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## MORPHOLOGICAL STAGES OF THE DEVELOPMENT OF AL-RUTBA CITY

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### Abstract

The city of Al-Rutba originated and developed like the rest of the cities of Iraq, affected by a number of circumstances and variables that interacted in different ways and led to the emergence of the city in its final form. Especially its geographical location in the middle of the Western Desert, its location made it a commercial station on the trade caravan route and contributed to increasing its commercial activity and providing many job opportunities for the population. Its location also made it characterized by desert cities because of the effects of the environment on its functional and architectural structure, so it grew and developed under the influence of a number of factors that were reflected in its functional and architectural structure that witnessed changes and changes during the stages of growth and development.

The research problem was formulated by the following scientific question (What are the most prominent changes that occurred in each stage of the morphological development of the city of Al-Rutba). In order to answer the question that came in the problem of the research, the hypothesis was formulated according to which: There are a number of factors and variables that contributed to the change in the morphological structure of the city of Al-Rutba, in a way that enables to distinguish several morphological stages.

Based on a set of elements that worked in an interactive and integrated manner to draw the urban landscape and the architectural structure of the city, most notably the city plan, its street systems, building materials, architectural style and urban land uses, four morphological stages were distinguished by revealing the changes that occurred in the functional and architectural structure of the city.

## Introduction

The geographers' interest in the structure, shape and structure as a result of the changes witnessed by cities, as well as their random expansion, which caused the emergence of urban problems and the alienation of the morphological identity that characterizes the Arab and Islamic city. This prompted geographers to pay attention to the morphological aspect and to adopt morphological analysis in urban studies to reveal the changes taking place in the city's structure, which would contribute to diagnosing the existing problems that cities suffer from and setting directions to address and achieve urban development.

It is no secret that studying the urban-urban history of any city will enable the researcher to extract all the factors and influences that stood behind the formation of physical models and architectural forms in each time period of the city's life. The morphological analysis enables the researchers to reveal the positive elements that reflect the state of development or the negative aspects that contradict the requirements of the population, and in a way that enables them to draw inspiration from the frameworks and criteria that determine the elements that reflect their positive effects on society and the environment.

The researchers chose the city of Al-Rutba as a study area because it passed through several variables that contributed in one way or another to the formation of its urban fabric and final urban structure. Despite its short life, it retained some architectural models of the Arab style and blended with modern urban models.

## Research problem

It seems that the research problem and its accurate formulation represents the first step in the process of scientific research, especially as it is a big question that expresses the problem of the research, so the research problem was formulated with the following question: (What are the most prominent changes that occurred in each stage of the morphological development of the city of Al-Rutba) .

## Research hypothesis

The city of Al-Rutba was established to manage the northern desert and control the international borders with Syria, Jordan and Saudi Arabia, so any change in political relations and trade movement will be reflected in the growth and development of the city, and accordingly, the research hypothesis can be formulated that there are a number of natural and human factors that contributed to the changes in the functional structure And the architecture of the city of Al-Rutba and made it pass through four morphological stages from its inception to the present.

## Morphological concept

As for the morphological stage, it means (a period of time from the civilizational history of any city in which architectural forms and physical models are produced that have their civilizational features), which were able to meet the city's residents' social and economic needs at that stage. The city of Al-Rutba, like most Iraqi cities, has grown and passed through successive stages of time, which can be distinguished by observing the different urban appearance from time to time. Therefore, the morphology of the city of Al-Rutba is represented in the interaction and integration of the form with the function that the city performs. During its short life, the city of Al-Rutba passed through four morphological stages:

- 1- The first morphological stage (since inception - 1957).
- 2- The second morphological stage (1958 - 1987 AD).
- 3- The third morphological stage (1988 - 2003 AD).
- 4- Fourth morphological stage (2004 - 2020 AD).

In order to determine the morphological stages that the city went through from its

inception to the contemporary stage and to facilitate the study of the time period that the city passed through until the year 2020, as well as to clarify the reflection of growth on the characteristics, size and final shape of the city (townscape). The researchers divided the morphological history of the city into four stages based on a set of morphological elements and physical variables to distinguish between those stages, which work in an interactive and integrated manner to give the city its final shape and personality that distinguished it from other cities of the world, most notably the urban land uses, the city plan, street systems and architectural style.

### **Characteristics of the location and position of the city of Al-Rutba**

The city of Al-Rutba was established in the northern desert in order to manage the areas adjacent to the political borders with Syria, the Hashemite Kingdom of Jordan and the Kingdom of Saudi Arabia, and to organize the affairs of tribes in the region. The city of Al-Rutba was created as sub-district center in the year (1926 AD) and continued until it became a district center in the year (1959 AD).

It should be noted that the British forces, which occupied all areas of Iraq in 1920, established the first urban unit on the right side Valley of Horan. represented by the Citadel, in order to establish their influence and dominance over the region, especially since the location is characterized by the availability of groundwater, as well as the accumulations of rainwater and torrential rain in Valley of Horan and Valley of Massad, Since the site is a resting place and a meeting point for caravans of pilgrims and travelers between Iraq, the Levant, the Hijaz and the Arabian Peninsula.

### **The first morphological stage (since inception - 1957 AD).**

The castle, which was built in 1921, represents the first nucleus of the city of Al-Rutba. The administrative factor, in addition to the movement of transport on the international road that was extended in 1923 to connect Iraq with Syria and the Hashemite Kingdom of Jordan, contributed to the emergence of the various uses of the land, The site also witnessed the establishment of the first police station in 1925 AD, which represented the first breakthrough in the development of land uses such as the market, primary school, health center, post and telephone, as well as residential uses that extended on the right side of Horan Valley.

It is noted from Picture No. (1) that the city plan took a rectangular shape with the extension of the international road, so its streets were perpendicular to each other at right angles, and it was also characterized by contrast in terms of its breadth, where the width of the street ranged between (3-5 m) within the old neighborhoods.

Picture No. (1) An aerial photo of the city of Rutba taken by the British Air Force in 1936



[http: /www.Iraqphilcois.com](http://www.Iraqphilcois.com).

