates (according to its old stream) with an area of about 130 ha, surrounded by a housing wall similar to the one surrounding the first subdivision.*

*- unit with triangular shape protected by a housing wall built in the New Babylonian era. This triangle is entirely on the left bank of the Euphrates, from the first subdivision, reaching the point north of Babylon and 2.5 km from it.*

*2. Housing function. Its structure is made up of straight streets that intersect perpendicularly - a clear sign of urban planning. The houses have a minimum of 8 and a maximum of 20 rooms organized around one central space (courtyard type).*

**3. Administrative and political function.** 539 BC. and the Persian conquest, Babylon is the capital of the most powerful empire in the Middle East, which explains its size and impressive heritage.

In a book entitled *Sumer and the Sumerians*, published in 2004 by Cambridge University Press, British archaeologist Harriet Crawford<sup>3</sup> writes.

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<sup>3</sup> Archaeologist Harriet Crawford - 2004 from the University of Cambridge publishing house.

*"Urban development is the end product of architectural development, which began during the Neolithic period. According to an adequate explanation, the ancient urban centers of ancient Mesopotamia were initially formed around a religious center, which was also responsible for trade and redistribution. the city was partly planned and partly natural, and the planning is evident in the walls of neighborhoods with tall temples, the main canal has a port where the central boulevard of the city is. residential and commercial space is a reaction to the economic forces and spatial constraints imposed by spatial planning - which has led to incorrect design with proper features. More Sumerians had ownership documents, according to wedge-shaped texts, to restore the urban growth structure, with related parameters such as population density, real estate prices, etc.*

*The capacity of a typical city is divided into living space, multiple spaces with different uses, commercial and civic spaces. The residential areas are grouped. The center of the town is a temple complex built at a height, always slightly outside the geographical center of the village. Usually a tall temple precedes the founding of the city and the nucleus around which the settlement later grows. The neighboring districts had special religious and economic functions.*

## **Medieval and pre-modern era**

The Middle Ages were the epoch of the Mongol invasions and the era of the transition to Islam, the Caliphate of the Abbasids, and the religious schism. The 13th and 14th centuries were the "golden age of Islamic cities". For 500 years Baghdad has been a city of palaces, mosques, libraries and universities. Universities and hospitals here were among the best in the world (Sarton, 1950), and this is the period when the principles and ideals that shape Islam have left traces in distinctive cities from India and Central Asia in the east to Andalusia in the west and in the North. and southern Italy, with the southernmost point bordering Yemen.

All traditional Islamic cities in these regions have some similar characteristics in urban forms. **They are unifying factors that make sense is to facilitate the application of Islam as a way of life:**

Islamic City:

- **Oneness (Tawhid):** Tawhid is a fundamental principle in Islam that manifests itself in the city through social unity and through the constructed unity between the natural and the artificial.

- **Manifestation of Allah (ibada):** This principle must be manifested not only in the religious ritual but also in all daily activities, and reflected in the formation of the Islamic urban texture.

- **A manifestation of justice (Taqwa):** the most important influence on the city. Islamic Taka requires people to remove what is considered sin and wrong.

- **Guidance (Hidayah):** The building plays an important role in directing people's thoughts and behavior. The Islamic city must direct its inhabitants in different ways to

the values and goals of Islam, which are the basis of life and a true vision of human creativity.

- **Contemplation (Tafakkor):** in accordance with Islamic teachings, one must be reminded that the fundamental value is to make contact with nature, and through the verses of the Qur'an, symbols and signs used in urban areas to create appropriate places for contemplation.

- **Safety and Security (Amniat):** Islam believes that safety and security are very important in Muslim communities, so the city itself must be safe for its residents and visitors.

- **Good (Ihsan):** In accordance with Islamic teachings, Muslims should treat well-being especially with relatives and neighbors. This influences the urban structure and spatial organization of the city by grouping into small neighborhood units.

- **Moderation of Moderation (Taadul):** Moderation should be practiced at all levels of life and human activity in an Islamic city should be designed so as not to favor extremes.

## Applicable concepts

### The concept of centrality in Islamic cities



Figure 45: Baghdad city during the Abbasids

Source: <http://ro.wikipedia.org/wiki/Bagdad>



## Chapter 2

### **The modern age**

#### **Contemporary Iraqi Cities after 2006 -development, types of functions**

Urban development is not a priority for the governments that run the country. In order for cities to develop, there is a need for political and economic continuity, and the serious "disruptions" that occur quite often at the level of political leaders, regimes and parties cannot stimulate urban development.

**Impact of political and socio-economic development on the urban environment by periods:**

- World War I and the British Mandate (1914)
- Iraqi Monarchy (1921)
- The Republic and the Ba'ath (1958)
- The regime of Saddam Hussein (1979-2003)
- contemporary period - after 2006

**The economic, social and political environment is not conducive to creating a mindset for the city to absorb the traditional elements and try to turn them into modernity.** So far, the only period during which major changes have been made at city level is the period of Saddam Hussein's rule. At that time, the modernization of city structures and city centers and the restoration of ancient ancient monuments (in Babylon, Nineveh, etc.) were carried out.

### **Baquba City throughout history - emergence, development, perspectives, doctoral student's proposals for merging new features into the city**

#### **Occurrence, development**

The main issue at this exhibition is the city of Baquba, which, due to its geographical position and status in the region, has great potential for development in many directions, which will be discussed in detail below.

In the context of what has been presented in the previous chapters, the city of Baquba is distinguished by its turbulent history, particularly dramatic in recent years, against the background of the war that led to the overthrow of Saddam Hussein and the subsequent withdrawal of Allied troops in the area.



**Figure 103: Baquba's location in connection with Baghdad and the most important landmarks in the area (Himrin Mountain, Himrin Lake, Diyala River)**

### **A brief introduction to Diyala province**

It is located about 60 km northeast of Baghdad, and is the most important city of Diyala province. An important role in its development plays the river Diyala, which extends along it.



**Figure 104: Location of Diyala province in Iraq**

Archaeological work carried out between 1937-1958. proves that in the present province of Diyala, agricultural activities were carried out from the 4th century BC. At the foot of Mount Himrin, the ruins of homes clustered in small communities, 10-20 miles apart, were discovered.



along the river Diyala. These communities are supposed to work together in irrigation work and other agricultural activities

### Geographic, demographic and economic factors

Diyala province covers an area of approximately 17 685 square kilometers, extending northeast from Baghdad to the Iranian border. It is crossed by two large rivers in the region - the Tiger and its tributary Diyala, which has made agriculture a major economic area since ancient times. Olive groves and citrus plantations are some of the largest in the Middle East.

The province's population of about 1.2 million people is quite diverse in terms of ethnic communities and denominations: Shiites - 43% Sunnis - 29%, Kurds - 26%, Turkmen - 2%. The majority of the population (approximately 70%) live in the urban agglomerations of Bakuba, Mukdadia and Hanakin.

Located near the capital of Iraq - Baghdad, Diyala, dating from the second half of the 19th century, is transit territory for the population from the country's outer provinces to the center, to the capital. It is understandable that this fact also puts a mark on its development, thereby benefiting from the crystallization of infrastructure and increased trade.

