

DEMOCRATIC AND POPULAR REPUBLIC OF ALGERIA
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Institute of Architecture and Urbanism
MASTER THESIS (MEMORY) IN ARCHITECTURE
OPTION: URBAN ARCHITECTURE
WORKSHOP: URBAN PROJECT IN THE PERIPHERY

Theme:

**Consolidation of an urban center on the outskirts of the
town of Ouled Slama**

Architectural project : Sports center

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Thanks :

*We want to thank first of all **the god** who gave us strength, the courage and patience during our studies to arrive at that day.*

*We express our sincere thanks to our **parents** for their encouragement and their contribution for the work carried out.*

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Boumdel Rayan & Abed Soumia

Dedication

*In the name of **GOD** merciful and may the salvation of **GOD** be upon his prophet **MOHAMED***

I dedicate this modest work to the people who are most dear to me:

*To my **dear mother** who is the light of my life and the hope of my existence, source of dedication, courage and inspiration who sacrificed so much to see me reach this day.*

*To my **dear father** the one who returned me as I am and as he wishes, source of respect, in testimony of my deep gratitude for all the effort and the ceaseless support that has always brought me ...*

*To my **Fiance Hassen** source of hope and motivation source of happiness Your prayer and your blessing have been of great help to me in completing my studies.*

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Finally, I thank all those who have helped me, directly or indirectly, in the accomplishment of this job. And to everyone who knows me ...

And to you future architects.<3

Boumdel Rayan

Dedication

*In the name of **GOD** merciful and may the salvation of **GOD** be upon his
prophet **MOHAMED***

I dedicate this modest work to the people who are most dear to me:

*To my dear **mother**, in testimony and gratitude for her dedication and constant support during all my years of study, her unlimited sacrifice, her moral comfort and all the efforts she made for my education and instruction to see me succeed this day....no dedication can express the love, esteem and respect that I have always had for you .*

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Finally, to all those who have helped me, directly or indirectly, in the accomplishment of this job. And to everyone who knows me. May Allah bless you all.

And to you ... future architects

Abed Soumia

Abstract :

The countries of the world have seen a large-scale development movement with population growth, industrialization and urbanization, which have had a negative impact on agricultural land. This has been particularly damaging for developing countries that lack the means and capabilities to protect the environment and control urban mobility. Algeria is among the developing countries which is a prone to urban sprawl as a result of the growth of cities. In this sense our attention was focused on the situation of the town of Ouled Slama , the latter have a vocation purely agricultural which lost little by little its agricultural character after having been known as a very rich territory with agricultural land . And here comes the urban project with its solutions in the process of the fight against urban sprawl .

Keywords: Urban project, urban sprawl, urban consolidation, periphery, center, centrality....

Résumé :

Les pays du monde ont connu un mouvement de développement à grande échelle avec une croissance démographique, une industrialisation et une urbanisation qui ont eu un impact négatif sur les terres agricoles. Cela a été particulièrement dommageable pour les pays en développement qui manquent de moyens et de capacités pour protéger l'environnement et contrôler la mobilité urbaine. L'Algérie fait partie des pays en développement enclins à l'étalement urbain du fait de la croissance des villes. En ce sens notre attention s'est concentrée sur la situation de la ville de Ouled Slama, cette dernière a une vocation purement agricole qui a perdu peu à peu son caractère après avoir été connue comme un territoire très riche en terres agricoles. Et la vient le projet urbain avec ses solutions dans le processus de lutte contre l'étalement urbain.

Mots-clés: Projet urbain, étalement urbain, consolidation urbaine, périphérie, centre, centralité...

ملخص :

شهدت دول العالم حركة تنمية واسعة النطاق مع النمو الديموغرافي والتصنيع والتحضر والتي كان لها تأثير سلبي على الأراضي الزراعية. وقد كان ذلك مدمراً بشكل خاص للبلدان النامية التي تفتقر إلى الوسائل والقدرات لحماية البيئة والتحكم في التنقل الحضري. الجزائر هي واحدة من الدول النامية المعرضة للتوسع الحضري بسبب نمو المدن. وبهذا المعنى ، انصب اهتمامنا على حالة بلدة أولاد سلامة ، حيث أن الأخيرة لها مهنة زراعية بحتة فقدت شخصيتها تدريجياً بعد أن عرفت بأنها منطقة غنية جداً بالأراضي الزراعية. ويأتي المشروع الحضري مع حلوله في عملية مكافحة الزحف العمراني

الكلمات المفتاحية: المشروع الحضري ، الزحف العمراني ، التوحيد العمراني ، المحيط ، المركز ، المركزية...

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INTRODUCTION

Today's cities suffer from several problems, including urban sprawl, which is a powerful factor in eco-landscape fragmentation and a danger to biodiversity. This is because of accelerated artificialization of the territory which has many consequences and is particularly worrying from an environmental point of view.

To manage this phenomenon certain solutions are proposed such as the consolidation of existing cities, and balanced development throughout the territory.

Faced with these data ; the objective of our work is to:

- Find a solution to brake or to stop urban sprawl.
- Creation of new centralities on the outskirts.



CHAPTER I:
INTRODUCTORY

I.1. Introduction to the theme of the master ‘Architecture and Urban Project’:

The general problem of the Master ‘Architecture and Urban Project’ is part of the studies concerning the control of transformations of the urban form, within the morphological approach to the city and the territory.

It is part of the large body of critical urban research on the control and production of urban forms in reaction to the functionalist approach to production in the city of the 1950s and 70s which used the models of modern town planning.