As for the architectural units, especially the residential units, they were simple, connected and contiguous houses. Note the picture No.(2), and the average area of the housing unit at this stage ranges between (125-200 square meters), It was distinguished by its thick walls, whose thickness ranged between (50-60 cm) in order to achieve thermal insulation and increase the durability of the building. It was also characterized by devoid of windows except for the openings near the roof, which are called energy locally, in order to prevent passers-by from supervising the people of the house and to prevent the passage of a large amount of solar radiation into the house, despite the small area of those dwellings.

picture No.(2) Connected housing units during the first morphological stage



Source: the author,10/2020

Picture No(3) The courtyard represents the yard during the first morphological stage



Source: the author

It should be noted that the central courtyard represents the most prominent characteristics that distinguish the dwelling in this stage. Note the picture No (3), as this space achieves a number of basic functions, namely ventilation, lighting and thermal regulation, in addition to that, it represents a place oriented towards the sky because of its spiritual dimensions for individuals family. It is no secret that most of the materials used in construction are part of the local environment, as clay and stone were used in building walls, and palm trunks, mats and wooden poles were used in the construction of ceilings, whose height ranged between (2.8-3 m).

### **The second morphological stage (1958-1987 AD).**

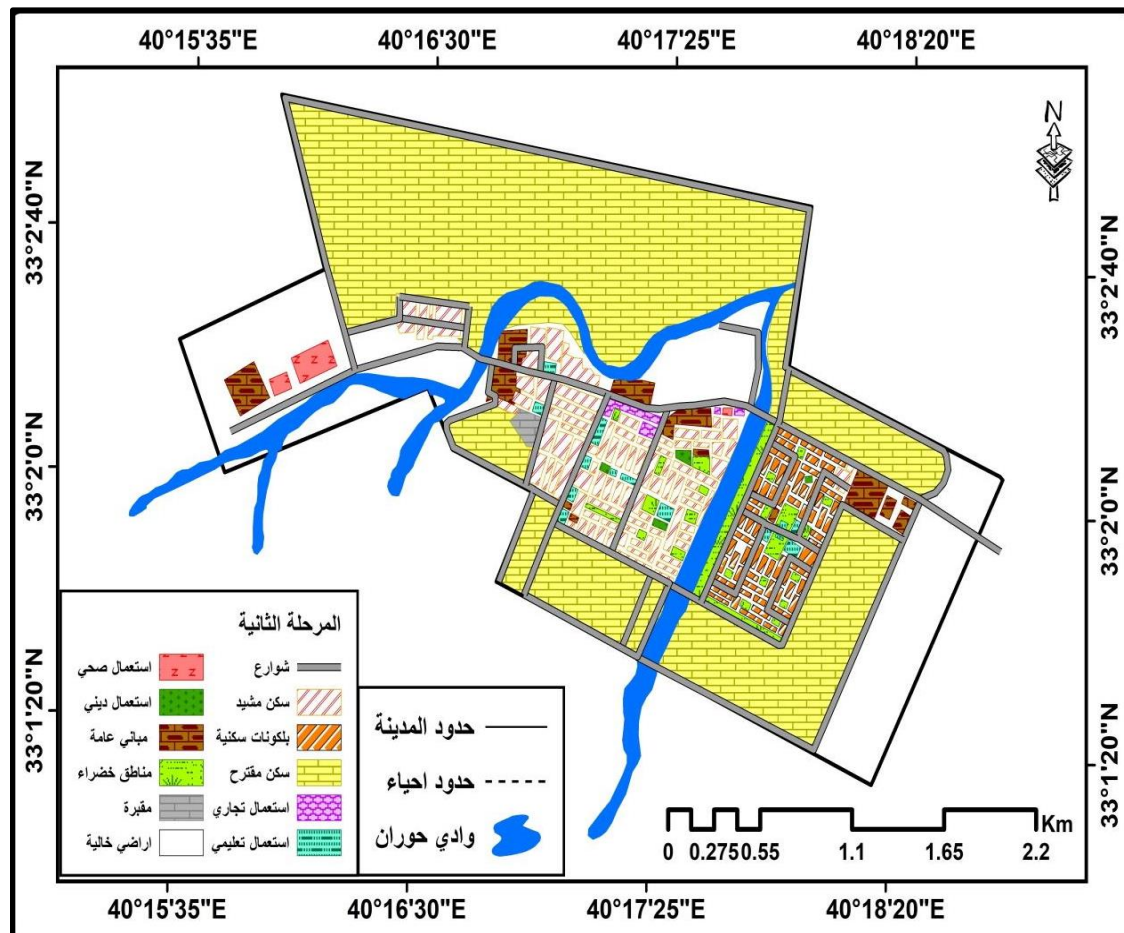
There is no doubt that the recovery of the economic situation in Iraq in the seventies of the last century was reflected in the improvement of the living situation of citizens and their ability to build housing units, which contributed to the expansion of the city's area. The city of Al-Rutba also witnessed during this stage an increase in the size of the city's population. In the 1965 census, it amounted to (5589) people, and in the 1977 census it amounted to (7935) people. In addition, the cases of encroachment on lands increased due to the enactment of laws and decisions such as Resolution No. (379) for the year 1970 AD. And Law No. (156) of 1971, which stipulates the ownership of the trespassing population at a low price.

During this stage, the first foundation design for the city was developed to represent the planned growth, as a basic design for the city of Al-Rutba No. (26) for the year 1976 was initiated, to organize the uses of the land and to address the cases of encroachment witnessed by the city, but it did not address that problem that continued to overtake on open lands and converting them to residential use despite their allocation as public services and green spaces within the basic design, This prompted the concerned authorities (the municipality and planning) to start laying down a new foundation design for the city No. (528) in 1987 AD to determine the axes of the city's expansion towards the east, west and south and leave the north direction for the presence of a natural determinant represented in Horan Valley and to address cases of abuse in all its forms and to meet the needs of the city in line with developments What is new that this stage has produced, and what it has brought about?



Relative development in functional land uses, seen map No. (1).

Map No. (1). Urban land uses of the city of Al-Rutba during the second morphological stage



Source: The two researchers based on: 1. Directorate of Urban Planning and General Engineering, Urban Planning Department, Basic Design Map of Rutba City, No. 528, for the year 1987, scale (5000:1). 2. Arc GIS output.