### City of Baquba

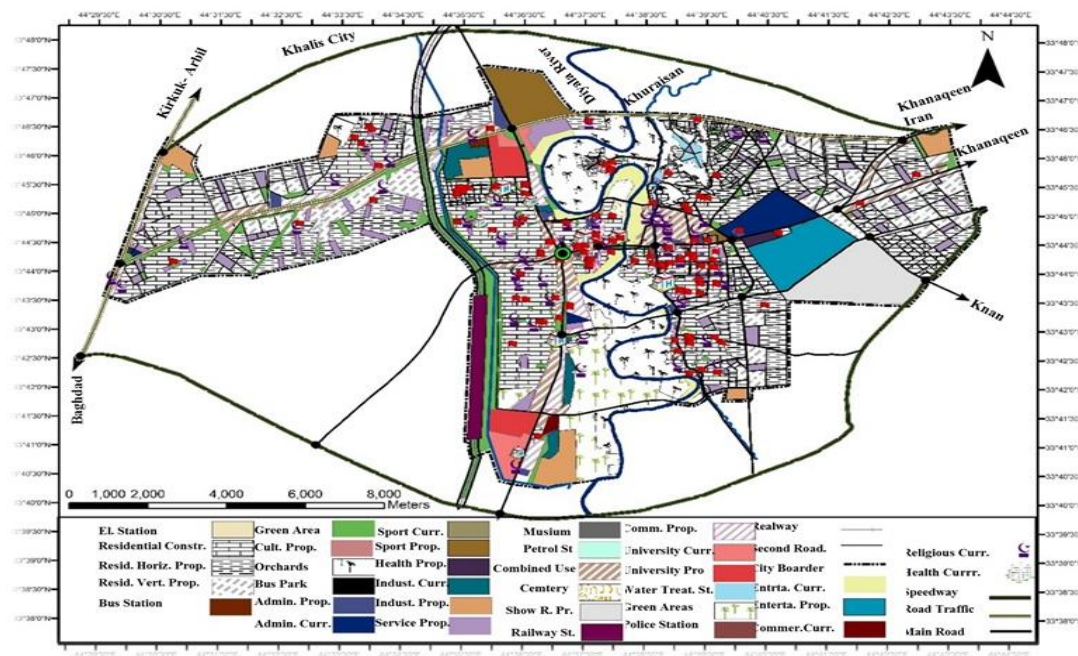


Figure 115: Baquba - Master Plan 2013

The city had its origins before the advent of the Islamic religion, its name means in the Syrian dialect from which it originated, "Jacob's house". Baquba is located on a trade route between

Iran and Iraq, and is known by several names, the current one is due to the Abbasid period. Sumerian writings have found references in which the city is called Aqaba.

The factors that led to the emergence and development of the city are the fertile soil and its favorable position on trade routes and water courses. Over time, the city has become an important hub connecting trade routes to other Iraqi cities and to Iran, as well as an important stop on the Silk Road.

In addition to its specificity at the commercial hub, the city is a remarkable citrus crop development, even today Baquba is known for its orange-seeded plantations. According to recent estimates, Baquba's population is about 460,000.

The main economic activities carried out at the city level are:

- Agriculture (known citrus plantations).
- Trade.
- Industry.

The urban development of the city in its present form is the result of 4 stages, each of which affects it differently:

## Chapter 3

### *Prospects for the future, doctoral student's proposals for improving the spatial environment in Bakuba*

#### *The first stage - the 19th century*

Началото на деветнадесети век е белязано от избухването на чума и други природни бедствия, което доведе до изчезването на много информация за това как градът присъства през този период.

**Stage II** - stretches from the end of the 19th century to the First World War. The retail space consists mainly of small "Duke" buildings adjacent to each other, with wooden or makeshift roofs of date palm leaves.

The apartment accurately reflects the economic and social circumstances. The typology of the dwelling is traditional, made mainly of wood (chanchilles), with closed balconies, with small windows on the ground floor and high and colored upstairs, the street is narrow, no more than 2 meters wide, used mainly by ordinary people who predominantly use animals as a means of transportation and transportation.

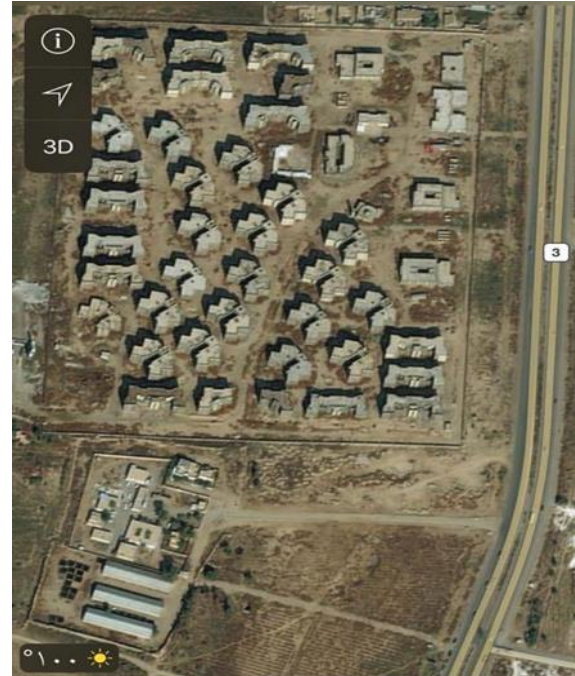
**Stage III** - between the two world wars (1920-1940). With the establishment of the monarchy in Iraq in 1920, it changed the administrative status of the city. Military barracks (Brigade Diyala) are being installed in Baquba fortress. This situation leads to a special functional character, which leads to an increase in business activities and diversification of the socio-cultural structure of the city due to the large number of foreigners now "Diyala Brigade Headquarters



During the period 2003-2017, Some projects have been implemented in the city that have changed Baquba's urban landscape. The projects have not been finalized at the time of writing this thesis - Due to financial and organizational problems of the municipal government of BAQUBA.



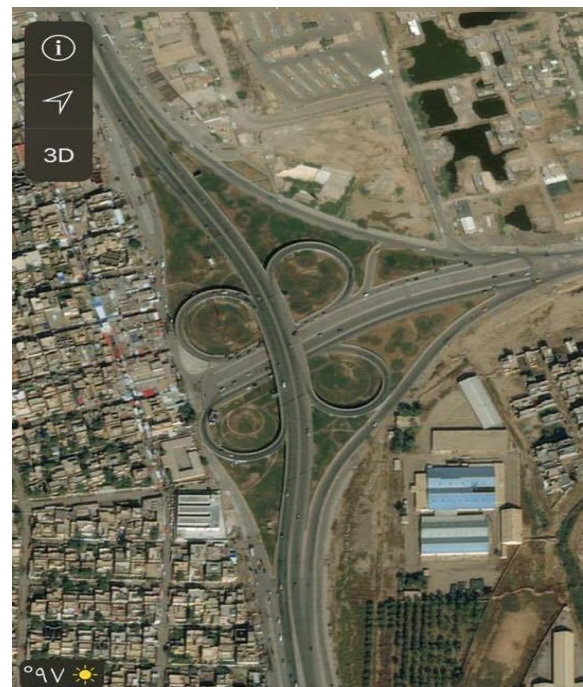
Figure 117: Residential Complex (Al-Muradia).



Source: Satellite image.



Figure 118: (Mafreq) junction

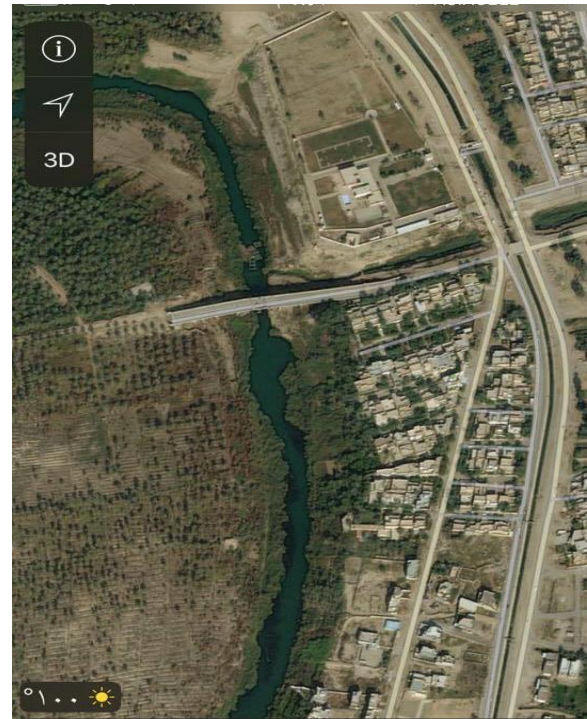


Source: Satellite image.