It favors the territorial fund as the basis for the planning of urban areas and support (reservoir, matrix affected by multiple structures) to define and orient their development: the natural forces which have ensured in the past the organic development of cities will be highlighted to provide the necessary framework for understanding the relationships that these cities have with their territory.

Relying on the considerable capital of knowledge produced and accumulated over time by urban research, urban research is currently investing, in a particular way, in the field of new practices and new project instruments as well as new means of control of urbanization and its forms.

In this vast field (of control of urbanization and its forms), the master

‘Architecture et Projet Urbain’ raises in particular the specific issue of the capacity of the normative and regulatory planning instruments in force to formulate and produce adequate urban responses to the transformations that cities are experiencing in their centers and peripheries.

The practices of operational town planning (strictly programmatic and functionalist) require a critical attitude on the part of those involved in the city: it is the urban project which will constitute the specific contribution of the architect in the multi-faceted practice of town planning, corresponding to a new way of thinking about town planning.

The urban project then becomes an element of possible response for the reconquest of the manufacturing of the city in the face of the crisis of the architectural object and the crisis of town planning, which has become too regulatory.

More than a concept or a historical reading grid of urban phenomena, the notion of urban project was in the 1970s the expression which "crystallized the various aspects of the critique

of functionalist urbanism, and simultaneously, that which would express architects' demand for a return to the field of operational urban planning¹ ”.

During the following decade, among the different authors and theorists of the urban project, Christian Devillers will stand out on the architectural scene as author - and actor - whose epistemological contribution to the theme of the urban project will be the most consequent.²

After recalling the main qualities that make up the city: sedimentation, complexity, durability of forms for new uses, etc., Devillers will develop three aspects³ :

The first concerns a theory of urban form, the second addresses the methods of the urban project, while the third tackles the difficult question of institutional and procedural logics.

He will conclude by affirming that the urban project "is a thought of the recognition of what is there (...) of the foundations on which we rely to establish foundations for others who will come after": a conception of architecture in its relationship to place and history, ensuring sustainability and historical continuity

It is the alternative to town planning through the notion of 'Urban Project', which defines itself implicitly in all of these words which will allow us to build a substitution approach within which history and territory will constitute the essential dimensions.

In reality, the urban project today is a set of projects and practices that manage, in particular, public and private space, the urban landscape.

"Without reflecting a doctrine in the narrow sense of the term, the idea of an urban project nevertheless refers to a doctrinal point of view that we are trying to substitute for another: operational town planning, which can be expressed more or less according to thresholds⁴ . ".

It will then be a question, on the one hand, of developing the tools for defining, managing and controlling the urban form and of reintroducing the architectural and landscape dimension into urban planning procedures, and, on the other hand, locate the urban project approach between

In the approach of the master "Architecture and Urban Project", the analysis-project passage was a major educational concern in the teaching of the architectural and urban project.

¹Bonillo J. L., Contribution to a critical history of the architectural and urban project, Thesis of H.D.R., Laboratory INAMA, E.N.S.A. Marseille, (March 2011)

²Devillers, Ch., "The urban project", in Architecture: research and action, Proceedings of the conference of March 12 and 13, 1979 at Marseille / Palais des Congrès, Paris, Ministry of the Environment and the Living Environment, CERA / ENSBA. Concerning this author, see also: Devillers, Ch., Pour une urbanisme de projet, May 1983; and Conferences paris of architects, pavilion of the arsenal 1994 - Christian Devillers, The urban project, and Pierre Riboulet, The city like work, Paris, ed.From the Arsenal Pavilion, 1994.

³Intervention by Ch. Devillers in March 1979 at the conference entitled Architecture: Research and Action at the Palais des Marseille Congress

⁴Bonillo J. L., Morphological analysis and the urban project in Intergéo-Bulletin, 1995, n ° 118

In this register, we will quote Albert Levy and Vittorio Spigai [1989] in their “Contribution to the urban project”, which will privilege the historical dimension to ensure the passage between analyze and project: historical continuity should allow the “conformation” of the project to (and in) its environment.

This same concern is tackled by David Mangin and Pierre Panerai [1999] from another perspective: that of the reinsertion of built types, mainly produced by the building industry, in a logic of fabrics.

The history of cities, for its part, teaches us the permanence of the routes (roads, plots...) and the sometimes very rapid obsolescence of fabrics. It is therefore appropriate, starting from current production today (types, programs, financing and usual construction methods of average prime contractors) to work from a new perspective which includes from the outset a reflection on developments and possible transformations, of public and private origin. This attempt to update the mechanisms and techniques which made it possible to produce the cities, leads here to very pragmatic and practical indications (layouts, wefts, sizing, cutting up, terminology...).

The main objective of the Master 'Architecture and Urban Project' is part of a theoretical construction which makes the abandonment of the utopia of the functional city of the modern movement and the acceptance of the concrete city inherited from history , the essential reference of the master's approach. The city inherited from history is the obligatory context for the inscription of architecture. In return architecture ... builds the city.

The return to history does not mean, however, a 'simplistic' rejection of modernity for a nostalgic attitude towards old urban production: architectural and urban productions of the 20th century had the effect of a great critical evaluation of their models and methods , sparking numerous research avenues

During the 2019/2020 academic year and among the different perspectives from which the urban project was approached and developed, three themes were privileged:

- The Urban Project and the Urban Planning Instruments.
- The Urban Project in the historic center.
- The Urban Project on the outskirts.

Through the theme of the urban project, students will then be able to offer a territory for reflection and experimentation on the city.