### City plan and street systems.

The city plan represents the vessel or the element of linking between man and the activities that he created in the city, as man is always keen to achieve harmony and interaction between his activities in a way that develops and develops the city. The city of Al-Rutba expanded during this stage in a limited way and in a narrow scope, focusing mostly on the eastern side of the city, and for the purpose of absorbing new jobs and addressing the dilapidated and worn out housing situation in the city, planning appeared clear in a small area occupied by this stage. The growth of the city took a network sector (the right angles system), as this stage witnessed many transformations, most notably the entry of mechanical means of transport into the field of use in transporting people and goods. It was necessary to have some kind of streets to accommodate this transformation, so a number of straight and wide streets were opened due to the increase in the area of the housing unit compared to the old areas. The public street was expanded with a width of (20 m) and the main streets were paved and a number of old neighborhood streets, which changed the fabric of the city and created new urban activities that took their positions on the sides of those streets.

### Architectural style.

During this phase, the city was distinguished by architectural characteristics and styles that differed from the previous phase. The style of the buildings was characterized by the emergence of duality between the eastern style and the axis, and the largest part of the housing was of a continuous style and a different style, organized in regular blocks and small spaces on the new streets and in regular geometric shapes. The human being has gone beyond the method of adaptation and moved to the method of prediction by establishing positive relationships with the environment, bypassing many of the details used in building the dwelling. As new, more durable and weather-resistant building materials were used, represented by cement, plaster and iron, and stone was the main material in building walls, which became 40 cm thick, seen picture No. (4).

Picture No 4 A model of a housing unit of the second morphological stage



Source: the author

### Land uses.

It is noted from the analysis of Table No. (1) that the total area of the city amounted to (646) hectares, and the built and occupied of them were (135.2) hectares. Figure No. (1) shows a discrepancy between urban land uses in terms of occupied area. The uses of green and abandoned lands ranked first, then residential uses ranked second, then transportation ranked third. The reason is due to the legalization of the spaces designated for functional uses, despite the presence of a large area of land devoid of uses, which helped the spread of the phenomenon of abuse and random growth in the city during this stage, and this reflected negatively on its morphological structure. Accordingly, it is possible to address the urban land uses during this stage and to indicate the proportion of each one of them as follows:

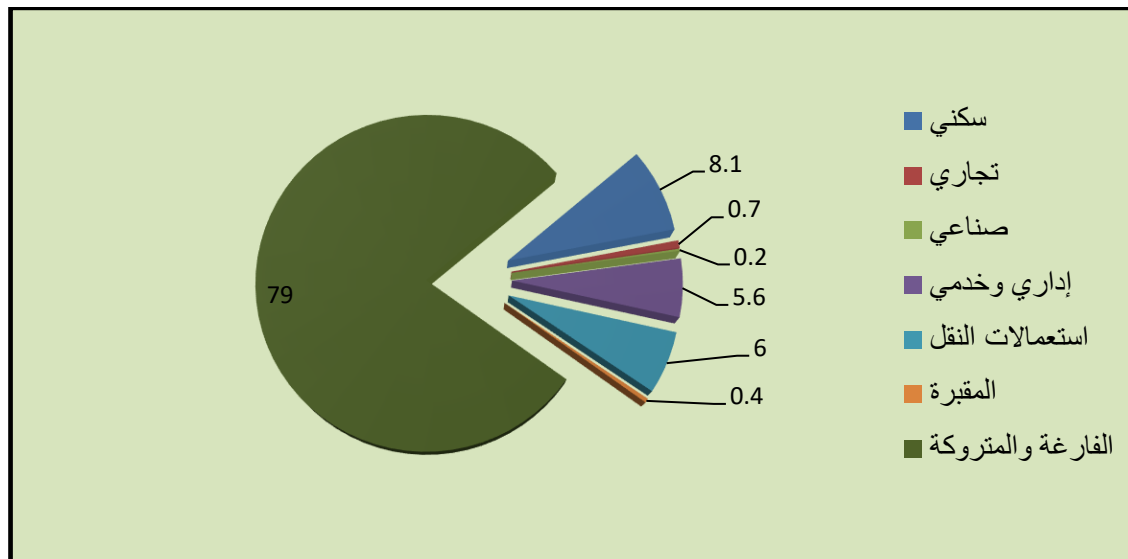
Table No. (1) Urban land uses in the city of Rutba for the second phase (1958-1987 AD)

| Type of use | Area<br>(hectares) | Percentage of built<br>and occupied area | % of the total<br>area |
|-------------|--------------------|--|------------------------|
| residential | 52,6               | 39                                       | 8,1                    |

|                                   |       |      |     |
|-----------------------------------|-------|------|-----|
| <b>commercial</b>                 | 4,3   | 3,1  | 0.7 |
| <b>industrial</b>                 | 1,4   | 1    | 0.2 |
| <b>Administrative and service</b> | 35.6  | 26,3 | 5,6 |
| <b>transportation uses</b>        | 38,9  | 28,8 | 6   |
| <b>cemetery</b>                   | 2,4   | 1,8  | 0,4 |
| <b>Built and occupied</b>         | 135,2 | 100  | --  |
| <b>Empty and Abandoned</b>        | 510.8 | --   | 79  |
| <b>The total area</b>             | 646   | --   | 100 |

Table: From the work of the two researchers based on: 1. The outputs of the Arc GIS program. 2. Directorate of Urban Planning, Department of Town Planning, Basic Design for Al-Rutba City No. (528) for the year 1987.

Figure No. (1) Relative distribution of land uses for the city of Rutba for the second phase (1958-1987 AD)



Source: From the work of the researchers based on Table No. (1).

#### Residential use:-

The Arab cities are characterized by their horizontal extension, occupying large areas that differ in their appearance from the western cities (10), and the city of Al-Rutba is one of those cities that grew longitudinally with the extension of the public street. The residential use at this stage occupied an area of (52.6) hectares, including Its percentage is (8.1%) of the total city area and (39%) of the built and occupied area of the city. The residences of this phase were characterized by being contiguous and simple, and their housing units formed a fine fabric in the urban spaces of the city and adapted to the climatic and social conditions prevailing in the city.



**1- Commercial use:-**

It is noted through the analysis of Table No. (1) and Figure No. (1) that the commercial use during this stage has taken over an area of land amounting to (4.3) hectares, which is equivalent to (0.7%) of the total area of the city and (3) 1%) of the inhabited area.