Figure 119: (Buchriz) Bridge.



Source: Satellite image.



Figure 120: Residential Complex (Al-Galbia).

Source: Satellite image.

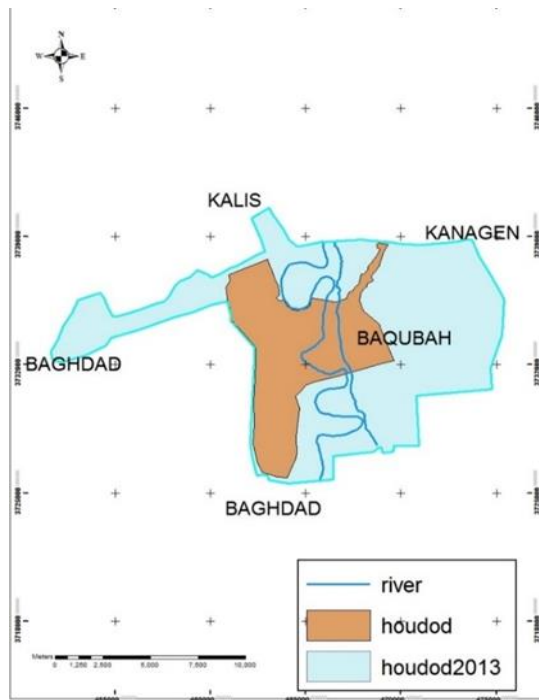


Figure 138: Urban 2014 boundary plan.

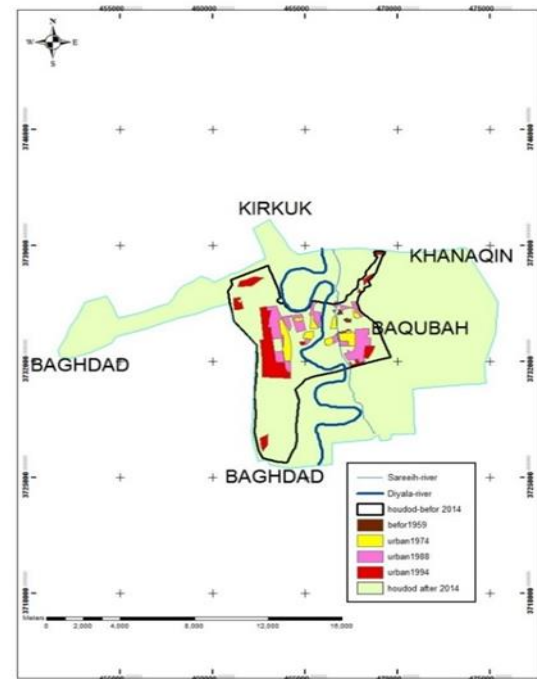


Figure 139: Urban plan 2014.

### Forms of urban development

Urban development of land is used in five categories:

- 1-Extension of existing buildings.
- 2- Performance: New changes are being defined in areas that were previously unused.
- 3- Extension: land use is an extension immediately adjacent to existing land use.
- 4- Linear development: enlargement is formed by an existing Corridor circulation, such as motorways or transit lines.
- 5- Tightening: A standard form of external development as shown in the figure.
- 6- Big projects: such as airport, industrial area.

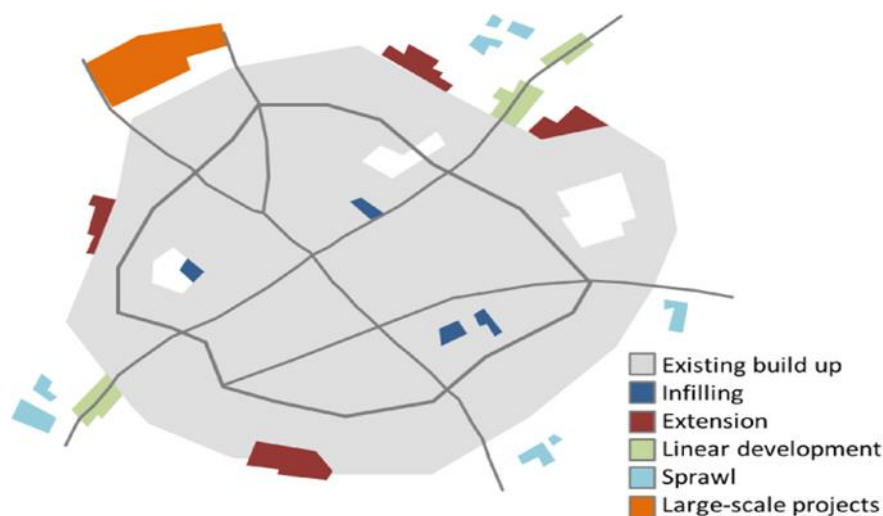


Figure 140: Urban development forms.



Plans-Source: Diyala City Government, City Planning Directorate

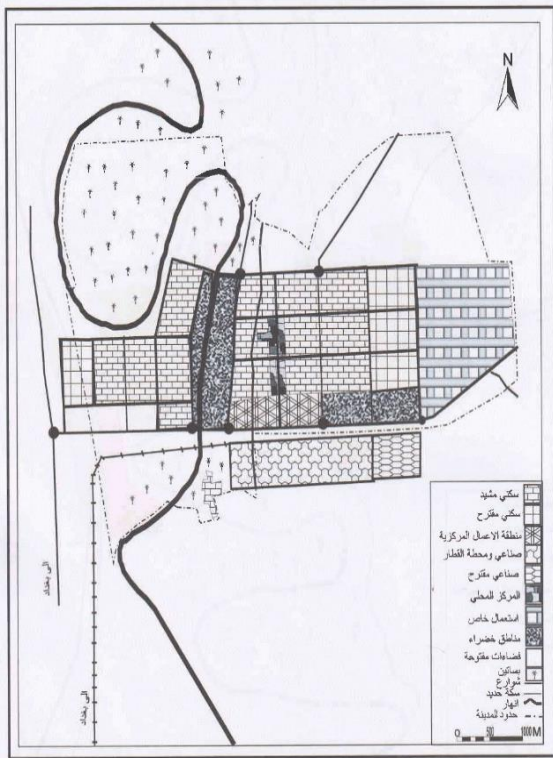


Figure 143: Device Baquba Plan of 1959.