Dr.Arch.M.Zerarka

Master degree holder (Architecture and urban project)

September 2020

I.2. Introduction to the intervention theme:

Consolidation of an urban center on the outskirts of the town of Ouled Slama

The concentration of population and commercial activities is recognized as one of the major trends in space occupation, it contributes to the emergence of new territories so-called peri-urban, the result of urban sprawl, most of the spaces occupied by this per-urbanization are former agricultural spaces the latter contributes an emerging a bad effect on all economic, social and environmental sectors, which changes the quality of life of the inhabitants to the worst.

The urban project is a thinking strategy that contains different solutions to those problems through an urban intervention, it is an architectural and urban expression of shaping the city that carries social, economic, urban and territorial issues.

one of these actions that comes as a solution given by the urban project is the urban consolidation which consists in optimizing the use of the territory in order to ensure profitability, to retain or attract new activities and to take advantage of the qualities of an already inhabited living environment (shops, public transport, mature trees, etc). Projects to improve public space, modifications to existing buildings, including architectural recycling, as well as integration and densification projects, ensure the sustainability and prosperity of the environments thus consolidated.

I.2.1. The choice of theme:

In the face of the spatial disparities that faced Algerian cities after independence, the government attempted to address this situation by redefining the territorial grid layout through four successive boundary changes to administrative divisions (1963, 1974, 1984 and 1997).⁵ but the latter concerns only the big cities in the north of the country which represent the major cities in Algeria like Algiers, Oran and Annaba as well, some medium cities like Skikda, Bejaia and Mostaganem, moreover, small towns have remained relatively neglected. As a result we have an uncontrolled urbanization of big cities and stagnation of small towns.

Consequently, several Algerian cities have undergone an uncontrolled growth on agricultural land (the plain of Mitidja) without meeting the needs of their inhabitants which

⁵BEREZOWSKA-AZZAG, Ewa (2001) Les instruments d'urbanisme de la période postindépendance et leur impact sur le développement spatial d'Alger. Cahiers de l'École Polytechnique d'Architecture et d'Urbanisme, vol. 10, no 9, Alger, p. 11.

caused a functional break between the historic centre and the outskirts of the city with the consumption of land randomly. For this we proposed to consolidate an urban center in the outskirts of the town of Ouled Salama.

I.2.2. The choice of site (The town of Ouled Slama):

The city is a complex environment which cannot however be reduced to a physical approach because the urban space is also the spatial translation of the organization in space and time of humans and their activities in a given context. This context is as much economic as political, social as cultural ...

while each city , agglomeration or town remains an essential element of analysis , for this we have found that the town of Ouled slama is an important site to analysis especially when it gradually loses its identity and suffers from urban sprawl on agricultural land due to several factors such as the (black decade , rural exodus ..) which causes economic, social and environmental problems.

I.2.3. Brief presentation of the town of Ouled Slama:

Ouled Slama was created in February **1984**⁶ during an administrative division; comes under the Daïra of **Bougara** after it was part of the letter (extension of **Bougara** to the east) . at a distance of approximately:

- **2.39** Km from the capital of **Bougara**.⁷
- **4.28** Km from the capital of **Larabaa**.⁸
- **26.41** Km from the capital of **Algiers**.⁹
- **24.88** Km from the capital of **Blida**.¹⁰

⁶ Master plan for development and town planning 2016 of the town of Ouled Slama

⁷ Master plan for development and town planning 2016 of the town of Ouled Slama

⁸ Master plan for development and town planning 2016 of the town of Ouled Slama

⁹ Master plan for development and town planning 2016 of the town of Ouled Slama

¹⁰ Master plan for development and town planning 2016 of the town of Ouled Slama

The town of **Ouled Slama** is located in the Wilaya of **Blida** in the East.

Administratively its chief town of commune is **Ouled Slama**, and its chief town of daïra is **Bougara**.



Figure I.1: Situation of the town of Ouled Slama in the Algerian territory.

Source: Google image processed by the author

I.3. The problematic :

I.3.1. Presentation of the general problematic :

More than fifty years after independence, Algerian cities still suffer from accelerated urban growth resulting in a high consumption of land resources. Such as the agricultural land of the Mitidja plain which is considered to be a territory rich in natural structure (main routes, cities, villages, etc.).

- After independence, the region knows a large migratory movement from all regions of the country. In 1966, it was the least rural region of Algeria¹¹.

¹¹ MATE et CAR/PAP, Programme d'aménagement côtier : Zone côtière algéroise, CAR/PAP, 2006

The urbanization of the plain then knows a certain stagnation until the beginning of 1980s, period from which the major urban centers know significant development, notably Blida and Boufarik, affected by very significant population growth; new urban centers have been created around the old colonial douars and farms . This urban expansion took place at the expense of the best agricultural land on the plain¹².

This phenomenon commonly known as urban sprawl. The latter, representing a major stake of the artificial occupation of the territory is defined by a rapid and horizontal development of the city and this, to the detriment of agricultural land and virgin land, also leading to a sprawl and dispersion of activities from the city to the periphery.

The space for agricultural use continues to decline regularly for the benefit of urbanization, which seems inexorable. For this, we have tackled the phenomenon of urban sprawl on agricultural land on a territorial scale (the Mitidja plain) in the general problematic .

Sprawl increased during the 20th century, due to poor urban planning and improper use of elements of urban composition.¹³

- **How can we slow or stop the urban sprawl on agricultural land that is present today in the heart of the cities and territories of Mitidja?**
- **How can the city be protected from urban sprawl by ensuring sustainable urban development?**

I.3.2. Presentation of the specific problematic :

Each city considered as a complex organism has general and specific problems and problematic and allowed the specific problematic of the town of Ouled Slama

The spontaneous occupation of the habitat, especially the proliferation of parcels located in the south of the Agglomeration chief town .