**2- Industrial use:-**

The industrial use in the city of Al-Rutba during this stage is represented by the presence of a number of handicraft industries such as carpentry workshops and ovens that are located in the city center and blacksmithing workshops and car repair workshops located in the west of the city. The industrial use during this stage occupied an area of 1.4 hectares, which is equivalent to ( 0.2%) of the total area of the city and (1%) of the inhabited area of the city.

**3- Administrative and service uses:**

These uses occupied an area of (35.6) hectares, with a rate of (5.6%) of the total area of the city and (26.3%) of the inhabited area. These uses were represented by government institutions that provided services to their residents and the neighboring areas, as they included administrative institutions that appeared at this stage, such as the Customs and Borders Corporation located to the west of the city, and other administrative institutions concentrated in the city center, such as the court, the Nationality Directorate, and the police station in which the city exercised its administrative and security tasks.

**4- Land uses for transportation:**

It is clear from Map No. (1) that the main and secondary road network during this stage was characterized by its coordination and coverage of all parts of the city, as it occupied an area of (38.9) hectares, with a percentage of (6%) of the total city area and (28.8%) From the inhabited area of the city, seen Table No. (1) and Figure No. (1).

**5- Cemeteries :-**

During this phase, the cemetery acquired an area of (2.4) hectares, which is equivalent to (0.4%) of the total area of the city and (1.8%) of the inhabited area of the city.

**6- Green areas and abandoned: -**

The empty and abandoned land area increased in the second phase significantly and significantly, as it occupied an area of land that amounted to (510.8) hectares, which is equivalent to (79%) of the total area of the city. It was represented by the green areas that permeate the city's neighborhoods, which occupied an area of (14.7) hectares, with a rate of (2.3%) of the total area of the city, while the abandoned and vacant land occupied an area of (496.1) hectares, with a rate of (76.7 %) of the total area of the city.

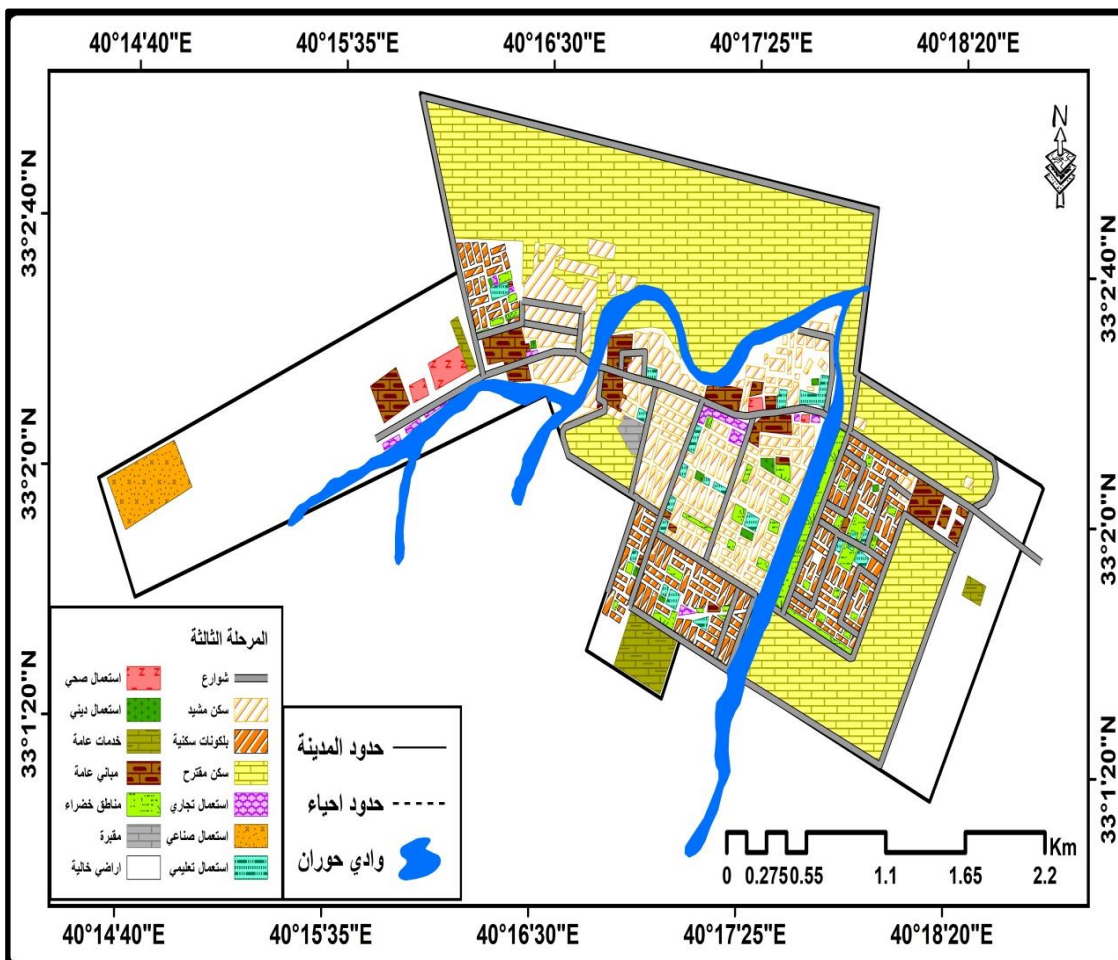
**The third morphological stage (1988-2003 AD).**

It is clear from viewing Map No. (2) that this stage has witnessed clear developments in the economic, social and political aspects that have had their impact on the city of Al-Rutba through the expansion of the construction of housing units and the development of new urban uses to provide services to the residents of the city and its neighboring territory, as a result of the improvement in the functional performance of commercial activity And the development of the level of services provided to the city. During this stage, the city witnessed a large number of cases of encroachment that spread in the city randomly, which prompted the municipal and planning authorities to initiate the development of a number of basic designs for the wet city and to rely on a policy of filling the void for empty and abandoned lands. Sector No. (589) of 1989 was designed to incorporate

continuous cases of abuse by citizens.

A new foundation design for the city No. (651) in 1993 was also initiated to address the random growth and planning shortcomings, as Law No. (117) for the year 1997 AD, which stipulates the allocation and distribution of open lands for housing purposes by the state by changing the allocated use without taking into account The urban landscape of cities. On the basis of which a number of sectorial designs were developed for the city of Al-Rutba, numbered (2375) for the year 2002 AD to accommodate those cases, especially those located at its outskirts. Thus, the city became composed of (6) residential neighborhoods, whose housing units amounted to (1677) housing units, and this was reflected in the inhabited city area of (177.1 hectares), bringing the total area of the city to (791,2) hectares.