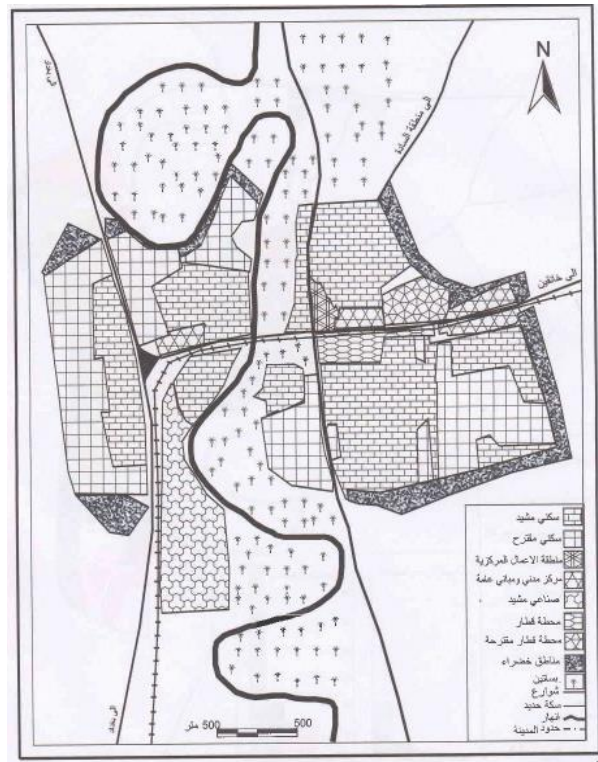


Figure 144: Device Baquba Plan 1974

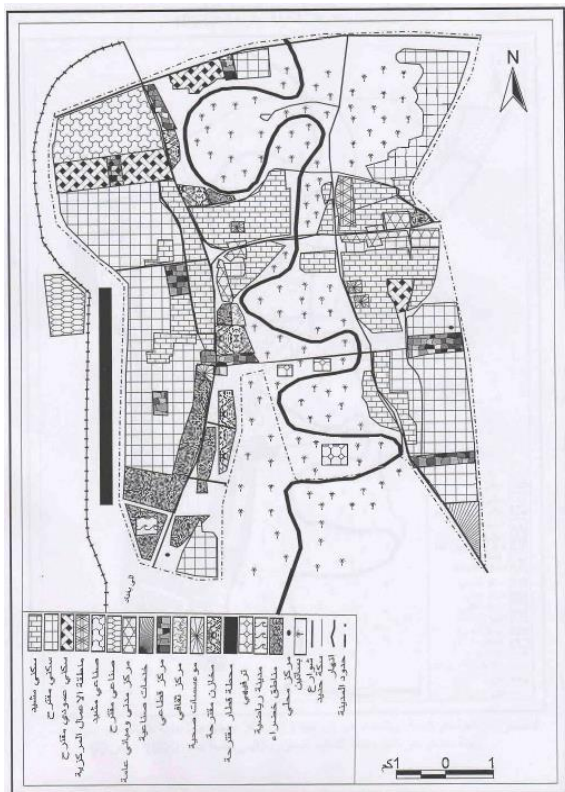


Figure 145: Device Baquba Plan 1988.

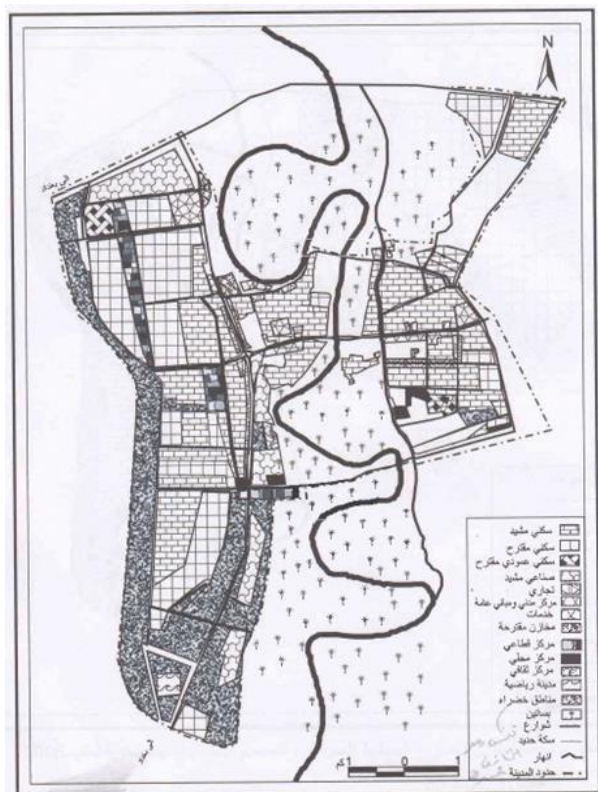