- The increase in individual housing outside the urban perimeter.
- The inexistence of an asserted core at the urban tissue of the chief town.

¹² MATE et CAR/PAP, Programme d'aménagement côtier : Zone côtière algéroise, CAR/PAP, 2006

¹³ <https://tel.archives-ouvertes.fr/tel-00553665/document>

- The lack in the road structure especially in the primary and secondary courses which ensures the link between the town of Ouled Slama and other cities.
- The deterioration of the existing road network: the existing tracks are impassable especially in winter.
- The existence of a big lack in terms of public and leisure spaces, play spaces, nodes , total inexistence of memory places in the town .
- The imbalance in the distribution of equipment ; from where the majority of equipment are located in the central part of the town .
- the decrease in agricultural land and the loss of the town's agricultural character.

In this sense , where we can consolidate another well-defined center in the town in order to improve the quality of life of residents while responding to their needs ?

I.4. The hypotheses :

Through the analysis of the current situation, the urbanization process requires a mastery of spatial organization in order to provide the town with all the amenities necessary for the best living conditions.

1-firstly, the solution seems to be to identify and organize anarchic urbanization which tends to consume the entire southern part.

2- Respond to the needs of the existing and proposed population in terms of housing, equipment and employment.

3- Protect agricultural land from urban sprawl by applying sustainable urban development, by consolidating natural (green and blue) and artificial (railway, tram, etc.) barriers ...

I.5.The research objectives:

The answer to these different problems constitutes the development scenario of the town of Ouled Slama where future actions will be determined. While our research objectives based on :

- The preservation of agricultural land in Mitidja and fight against urban sprawl.
- Involve the town in regional development

- Creates a link between the town's center and its outskirts.
- Reclassify public spaces in the town.
- Respond to the needs of the population and improve the living environment of the inhabitants.

I .6. Brief presentation of the methodological approach:

Firstly, our approach is based on a bibliographic research will be carried out through the reading of the various books, master theses , doctoral theses relating to the thematic of our studies which is at the level of the library central of the university of Blida and the library of the institute of architecture and town planning of Blida and the library of the EPAU coupled with the exploration of the various internet sites to get out magazines and articles in order to enrich and subtract from them the methods used in the projects which are part of our research project "urban project and periphery".

Secondly, our approach is based on the consultation of the various administration which has a relation with town planning such as the URBAB in charge of town planning studies at the level of the town of Blida, the DUC and the cadastre of Blida, the APC of Ouled slama, the APC of the city of Arbaa and Bougara. Used to collect cartographic and manuscript data. then our approach requires a site visit for site recognition, and to see its natural morphology.

The theoretical phase: consists in defining the various concepts covering the theoretical part, the question will be in the first chapter to identify the research theme as well as the presentation of case studies then in the second chapter to develop the meaning of the relative concepts to the research topic.

The conceptual phase: this work is based on a scientific method in order to achieve the objectives set for this, we base ourselves in these studies on a theoretical concept which is the "Typo morphological" approach through an analysis:

Territorial: to understand the relationship between the natural environment and the urban framework or the impact of the site's geomorphology on the urban settlement of Ouled Slama.

- **Diachronic:** in order to know the evolution of the urban structure, its formation, its deformation and its growth mechanisms.

- **Synchronous:** to detect when the crisis of modern town planning started and its impact on the town .

here is a small schema which summarizes our methodological approach:

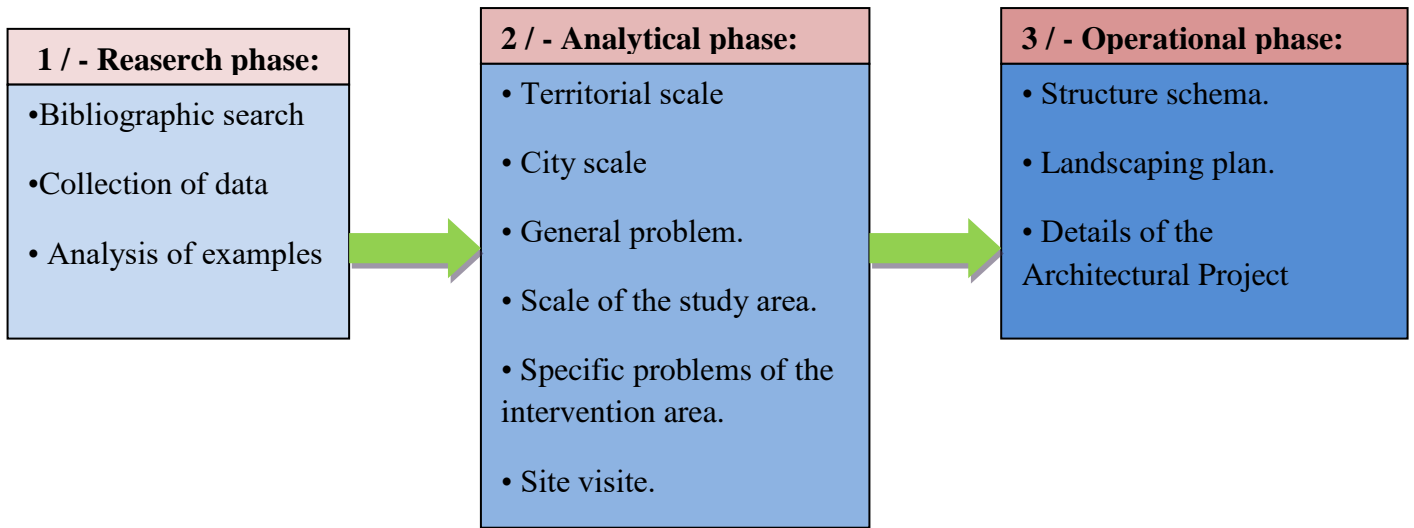


Figure I.2: Schema of the methodological approach

Source: authors

I.7. Presentation of the content of each chapter:

- **The first chapter entitled: "introductory"** generally presents our problematic which will address the various questions related to how to integrate an urban project in the town of Ouled Slama and more precisely on the scale of the outskirts of the town . This chapter also discusses our project and our motivations, as well as the methodology followed.