Map No. (2) Urban land uses of the city of Al-Rutba during the third morphological stage



Source: From the researchers' work based on: 1. Ministry of Planning, Directorate of Urban Planning and General Engineering, Urban Planning Department, Basic Design Map of Rutba City, No. 651, for the year 1993, scale (5000:1). 2. Arc . output

### 1- City plan and street systems.

The plan is defined as a map of the urban area, in which the images of the geometric pattern of the transport network and the main and secondary roads distributed within the city are shown in the form of engineering sectors. During this stage, the city preserved as much as possible its residential plan,

although it did not completely match the original city plan, As some radial streets appeared in the city, they were characterized by their wideness and devoid of impenetrable paths, especially on the right side, as is the case in Al-Mithaq and Al-Intisar neighborhood, with the survival of some quadrangular blocks, most of which tend to have a rectangular shape. These streets added a new morphological element to the residential areas. It attracted commercial and industrial activities to it and made urban growth take a sectorial form along those streets, which led to a clear change in the city's architectural and functional structure.

## 2- Architectural style.

The morphology of the houses has changed at this stage and is moving away from the traditional architectural style followed during the previous two stages, as important changes occurred in the style of construction and design that distanced the house a lot from the reality of the traditional to derive many of its internal and external details from the western house. The dwelling with an open courtyard was replaced by another consisting of a closed inner courtyard with many details and internal spaces, as shown in Picture No (5). The housing area at this stage ranged between (250-300 m) containing bedrooms, reception, living, kitchen and stairs, at the bottom of which is the sanitary group. Stone and cement were used in building walls whose width reached (35 cm), plaster and borax were used to paint the interior walls, and cement was used to paint the walls external. As for the interior floor of the dwelling, it is often paved with colored ceramics. Iron was used in the manufacture of exterior doors and wood for interior doors. Most of these dwellings contain two exterior doors, the first being small for family use and the second being large used as a garage for entering the car, The housing units at this stage were characterized as having one and a half floors and two floors whose ceilings were constructed with iron and reinforced concrete (15 cm thick). The reason is due to the economic, social and cultural developments that helped the population in the emergence of new patterns in construction and engineering designs that came in response to the requirements of this stage and which continued to develop due to the population keeping pace with the development of the joints of modern life.

Picture No (5). Model of a housing unit of the third morphological stage



Source: the author

## 3- Land uses.

It is evident from the observation of Table No.(2) and Figure No. (2) that green and abandoned lands

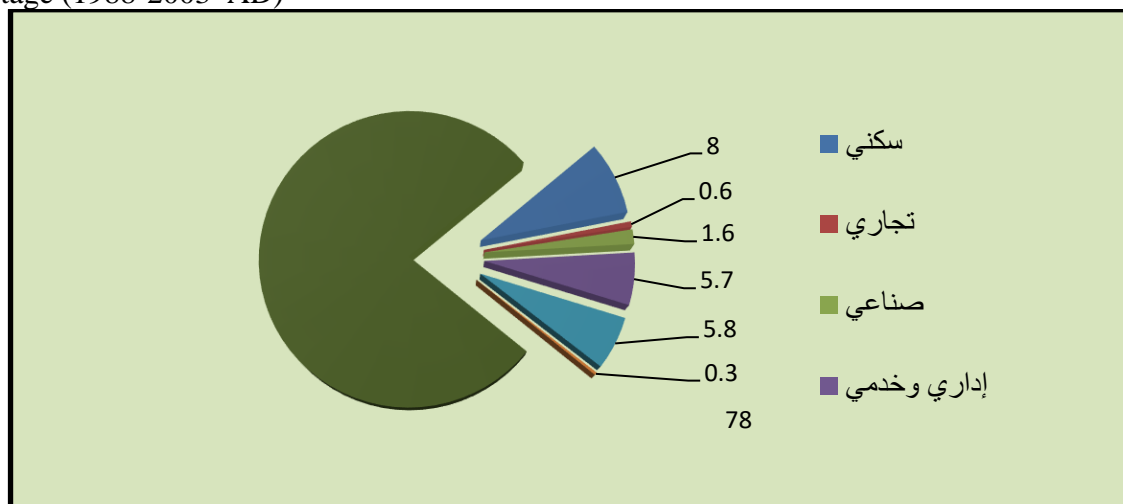
occupied the largest percentage of the total city area, followed by residential uses, transportation uses and other urban functions in the city. Despite the obvious changes and developments of land uses, especially commercial, service and industrial areas, as well as housing, the vacant areas continued to maintain their first rank among other urban functions, as they occupied an area of (614,1) hectares of the total area of the city, which amounted to (791,2) hectares, Despite the control of this use over most of the city's area, other land uses varied and developed clearly during this stage, although its expansion was in a narrow and limited scope, but it reflected the city's continuous need for its services and in the long run.

Table No. (2) Urban land uses in the city of Rutba for the third phase (1988-2003 AD)

| Type of use                | Area (hectares) | Percentage of built and occupied area | % of the total area |
|----------------------------|-----------------|---------------------------------------|---------------------|
| residential                | 63,6            | 35,91                                 | 8,04                |
| commercial                 | 4,9             | 2,76                                  | 0,62                |
| industrial                 | 13,7            | 7,74                                  | 1,73                |
| Administrative and service | 45,2            | 25,52                                 | 5,71                |
| transportation uses        | 46,8            | 26,43                                 | 5,91                |
| cemetery                   | 2,9             | 1,64                                  | 0,37                |
| Built and occupied         | 177,1           | 100                                   | --                  |
| Empty and Abandoned        | 614,1           | --                                    | 77,62               |
| The total area             | 791,2           | --                                    | 100                 |

Table: From the work of the two researchers based on: 1. Urban Planning Directorate, Urban Planning Department, Basic Design of Rutba City No. (651) for the year 1993. 2. Arc GIS program outputs.

Figure No. (2) Relative distribution of land uses in the city of Rutba for the third stage (1988-2003 AD)



Source: From the work of the researchers based on Table No. (2).

### **1- Residential use:-**

Residential use occupied during this phase an area of land amounting to (63.6) hectares, which is equivalent to (8.04%) of the total area of the city and (35.91%) of the city area.