Figure 146: Device Baquba Plan 1994.

Plans - Source: Diyala City Government, City Planning Directorate

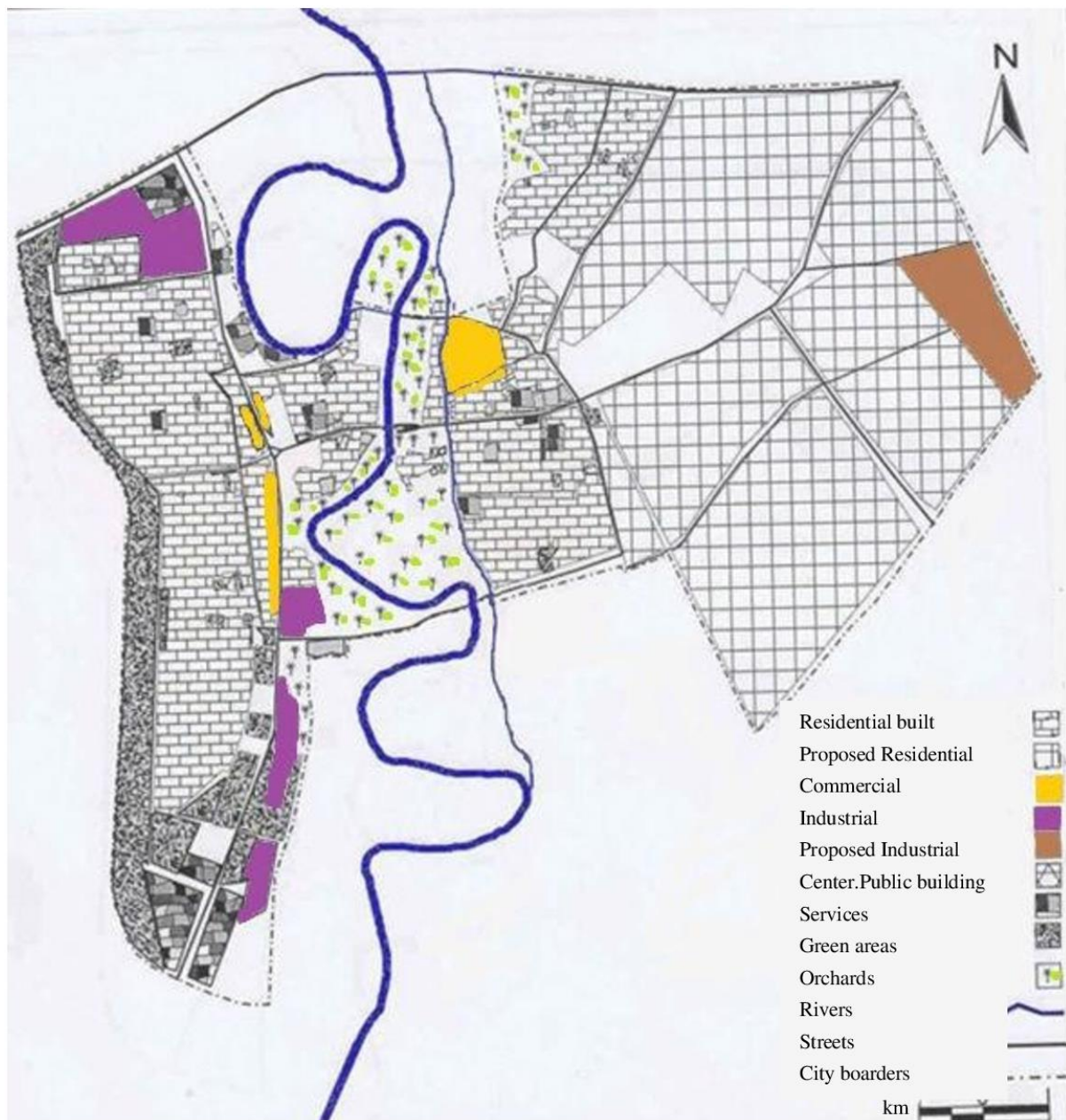
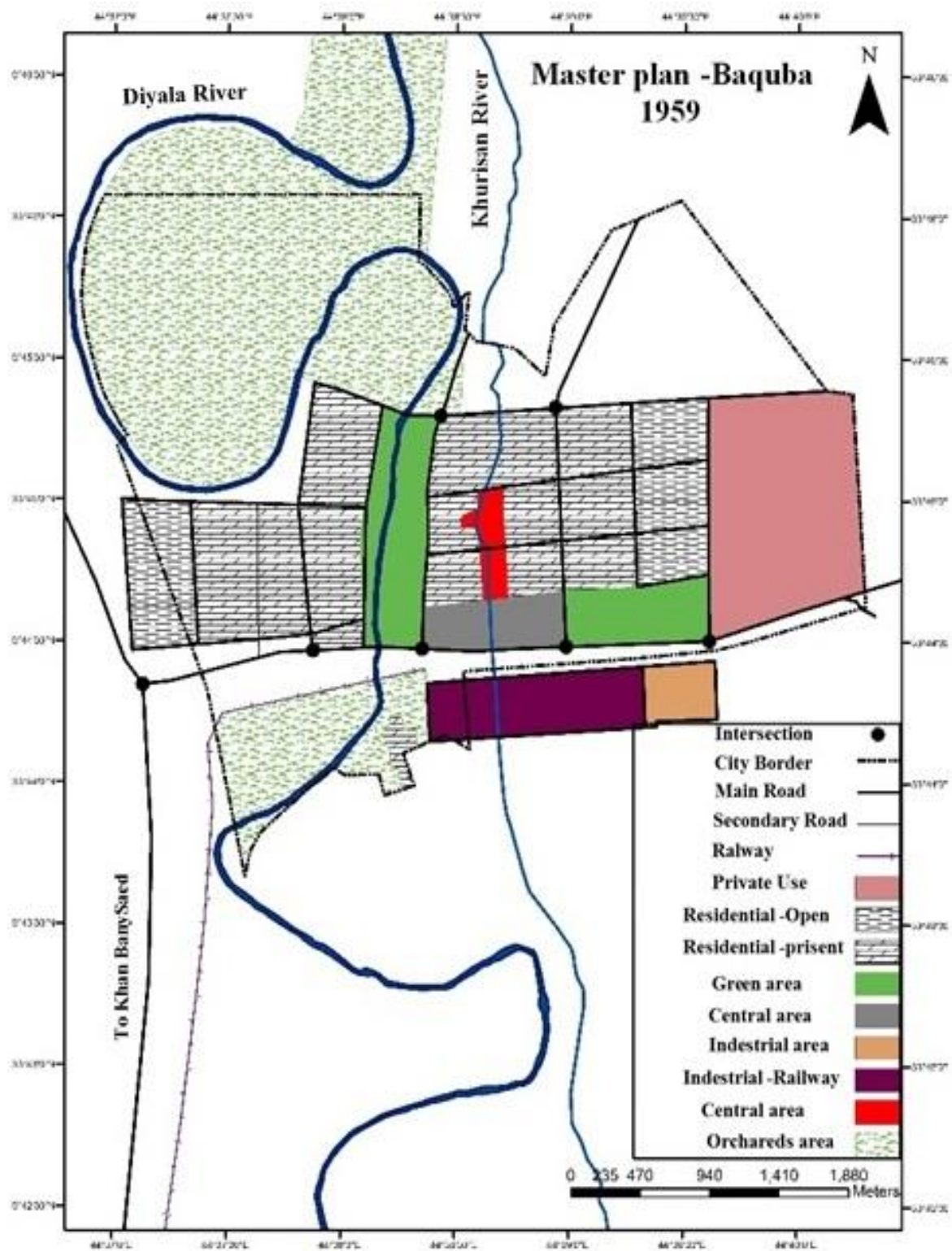