- **The second chapter entitled: "state of the art "** will define the concept of consolidation of an urban center on the outskirts of the town , its aspects, objectives and the principles to be taken into account to design this type of project, demonstrate it by sources such as books, articles, theses and concrete examples which are closest to our approach.

- **The third chapter entitled: "Case of study"** allows us to locate the urban context, define by analyzing the town and the site, which allows us to bring out the most persistent components and come to a conclusion.

Make a written and graphic presentation of the project ideas, the design process which will be exposed through illustrations and arguments in relation to urban and architectural choices.



CHAPTER II :
STATE OF THE ART

II .1 . Introduction:

Cities are rapidly changing all over the world as urban populations grow. Urban consolidation has become a common planning response. It focuses on concentrating growth in existing urban areas. This involves the delivery of higher-density housing and mixed-use developments.

Urban consolidation is often advocated as a neat solution to increasing populations, decreasing housing affordability and unsustainable urban sprawl. It is now a key planning policy in many cities, including all of the capitals.

To determine the fundamental concepts which has a relation with our study theme " The consolidation of an urban centre in the outskirts of the town of Ouled Slama " we had to understand the key concepts and clarify them . In the state of the art chapter, our approach will focus on a conceptual study and another theoretical spread over two parts :

- the first aims to define and clarify the key concepts, ideas and concepts of research.
- the second concerns a thematic analysis on the projects which deal with the same problematic of our research.

II .2 . Definitions of main research concepts of the urban project :

This research revolves around the following concepts : urban consolidation , urban densification , urban project, urban sprawl , center, centrality, periphery, piedmont urbanization , peri-urbanization , urban agriculture , sustainable , development ..

II .2.1.Urban consolidation :

II .2.1.1. Definitions : ¹⁴

Urban consolidation refers to a diverse set of planning policies intended to make better use of existing urban infrastructure by encouraging development within existing urbanised areas rather than on non-urbanised land, thus limiting urban sprawl. It is the building of higher density housing in existing areas of a city in order to increase population density. Urban Consolidation involves increasing the number of houses or units within existing areas so they can have more efficient use of services and reduce the overall impact on the environment. Urban Consolidation is touted as a means to reduce the total amount of land needed to house the population.

There are broadly three kinds of urban consolidation:

- **Market-led consolidation** of existing residential areas involves residential redevelopment of established dwellings as well as non-residential land and buildings at higher densities than the metropolitan average.

¹⁴<https://www.definitions.net/definition/urban+consolidation>

- **Transit-oriented development** is a type of urban development that maximizes the amount of residential, business and leisure space within walking distance of public transport.¹⁵ It promotes a symbiotic relationship between dense, compact urban form and public transport use.¹⁶ In doing so, **TOD** aims to increase public transport ridership by reducing the use of private cars and by promoting sustainable urban growth.¹⁷

A TOD typically includes a central transit stop (such as a train station, or light rail or bus stop) surrounded by a high-density mixed-use area, with lower-density areas spreading out from this center. It is also typically designed to be more walkable than other built-up areas, through using smaller block sizes and reducing the land area dedicated to automobiles.¹⁸



Figure II.1: The local government of Arlington County, Virginia encourages transit-oriented development

Source: Google image

- The third approach is to require that all new development on **the urban fringe** of existing metropolitan areas is at higher densities than the current average for those cities.

also known as the outskirts, suburban, peri-urban or the urban hinterland, can be described as the "landscape interface between town and country",¹⁹ or also as the transition zone where urban and rural uses mix and often clash.²⁰ Alternatively, it can be

¹⁵Calthorpe, Peter (1993). *The Next American Metropolis: Ecology, Community, and the American Dream*. New York: Princeton Architectural Press. ISBN 9781878271686.

¹⁶Caves, R. W. (2004). *Encyclopedia of the City*. Routledge. p. 676. ISBN 978-0415862875.

¹⁷Robert Cervero, Chris Ferrell and Steven Murphy (2002). *Transit-Oriented Development and Joint Development in the United States: A Literature Review*, Research Results Digest Number 52, Transit Cooperative Research Program.

¹⁸"Transit-Oriented Development (TOD)". www.sustainablecitiesinstitute.org. Archived from the original on December 20, 2016. Retrieved December 15, 2016.

¹⁹<http://www.teignbridge.gov.uk/index.cfm?Articleid=2803> Archived March 11, 2007, at the Wayback Machine

²⁰Griffiths, Michael B.; Chapman, Malcolm; Christiansen, Flemming (2010). "Chinese consumers: The Romantic reappraisal". *Ethnography*. 11 (3): 331–357. doi:10.1177/1466138110370412.

viewed as a landscape type in its own right, one forged from an interaction of urban and rural land uses.



Figure II.2: The rural-urban fringe of Bacchus Marsh, Victoria, Australia.

Source: Google image .