### **2- Commercial use:-**

There is no doubt that the development of jobs in general and trade in particular represents the essential factor in the civilizational development witnessed by the city. Therefore, commercial use is one of the most important uses in the city of Al-Rutba, as it occupied an area of 4.9 hectares, which is equivalent to ( 0.62%) of the total city area and (2.76%) of the city's built and occupied area.

### **3- Industrial use:-**

Industry is considered the title of progress and development, and it is a cornerstone in providing job opportunities for a large number of citizens, as it occupies an important part of the land uses in the city(13). (1.73%) of the total city area and (7,74%) of the city area.

### **4- Administrative and service uses:**

Administrative and service uses occupied an area of (45.2) hectares, with a rate of (5.71%) of the total area of the city and (25.52%) of the city area. With this percentage, it acquired not a small area of the total city area, as it included institutions and administrative, health, security and other public sector services, restaurants, hotels and cafes, all of which were concentrated in the old neighborhoods.

### **5- Land uses for transportation:**

Transport uses are an important component of urban land uses; It plays a role in the speed of communication and interaction between the city and other urban areas. The study area is one of the cities that developed and increased in area thanks to transportation methods, where this use occupied an area of (46.8) hectares, and a percentage of (5.91%) of the total area of the city and (26.43%) of the land area of the city.

### **6- Cemeteries :-**

During this stage, the cemetery occupied an area of land amounting to (2.9 hectares), constituting (0.37%) of the total area of the city and (1.64%) of the land area of the city.

### **7- Green areas and abandoned: -**

The vacant lands during this phase acquired an area of (614,1) hectares, representing (77.62%) of the total area of the city.

### **Fourth morphological stage (2004-2020).**

The city of Al-Rutba witnessed at this stage a significant spatial development and expansion, which came in response to the increase in the population and the emergence of new functional uses, and to keep pace with the development of civilization. It witnessed rapid growth in its northern and southern sides after the weakening of the influence of Horan Valley as a natural determinant of the city's growth towards the north, with its continued growth towards the east and west. Because of the deterioration of the security conditions in Anbar Governorate after 2003 and the absence of state control and as a result of the events of 2014, the study area was affected by many cases that changed the city's plan, shape and morphological character, especially the encroachments on land by citizens.



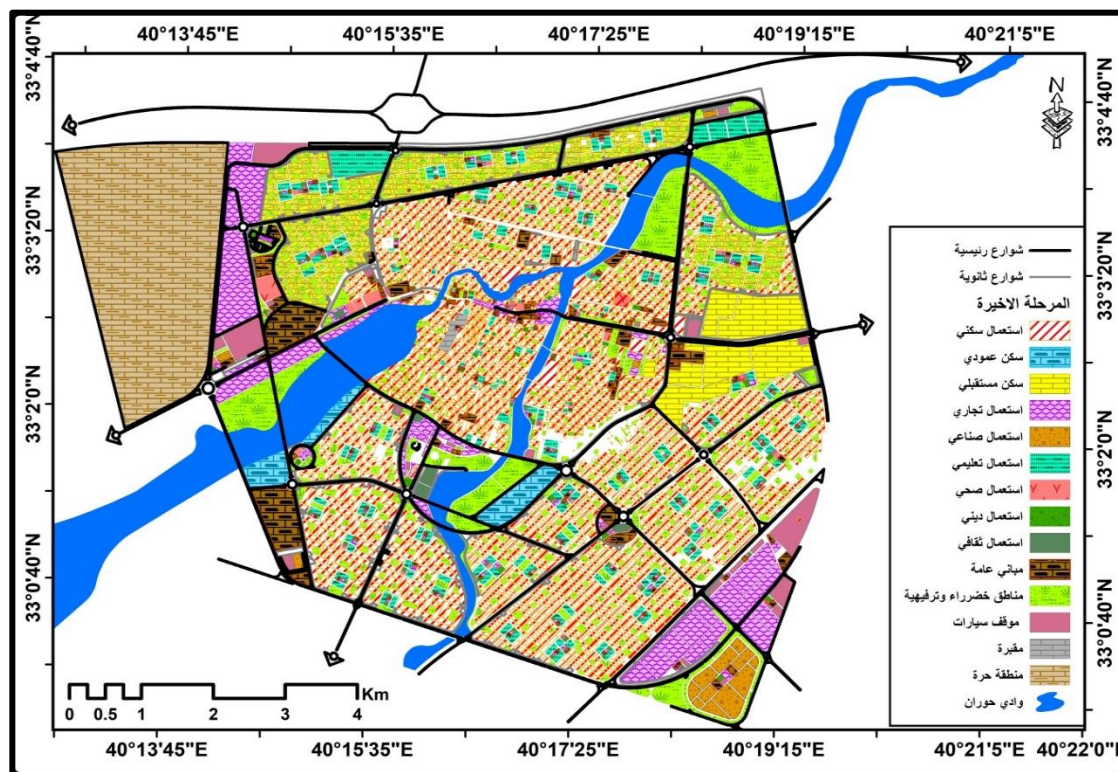
The number of cases of trespassing on the lands in the year 2020 AD reached (2700) cases distributed over the various residential neighborhoods in the city (15). This prompted the concerned authorities to start developing the basic design for the city of No. (953) for the year 2020 AD, to address these cases, which became widespread and widely, especially after the cessation of the sorting and allocation of lands in 2009.

A number of variables and reasons have helped in the formation of this stage and have affected the structure of the city and its external appearance, and these reasons are:

1) Population growth. In the 1997 census, the city's population was (13642) people, and in 2020 it reached (29,925) people, with a rate of change of (119.4%) from the third stage. Which led to an increase in the demand for residential land to meet the needs of the city's population resulting from that increase.

2) The city's dependence on a basic plan that represents the uses of the land in a different way from the reality of the city's unplanned growth, as it is clear through the analysis of the map (3) The basic design of the city of Al-Rutba has specified residential areas proposed within the design, but they are in fact occupied residential neighborhoods in the northeastern part of the city, represented by the "Al-Askari" neighborhood, the first and second "Al-Muazafin" neighborhoods, and the "Adhari" residential neighborhood. It also identified green areas, which are currently public buildings and government departments, rugged areas and waterways represented by the Horan Valley and the Massad, which penetrates the city from its eastern side, which led to the emergence of negative results such as the continuation of the phenomenon of abuses and the disintegration of the urban fabric, which affected the shape and morphology of the city.