Figure 147: Baquba Urban Plan 2006.

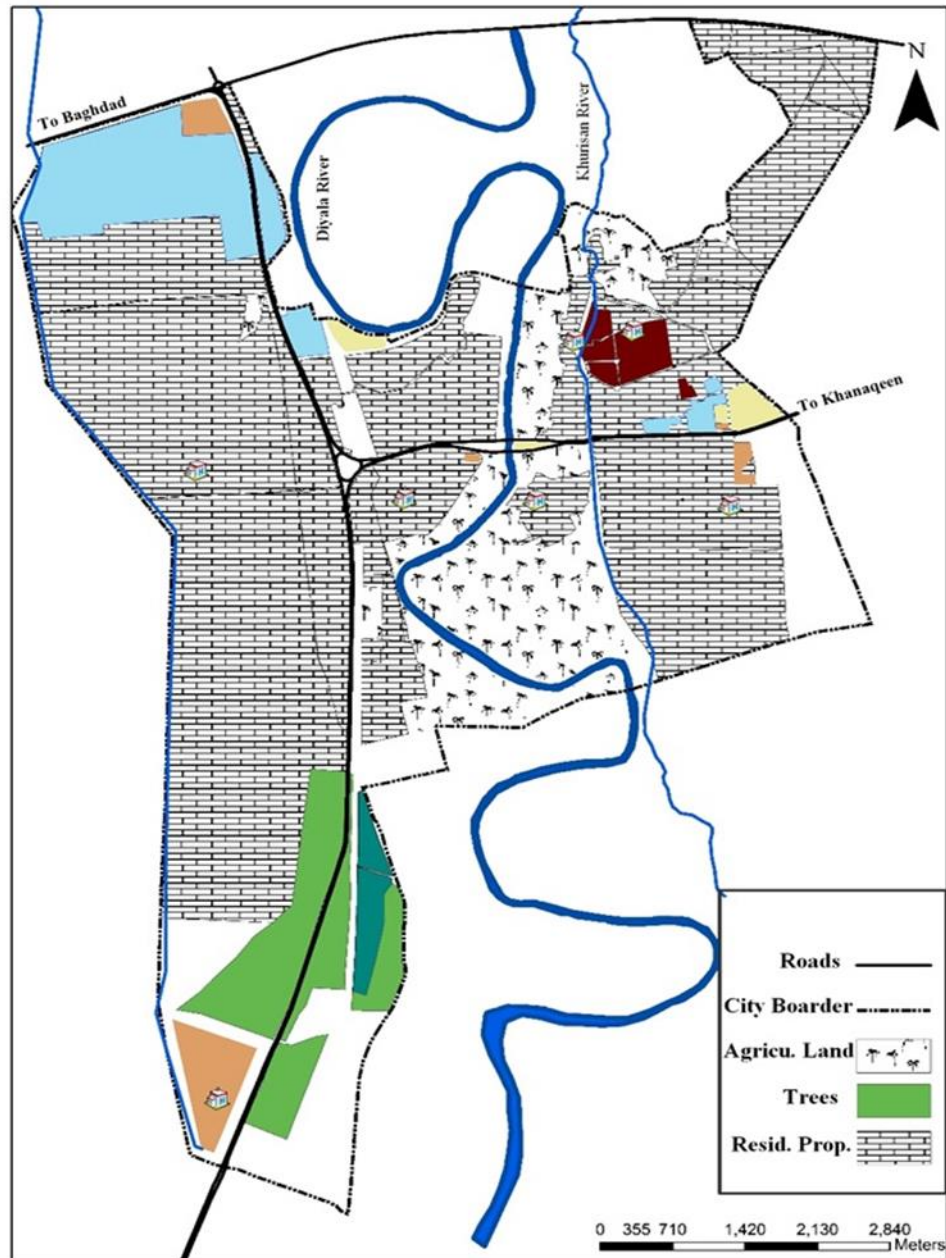




Master Plan-Baquba-1959-

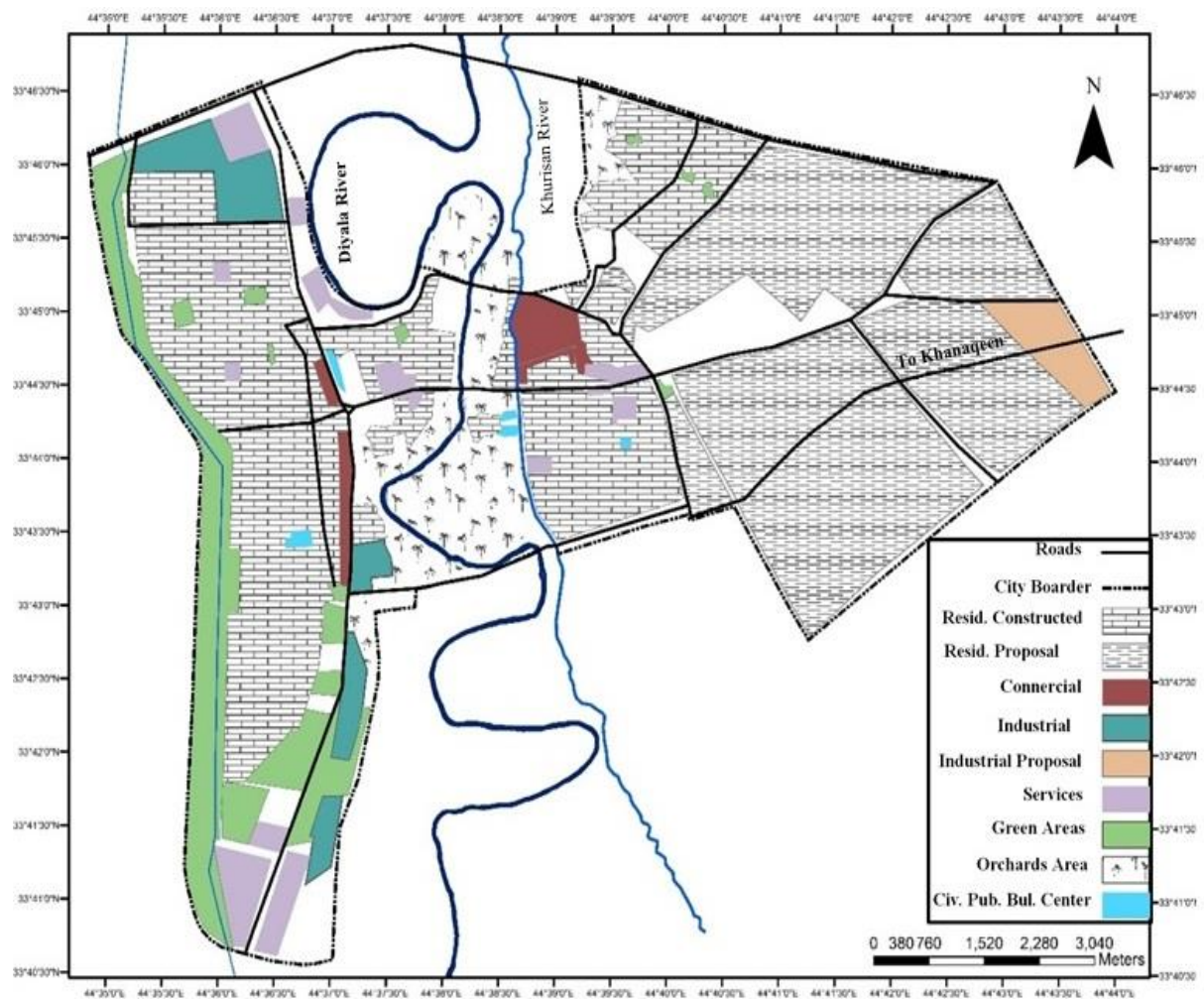
Figure 151: Urban Development Module of Baquba City Development Plan-1959.

Source: <http://www.uodiyala.edu.iq/PageViewer.aspx?id=139>, Diyala University, Department of Urban Planning



Master Plan-Baquba-2003

Figure 156: Module for urban development of the city of Baquba, marking the proposed study area.  
Source: <http://www.uodiyala.edu.iq/PageViewer.aspx?id=139>, Diyala University, Department of Urban Planning



Master Plan-Baquba-2006

Figure 157: Module for urban development of Baquba city. Development plan-2006  
 Source : <http://www.uodiyala.edu.iq/PageViewer.aspx?id=139>, Diyala University, Department Urban Planning



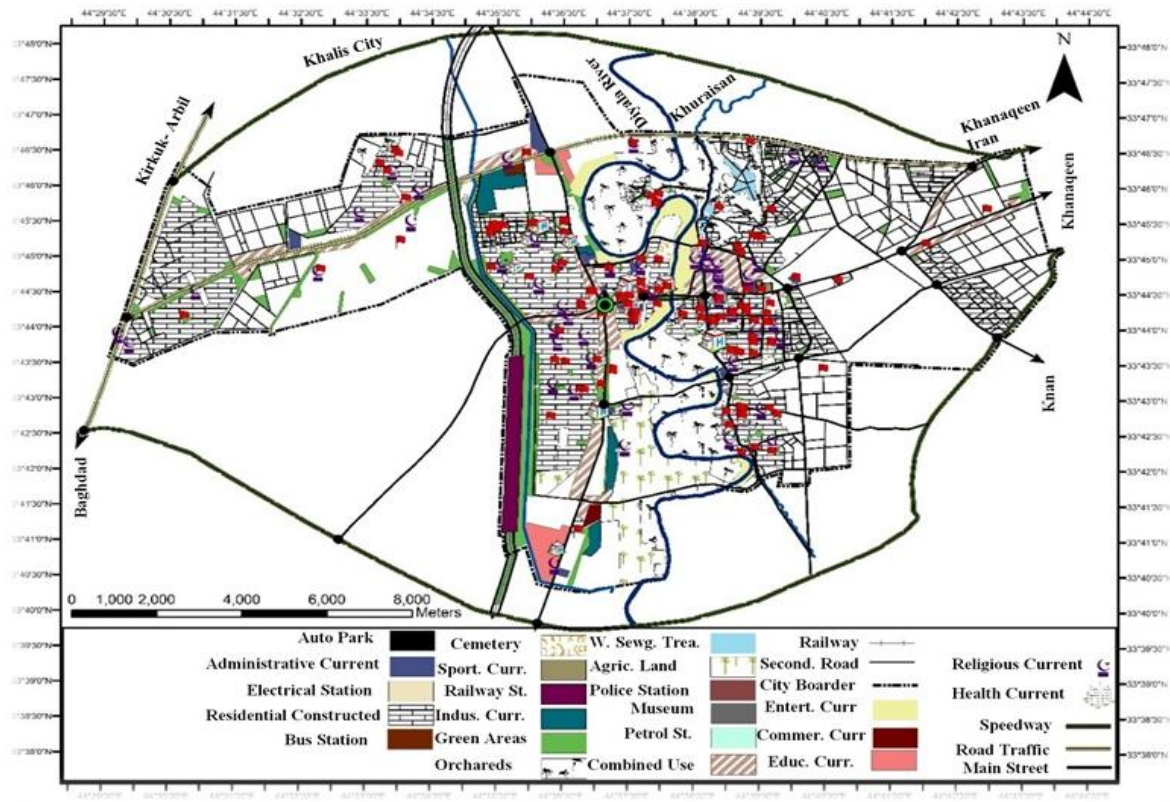


Figure 159: Existing features according to the Urban Planning Bureau.  
Source: <http://www.uodiyala.edu.iq/PageViewer.aspx?id=139>, Diyala University.