II .2.1.2. History:

The term "**urban consolidation**" first appears in social science and urban planning literature around the late **19th** and early **20th** centuries. Much of the existing literature on urban consolidation comes from Australia; some of the world's first government-official urban consolidation policies were enacted in Sydney and Melbourne to increase construction of higher-density terrace housing in the late **19th** century.²¹ Throughout the 20th century, implementation of urban consolidation policies appears to come in 'waves', separated by population surges stemming from major events like World War I and II. Urban consolidation policies began to appear in the United States around the same time, with one of the earliest examples being a proposal for the consolidation of railroad lines in Iowa and Minnesota to increase the capacity and efficiency of existing passenger and freight traffic.²²

II .2.1.3. The objectives of urban consolidation:

The consolidation of urban areas seeks to optimize the occupation of space and the use of infrastructure, equipment and public services, by (re) developing more compact neighborhoods, supporting a diversity of activities and modes of transport. By building on the qualities of already urbanized environments, they seek to exploit them and make the most of them for a greater number of people. They can, among other things, participate in

²¹Troy, Patrick Nicol (1996-01-01). The perils of urban consolidation : a discussion of Australian housing and urban development policies. Federation Press. ISBN 9781862872110. OCLC 35570982.

²²Richard H. Zeitlan, "Prairie du Chien: Urban Consolidation and Decline, 1858-1930," July, 1980, unpublished report for U.S. Army Corps of Engineers, St. Paul, p. 8.

strengthening urban and local centralities, make profitable urban infrastructure and public transport, and facilitate access to shops, services and facilities for the entire population.



Figure II.3: Consolidation of a main street .

Source: living in the city, adapted by the authors, available at:
<http://collectivitesviables.org/articles/consolidation-et-requalification-urbaines.aspx>

II .2.1.4. Limits of Urban Consolidation:

Although urban consolidation policies may have many positive social, economic, and environmental effects, there are limits to the extent of its benefits. Efficiency is a key feature of urban consolidation, but the aspect of infrastructure capacity is often overlooked. As a city's infrastructure is used by an increasing number of people, the systems must be upgraded and retrofitted, a process which can cost hundreds of millions of dollars. Falling under this category of 'capacity' are common features of civilization, such as roads, drainage systems, and open spaces. Roads in areas with urban consolidation policies are often overburdened with increased intercity traffic in addition to the preexisting suburban commuter traffic, and this problem is not always easily solved with transit-oriented development. Drainage systems are severely impacted by higher populations, potentially leading to increased flooding and pollutant runoff. Open spaces in high-density urban areas often conflict with urban consolidation policies; residents of high-density areas require a significantly higher amount of open space, but this would limit development of consolidation-oriented housing and transportation.²³

²³Searle, Glen (2004-01-01). "The limits to urban consolidation". *Australian Planner*. 41 (1): 42–48. doi:10.1080/07293682.2004.9982332. ISSN 0729-3682.

II .2.1.5. A variety of interventions to consolidate living environments:

Rebuilding the city on its own is the result of a combination of various interventions. Improvements to open space, modifications to existing buildings and the insertion of buildings into the existing grid (see the table below) are different ways of consolidating and re-qualifying urban environments. Implemented with sensitivity for the host environment, on an ad hoc or grouped basis, these interventions have the potential to structure and connect the environment, as well as to intensify its activities.

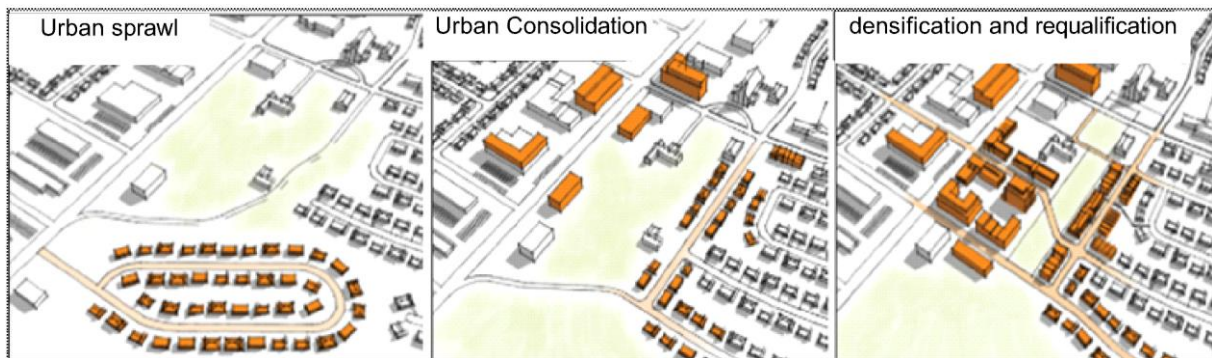


Figure II.4: tissue consolidation and densification

Source: urban life, adapted by the authors, available at:

<http://collectivitesviables.org/articles/consolidation-et-requalification-urbaines.aspx>

Reinventing public space and interfaces	Optimizing existing buildings	Complete the built framework
<ul style="list-style-type: none"> ▪ Strategy 1: protection of natural and agricultural environments. ▪ Strategy2: permeabilization of the environment ✓ Creation of pedestrian and cycling connections ✓ Restructuring of the road network ✓ Reclassification of linear infrastructures ✓ Networking of open public spaces ▪ Strategy 3: ✓ creation and improvement of public spaces ✓ Redevelopment of 	<p>Strategy 1: subdivision of existing buildings</p> <p>Strategy 2:</p> <ul style="list-style-type: none"> ✓ adaptation to buildings for addition of area and occupants ✓ Building raising ✓ Extension of building with change of footprint. <p>Strategy 3:</p> <ul style="list-style-type: none"> ✓ recycling of buildings with change of vocation (conversion) ✓ Recycling for institutional, commercial and 	<p>Strategy 1: building replacement for densification</p> <p>Strategy 2: addition of new buildings</p> <ul style="list-style-type: none"> ✓ Construction on plots from a reconfiguration of the roads ✓ Construction of land resulting from fragmented parcels ✓ Construction on vacant plots and surface parking areas ✓ Overall projects