Map 3 Urban land uses for the city of Al-Rutba for the fourth stage



Source: The two researchers based on: 1. Directorate of Urban Planning and General Engineering, Urban Planning Department, Basic Design Map of Rutba City, No. 651, for the year 2020, scale

(10,000:1). 2. Arc GIS software output

- 3) The rapid expansion of urban growth away from the planning standards and adopting the pattern of growth by leaping and the pattern of crawl from the city center towards its outskirts, as the city has become composed of (13) residential neighborhoods, after it was in the third stage consisting of (6) residential neighborhoods distributed within the city limits.
- 4) The emergence of new patterns of streets characterized by their regularity and wideness in line with urban development and the growing number of mechanical means of transportation within the city, as well as the entry of Western designs into residential units represented by the ('Double Valium' It is a name given to very large houses) style, which is an extension of the Western style with all its architectural details, which gave the city an appearance different from previous stages.

### 1- City plan and street systems.

The city plan is one of the important elements of the city's morphology, as it affects the appearance and structure of the city through the exercise of its activity within the framework of its plan that has changed with time. During this stage, the city of Al-Rutba witnessed a wide transformation in the field of its plan and street systems. It represented a major breakthrough in the amount of survey allocations for roads and streets that came in a quadrilateral pattern represented by the new areas in its northern and eastern sectors, as new streets were opened that served urban activities, especially housing, trade and administrative services, as well as the expansion of other streets as a result of the expansion of the city towards its outskirts and the increase of its residential neighborhoods, which affected On the morphological construction of Al-Rutba city.

### 2- Architectural style.

The morphology of the dwellings changed during this phase, and the western style became the dominant style for most of the dwellings of this phase. This style was concerned with the front facades, the locations of the main doors, the height of the external fence and the widening of the size of the windows. The housing was characterized by the capacity of its area, which ranged between  $(400, 500 \text{ m})^2$ , the increase in the number of rooms and the entry of new building materials that differ from the previous stages, as stone and cement were used as a basic material in the construction of walls whose width reached (30 cm). And the use of iron in making ceilings, pillars and building ties to give the dwelling more strength and durability, and to help prevent the dwelling from disintegrating as a result of its exposure to harsh natural conditions. As for the appearance of the house, ceramics, marble and decorations were used as a basic material in covering the front facades and interior walls, and the use of alabaster and ceramics in covering the floors, in addition to the height of the house fence on all sides to increase security and privacy for family members. Seen picture No. (6).

Picture No. (6) A model of a housing unit representing the fourth morphological stage



Source: the author

Picture No. (7) Represents the modern style (Double Valium) in the city of Rutba



Source: the author

During this stage, the windows appeared in large shapes and sizes, occupying a large area of the walls, most of which are made of iron and aluminum, in which reflective or shaded glass was used,

and they are usually pointed or arched from the top to approach the ceiling. The interest in the home garden also emerged more regularly through the coordination of flowers and trees And the construction of fountains inside them, seen picture No. (7).

### 3- Land uses.

The land uses vary within the city in terms of its area and distribution, and as a whole it represents its urban fabric, which is expressed by the main functions that meet the needs of its residents and surrounding areas, such as residential, administrative, commercial and industrial uses, It is evident through the analysis of Table No. (3) and Figure No. (3) that there is a discrepancy in the area occupied by each use within the city, as it is clear that there is no relative relationship between the importance of use and the space it occupies, and this means that there is not necessarily a proportionality between the use and the area it occupies inside the city.

In view of the importance of each of these uses, they will be briefly explained according to their importance, with an indication of the area occupied by all uses in the city, as follows:

#### 1 Residential use:-

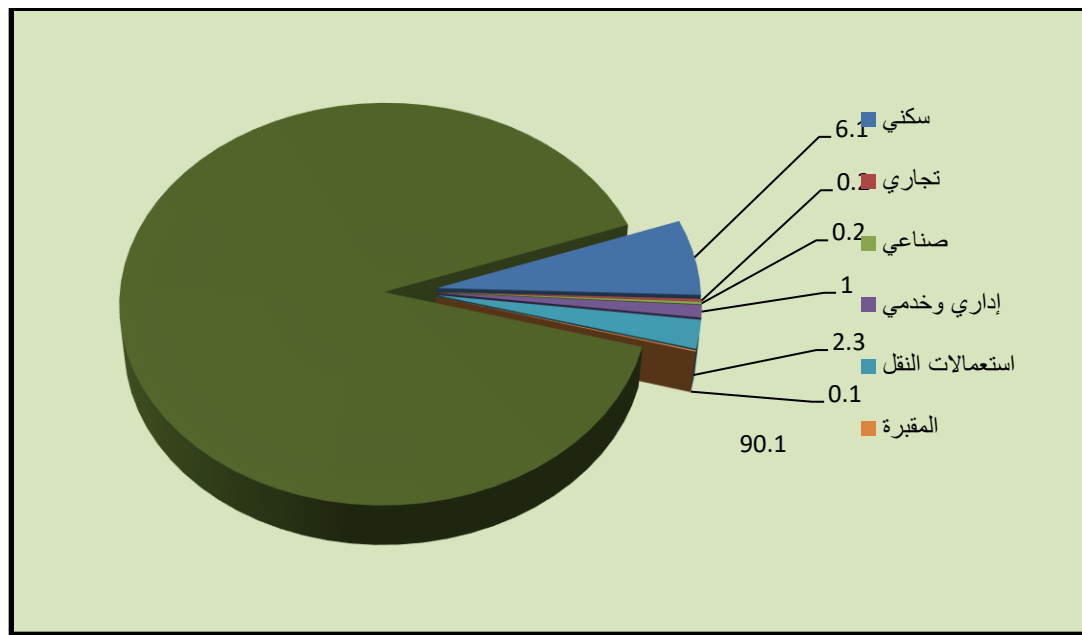
During this phase, the residential use acquired an area of land amounting to (365) hectares, which is equivalent to (6.12%) of the total area of the city and (61.92%) of the city area.