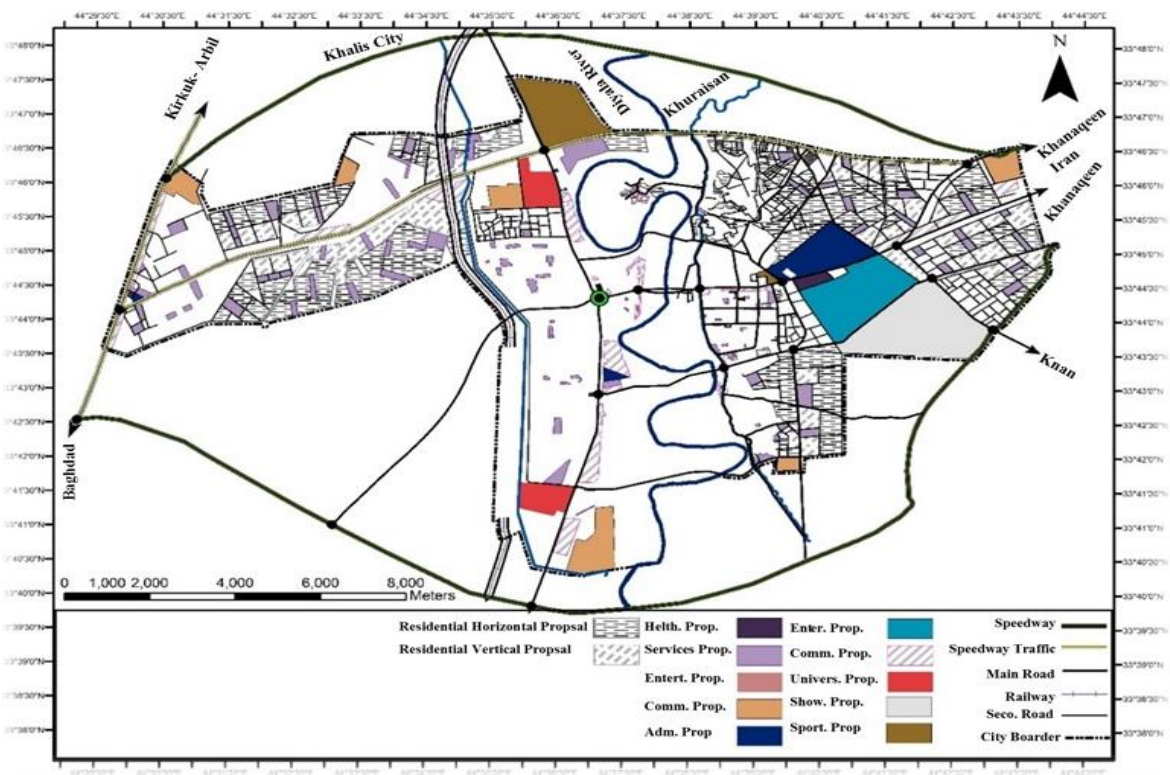


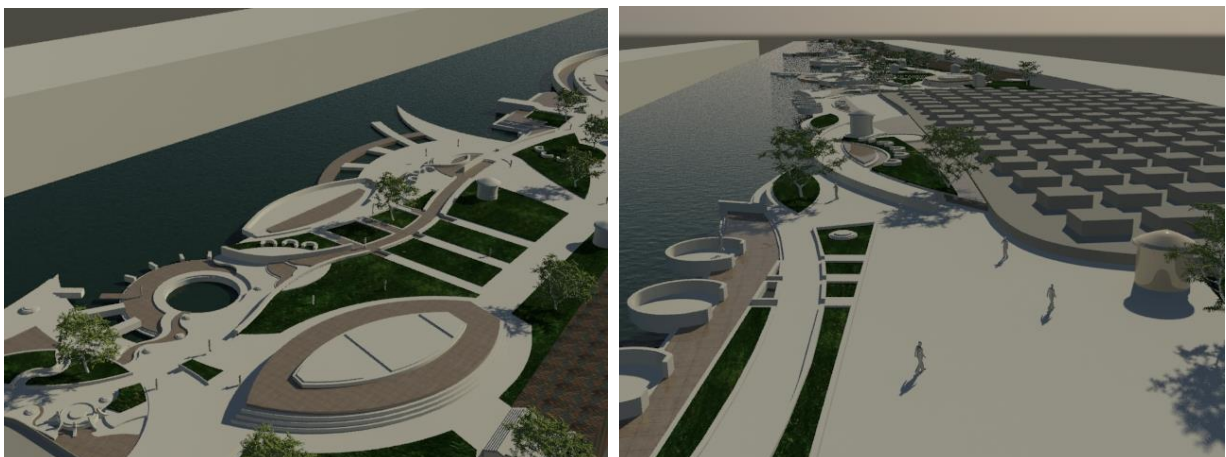
Figure 160: Urban Ordinances proposed by the Urban Planning Bureau.  
Source: <http://www.uodiyala.edu.iq/PageViewer.aspx?id=139>, Diyala University.

### **Functional and planning problems of Baquba city**

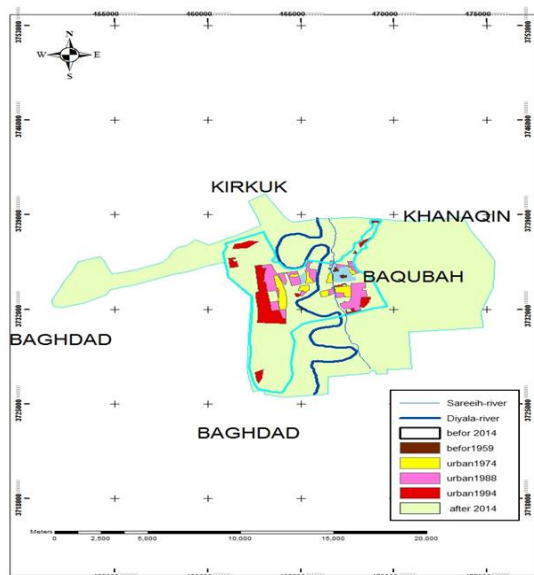
One of the major problems of the city of Baquba is the disproportionate population growth in relation to the city's infrastructure. The increase in the number of inhabitants, with the raising of the standard of living in recent years, following armed conflict, has led to a dramatic increase in the number of vehicles, which requires intervention on infrastructure. Lack of parking is becoming more acute, and the lack of smooth traffic, especially from the central area to the suburbs, creates great inconvenience.

The second major drawback for the city of Baquba is the lack of cultural sites truly representative of the history and development of this territory. Keep in mind that the last war in the beginning of the 21st century had consequences not only in political, military, etc. aspects, but also about culture. No less than 200 sites rich in archeological remains were discovered during the war, and much of the remains found were found transported to Europe and America, since there is no appropriate museum in the area. Another problem is the lack of public facilities, which the city of Baquba with its growing population must possess. There are only a few sports facilities and public gardens, but this is not enough

A proposal for urban development in the western part of the Diyala River in Baquba was made, which was expressed in a proposal by architect Omar Yusof, who chose a municipal site between the two bridges, and offered a place for recreation with restaurants and a park as a landscape project and sports hall to the river Diyala. This proposal is a conceptual project that has been around since 2008 and has not been implemented due to lack of funding. The project proposed that this part or district be part of Baquba and be connected to the center without being an urban center.



### Urban areas 2014 y.



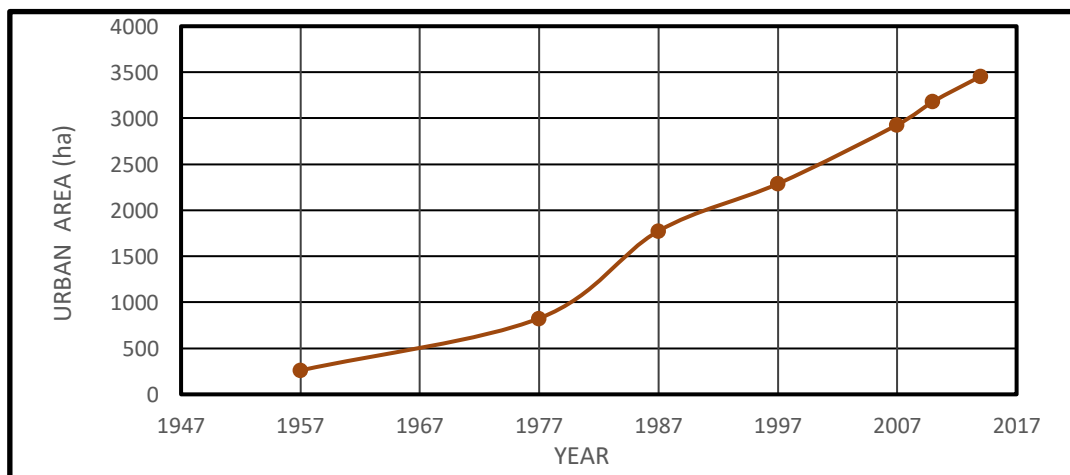
### Urban areas, extension of Baquba City, 1920-2014.