<p>open spaces without vocation</p> <p>✓ Redistribution of road space</p> <p>✓ Establishment of shared streets</p>	<p>office use</p> <p>✓ Residential recycling</p>	
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Table II.1: diversity of intervention to consolidate urban areas

Source : urban life, adapted by the authors, available at:

https://vivreenville.org/media/441285/vev_croitre_sans_setaler1_extrait.pdf

II .2.2. Urban densification:

II .2.2.1. The density term:

Density is a "quality of that which is dense, of that which is made of many and tight parts, which contains a lot of matter relative to the space occupied".

As Anastasia Touati explains in the introduction to the folder "Remaking the city on the city: controversies and forms of residential densification", "an often imprecise term used in the fields of town planning, urban economy or geography, urban density expresses a theoretical relationship between a quantity (number of inhabitants, number of jobs, housing or even a number of m² of floor space, for example) and the space occupied (gross or net land area). There is therefore no single urban density.²⁴

Anglophones admit a difference between "density" and "crowding":

- ✓ Density: refers to the building, this concept corresponds to the construction density, its indicator is the ground cover coefficient .
- ✓ Crowding: refers to users, corresponds to a human density. Population density expresses a relationship between the number of inhabitants and the space they occupy.

²⁴Catalina Duque Gómez, Urban Density, Cities and Territories Governance (CITEGO), December 2015, available at: http://www.citego.org/bdf_fiche-notion-1_fr.html

II .2.2.2 Density indicators: ²⁵

There are different indicators of density at the city level:

- ✓ Population density = number of inhabitants' / land area
- ✓ Employment density = number of jobs / land area
- ✓ Built density (ground cover coefficient)= floor area / land area

These indicators are complementary, but an area can be dense in terms of employment and weakly in terms of housing, or vice versa. These indicators are more or less relevant depending on the scale to which they are applied (country, metropolitan area, district, block).

II .2.2.3 Perceived / real density:

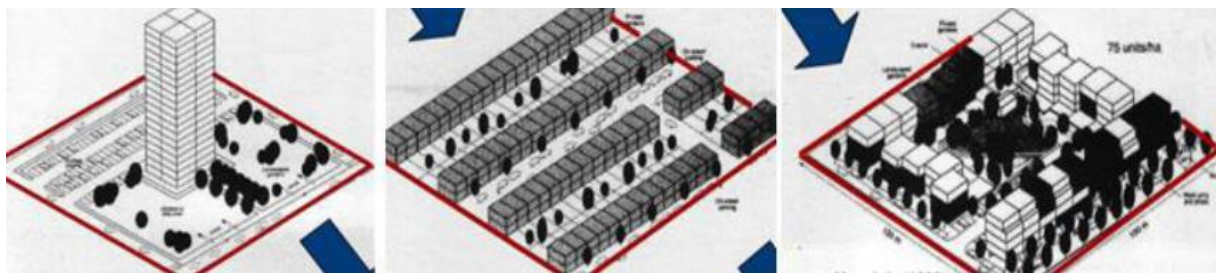


Figure II.5: Perception of urban space for the same density

Source: international workshop - TOKYO - MASTÈRE AMUR - 2009-2010 available at:

http://www.pdfichier.com/PDF_Doc_Telecharger_4.php?Pdf_Doc=27056&PDF=densit%C3%A9_d%C3%A9finition_g%C3%A9ographie

The concept of density also refers to perceptions of urban space. The perception of density is very little connected with real and objective density as it can be measured. The population generally rejects this notion of density and studies have shown that the inhabitants quite spontaneously associate density with towers, with bars. For the same density (ex: 75 dwellings / ha, figure below) the perception of crowding varies according to several factors, many of these elements will have a real importance as for the perception and the acceptance that the population density: presence of green spaces, feeling of security, access to ventilated and bright housing, quality architecture and development, variety of spaces,...²⁶

²⁵RAPHAELLE BERNABEI - BENJAMIN BOSSELUT, LA FABRIQUE DE LA DENSITE, ATELIER INTERNATIONAL - TOKYO - MASTÈRE AMUR - 2009-2010 - VENDREDI 05 MARS 2010 - ANALYSE THÉMATIQUE, disponible à : http://www.pdfichier.com/PDF_Doc

²⁶ RAPHAELLE BERNABEI - BENJAMIN BOSSELUT, THE DENSITY FACTORY, INTERNATIONAL WORKSHOP - TOKYO - MASTÈRE AMUR - 2009-2010 - FRIDAY 05 MARCH 2010 - THEMATIC ANALYSIS, available at: http://www.pdfichier.com/PDF_Doc_Telecharger_4.php?Pdf_Doc=27056&PDF=density%C3%A9_d%C3%A9finition_g%C3%A9ographie

II .2.2.4.Intensification:

Intensifying consists of densifying a neighborhood, intensifying urban life over time, in choice, in attendance, three principles of urban space intensification can be identified see the table below: ²⁷

Principle	Actions	Illustration
Densification of urban fabric	Mobilization of vacant plots in urban spaces. This approach is part of the existing fabric and may be linked to changes in the rules of constructability, to a reorganization of public space or to the expansion of plots (in the case of Tokyo) or to the valuation of the real estate markets.	
Reconstruction	The reconstruction corresponds to a renewal of real estate. Reconstruction can lead to a change of destination or diversification of activities reconstruction is closely linked to the obsolescence of the building	
Change of use	Business and industrial sites are particularly interesting for this type of intensification, which allows activities to be diversified. The changes of use can lead to modifications of the building without, however, requiring demolition This approach is closely linked to a heritage vision of the building and is favored by the context of sustainable development (economy linked to reconversion, anticipation of changes in uses, etc.).	