Table No. (3) Urban land uses in the city of Rutba for the fourth stage (2004 - 2020 AD)

| Type of use                           | Area<br>(hectares) | Percentage of built<br>and occupied area | % of the total<br>area |
|---------------------------------------|--------------------|--|------------------------|
| <b>residential</b>                    | 365                | 61,92                                    | 6,12                   |
| <b>commercial</b>                     | 9,2                | 1,56                                     | 0,15                   |
| <b>industrial</b>                     | 14,4               | 2,44                                     | 0,24                   |
| <b>Administrative<br/>and service</b> | 52,1               | 8,84                                     | 0,87                   |
| <b>transportation<br/>uses</b>        | 143,4              | 24,32                                    | 2,41                   |
| <b>cemetery</b>                       | 5,4                | 0,92                                     | 0,1                    |
| <b>Built and<br/>occupied</b>         | 589,5              | 100                                      | ---                    |
| <b>Empty and<br/>Abandoned</b>        | 5370               | ---                                      | 90,1                   |
| <b>The total area</b>                 | 5959,5             | ---                                      | 100                    |

Table: From the work of the researchers

Figure No. (3) The relative distribution of land uses in the city of Al-Rutba for the fourth stage (1998 - 2020 AD)



Source: From the work of the researchers based on Table No. (3).

#### Commercial use:-

Commercial uses have continued since the inception of the city until the present time to exercise its important role, especially in the twentieth century due to the boom of trade, as it occupied an area during this phase amounting to (9.2) hectares, and equivalent to (0.15%) of the total area of the city and (1.56%) of the city area.

#### Industrial use:-

Industrial use is one of the important activities in the city, and it is one of the basic and influential urban uses and on it depends economic life and its development, as well as its clear impact on the population and its movement within the urban space. This use occupies an area of land amounting to 14.4 hectares, representing (0.24%) of the total area of the city and (2.44%) of the inhabited area of the city.

#### Administrative and service uses:

These uses are among the most important elements that help the city to provide its services to its residents and residents of its territory with success and high efficiency. During the contemporary stage, it contributed to giving the city a new morphological feature that distinguished it from the previous stages. It is clear from the analysis of Table (3) and Figure (3) that the administrative and service uses occupy an area of (52.1 hectares), i.e. (0.87%) of the total area of the city and (8.84%) of the city area.

#### Land uses for transportation:

Undoubtedly, the importance of the uses of transportation is highlighted by its impact on the growth and development of cities, as the population needs a road network linking the various settlement centers. And that the amount occupied by that network of the city's area is constantly developing as a result of the city's expansion and extension from the center towards its outskirts. Which affected the character of the inherited urban fabric of the city and its urban form, all visible. As these uses occupied an area of (143.4 hectares), which is equivalent to (2.41%) of the total area of the city and



(24.32%) of the land area of the city.

#### **Cemeteries: -**

During this stage, the cemetery occupied an area of land that amounted to (5.4) hectares, with a percentage of (0.1%) of the total area of the city and (0.92%) of the total land area of the city.

#### **Green areas and abandoned: -**

There is no doubt that most of the Iraqi cities are still below the required level in the investment of green and abandoned lands, which are of great importance for the comfort of the city's residents, especially in the desert areas with a hot dry climate, including the city of Al-Rutba, It appears from Table (17) that the green and abandoned lands occupied an area of (5370) hectares, which is equivalent to (90.1%) of the total area of the city.

#### **Conclusions:**

1- The study showed that all the master plans or basic designs that were developed for the city of Al-Rutba had a very important impact in addressing the major problems that accompanied the prevailing random growth, and giving the city its contemporary morphological character. Although the city was formed and established on the basis of random construction, the foundations of its construction and the scheme of its branches are characterized by openness to the roads and without deviations or closing one of the streets, and this is what draws attention on the basis of the design of the roads and their good civilized form. There are no closed alleys, but it was in the form of a planning that suggests a distance of sight and openness at the general civilized level, as it is the open, straight and wide streets for pedestrians and wheels.

2- The study revealed that the general morphological appearance during the first stage embodied the first nucleus for the emergence of the first architectural unit in 1926 AD in the city of Al-Rutba, and that it is one of the important stages in the life of the city because it carried with it the architectural heritage of the city and represented the basis of construction and architectural styles adopted in the later stages. The urban growth during the second morphological phase was also characterized by being faster than the growth witnessed by the city during its first period of growth, as the city witnessed irregular urban expansion and growth in land uses in a linear fashion along the main street.

3- During the third phase, the general morphological appearance of the city of Al-Rutba witnessed clear developments in the economic, social and political aspects that were reflected in the urban fabric and the general urban landscape of the city of Al-Rutba through the expansion of the construction of housing units and the development of new uses. As for the fourth phase, the functional and urban structure of the city witnessed a rapid expansion and away from the planning standards, adopting a growth pattern by jumping and a pattern of crawling from the city center towards its outskirts. At the end of this phase, the city became composed of (13) residential neighborhoods distributed within the city limits, in addition to the introduction of western designs on the housing represented by the ('Double Valium' It is a name given to very large houses) style, which gave the city a new morphological appearance that distanced it from its original Arab character and made it different from the previous stages.

#### **Recommendations:**

1- The concerned authorities should remove the abuses of government lands and streets and not consider them as a reality, and limit the random expansions in a way that guarantees the city a functional and urban development in line with the current and future economic and social developments. Through the formation of a working group from the municipality of Al-Rutba, their task is to prevent and remove the continuous cases of encroachment and not leave an opportunity to

create new encroachments by implementing strict laws and decisions against violators to preserve the urban appearance of the city.

2- Providing a green belt surrounding the city like eucalyptus trees to reduce the impact of dust storms on the city and work on afforestation of the main road and squares within the city's neighborhoods to give the area a beautiful morphological appearance.

3- Preserving the urban fabric in harmony with the architectural developments by adopting a technical and accurate strategy that preserves the old buildings that bear the identity of the authentic Arab style. Working on maintaining them and developing new designs for buildings that take into account the climatic conditions prevailing in the city and its urban fabric, in a way that makes it keep pace with the modern developments witnessed by the advanced cities.

4- The necessity of involving the city's community in solving its existing problems and the participation of specialists who are not related to the decision-makers and knowing their opinions and desires before making decisions regarding the expansion and development of the city, and not to be negligent in the application of the new basic design according to the legal use of each area of land and not to change the characteristics and functions of these uses, especially in the absence of Government oversight on itself first and on citizens second.

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