Year	1920 1959	1974	1988	1994	2004 2014	Total area (ha)
Time	0 39	54	68	74	84 94	
Urban sprawl (ha)	15.40 260.8	603.22	1305.1	2161.4	2870 3814	5126
%Urban Area	0.3 5.1	11.77	25.46	42.17	56.0 74.4	100

### Annual index of Urban spatial expansion

Year	Urban area (ha)	Space. Expansion (ha)	AIUSE %
1957	260	-----	-----
1977	826	566	3.4
1987	1775	949	5.3
1997	2288.2	513.2	2.2
2007	2929	640.8	2.2
2010	3181.1	252.1	2.6
2014	3456	274.9	2.0

### 1-Spatial expansion in the period 1957-2014



### 2 -Rapid increase in urban mass for all periods.

This chapter describes the state of the city through a SWOT analysis, highlighting the strengths, weaknesses, opportunities and threats arising from the indoor and outdoor environment.

#### BAQUBA- SWOT analysis

<b><i>Strong points</i></b>	<b><i>Weak point</i></b>	<b><i>Opportunities</i></b>	<b><i>Threats</i></b>
Natural environment – presence of rivers Diyala and Khurasan	The effects of the war still persist at the level of the built fund	Concern at the governmental level for the improvement of the administrative apparatus	Activities of the organizations of a terrorist nature
Geographic location in a territory with long and diverse history	Infrastructure under-dimensioned in relation to the town needs	Existence of projects in the field of urbanism and real estate business, many of which elaborated by foreign companies	Unstable character of the neighboring areas (Syria, Israel) due to the political situation in the Middle East
Growing population	lack of benefits	Programs such as “THINK” and Scholar Rescue Fund for the support of the academic staff by relocation and stimulation of their activity	Exposure to destructive phenomena such as floods, due to the landscape in the northern part of the province and to the rivers crossing Diyala province, phenomena which occurred repeatedly
Presence of traditional activities – Growth of citric fruit, trade, industry, religious tourism		Openness of the population in the area towards the spiritual values of Islam, which may favorably influence the development of subsequent communities	
Geographic closeness to the capital Baghdad – 50 km NE and relatively easy access from and to it			



## Conclusion

### Contributions of the author of the thesis

#### A. Practical application - Functional suggestions for the urban development of Baquba

Given that the aftermath of the war is still being felt demographically, socially and economically, Iraqi cities need ongoing support in order to develop in the new directions required by contemporary realities.

The city of Baquba needs a new developed city center to connect the old city center in the western part of the city and the new commercial, service and administrative buildings on the eastern part of the Diyala River, located on Commercial Main Street.

The new place I chose (the author of the thesis) is on the western side of the Diyala River between the two bridges. The proposed site is suitable for a city center with the necessary buildings in Bakuba as a museum for exhibiting and storing historical exhibits, to which the city is rich and a hotel and resting places on the bank of the river Diyala and other central city service and commercial buildings and facilities. seeks to be the largest museum in the Arab world (5000 sq. m.), reminiscent of the ancient forms of ziggurat and accompanied by a number of other facilities needed for educational and training activities. On the opposite bank of the river Diyala weapons that have a central element in the hotel, reminiscent of the ancient structures in SAMARA with its spiral form (Malwea).

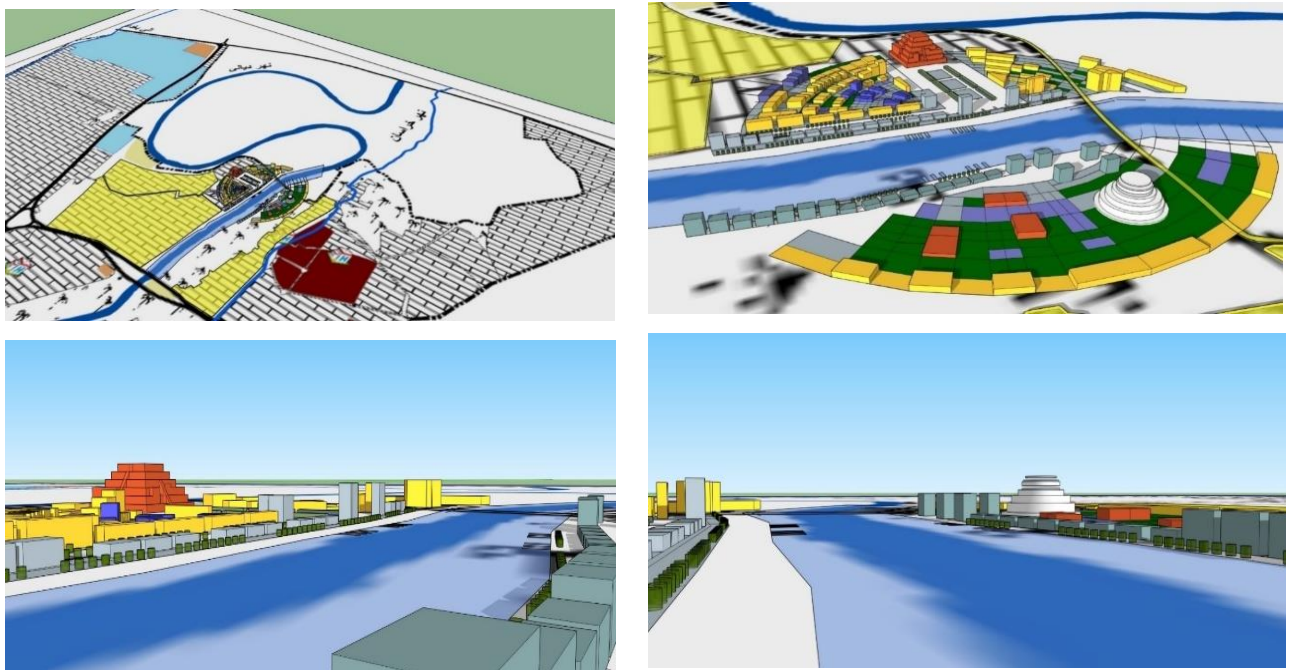


Figure 161-162-164-165 circular city structure. Source: craft prepared by the author.

## **B. Scientifically applied contributions:**

- A number of programs are being enumerated to reduce the congestion transport problems in the city center of communications linking Baquba with the other provinces of DIYALA.
- It also analyzed the elements of modern Iraqi architecture, highlighting its positive and negative aspects, in order to identify the directions to be followed in the future, namely:
  - The return to traditional Arabic forms and language in art and architecture, Egyptian or elsewhere, due to its roots of a different invoice, roots born of cultural life, traditions, customs and local values.
  - Protecting the natural environment and its development (a determining element in the history of Iraqi urban planning).
- In terms of urban development, the dissertation provides enough evidence to conclude that the rapid territorial expansion of Baquba has been particularly intense over the last five decades.
- For the period 1959-2017. the city of Baquba is expanding arbitrarily in all directions, but the main expansion is in the southern and western parts of the city, which is in violation of the existing urban development plan as the new extension is not planned with the necessary infrastructure. Of the plans made by the city services at different times from the development of the city, it can be seen that the elements determining its functional and territorial expansion are:
  - the two rivers (Diyala and Chorasan).
  - the presence of orange gardens.
  - the socio-class division of the population that has occurred over time.

## **Author's publications on the topic of dissertation work**

- 1- Research - The impact of the organizational problems facing the transport network on the urban growth of Baquba city - Diyala Magazine of Engineering science. Publishing vol.10, No 4 of DJES 2018 (DIYALA Journal of Engineering Sciences).
- 2- Research - The effect of the random urban expansion on the basic design of the city of Baquba -Diyala Magazine of Engineering Sciences.Paper ID: 542-2017 DJES 2019 (DIYALA Journal of Engineering Sciences).