Table II.2: principles of intensification

Source: international workshop - TOKYO - adapted by the author available at:

http://www.pdfichier.com/PDF_Doc_Telecharger_4.php?Pdf_Doc=27056&PDF=densit%C3%A9_d%C3%A9finition_g%C3%A9ographie

II .2.2.5.The objective of urban densification:

Densification is an optimization operation with the objective of rationalizing the occupation of space according to a number of viability criteria. Some urban actors call it urban planning, while others consider it a technique of urban engineering. The study can concern a new densification or an existing densification to bring it an improvement

²⁷ http://www.pdfichier.com/PDF_Doc_Telecharger_4.php?Pdf_Doc=27056&PDF=densit%C3%A9_d%C3%A9finition_g%C3%A9ographie

Physically, the densification operation consists in placing a mass on a space and the mass / space ratio will be a criterion of appreciation to judge whether the space in question is weakly, strongly or moderately densified .²⁸

Densification is a process promoting the occupancy and optimal use of existing buildings (extensions, use of attics, elevations, changes of use, etc.).

II .2.2.6.The intervention methods of urban densification:²⁹

The achievement of densification will depend on the relationship between the habitat and the outdoor space, the service, the presence of collective facilities or green spaces, the topography, as well as the architectural quality of the surrounding built fabric; in other words, the existing built and social context: densification and the quality of urbanization are notions to be closely linked. In this sense, the actions must be adapted to each urban situation. Densification can be:

- **Radical** (demolition / reconstruction);
- **Intermediate** (plot changes, groupings of plots, changes in the construction order, exemptions for infill constructions);
 - **Slight** if it is necessary to preserve the character of a district and meet the immediate needs of its occupants (additional buildings, fitting out of the attic, integration of apartments for young people and seniors in the villas)

II .2.2.7.The potential for densification:

The densification of the existing urban fabrics holds considerable potential and opportunities to be exploited on all levels: environment, economy and society. Today, recourse to the process of urban densification is strongly required with a view to the sustainable development of our cities. Current trends are increasingly moving towards a return to the compact city.

See the table below which represents the potentialities of densification in the three environmental, social and economic plans :

²⁸ B. El KECEBOUR N. LARADI, "Evaluation of urban densification using the orthogonal plane grid", Sciences & Technologies B - N ° 25, June 2007, 25-33.

²⁹ Agency Luc Malnati & Leonard Verest "Basis-densification study", Construction and Planning Department, Canton of Friborg, July 11, 2014.

The plan	Potentiality
Environmental	Protection of natural spaces and agricultural land by fighting against urban sprawl and the artificialization of soil which is a non-renewable resource, reducing CO2 emissions by reducing the use of private cars including the distances traveled in dense spaces are short, which reduces dependence on vehicles in favor of soft modes of transport: walking, bicycles, public transport.
Economic	The transformation of artificial territories (by densification of already existing fabrics, occupation of unused urban pockets, etc.) appears to be much greater than the production of new urbanized fabrics by sprawl (new towns, residential centers, etc.): the reduction in public expenditure by service networks, roads ...
Social	Thus this action can meet the needs of residents in terms of housing and promote social and functional diversity through support equipment, offers profitable and high-performance local services. It is also an opportunity to rehabilitate public spaces, offering prospects for change and renewal of urbanized sites, without increasing the nuisance, which produces an urban space appreciated by the inhabitants.

Table II.3 The potential for densification in the three plans

Source: Thesis of AMICHE Ayoub, BELKHIRI Sid Ahmed.

II .2.2.8. Urban densification environments:

If you want to densify, it is first necessary to determine the places where densification is relevant in terms of building potential, profitability, but also implementation potential. The different types of spaces appear to be key spaces by their potential:

A. Degraded neighborhoods:

Through the urban renewal policy, actions in degraded social housing neighborhoods initially make it possible to open up the neighborhood and bring a certain urban quality to it through the requalification of public spaces and buildings; and secondly, to integrate functions other than housing and to develop land for densification of the neighborhood.

B. Major urban axes:

By the creation of trams or the requalification of road axes; are approaches offering the possibility of densifying the surrounding spaces.

C. Diffuse space:

The space with the most potential for intensification. On average, half of the construction is done in the diffuse. The challenge for the municipalities is to build on this potential and to ensure the quality of the operations carried out as well as the functional and social mixes, and this, through a local urban plan which makes it possible to set up this strategy.



Figure II.6: Diffuse urban fabric.

Source: ADEUS, 2016. Available at: www.adeus.org

D. Large mutable or fallow areas: ³⁰

There is no official definition of wasteland and it is not a legal concept. It is part of the exercise of land and real estate property rights, but also of environmental law. According to the territories, their problems and their objectives, there are thus multiple definitions of wasteland. However, it is always defined according to the same criteria:

- ✓ The temporality of the vacancy (unoccupied land or building),
- ✓ The area of the land or land unit,
- ✓ The old use
- ✓ The presence of frame or not.

II .2 .3. Urban project :

II .2.3.1. Definitions :

The urban project is a thought out and drawn strategy of the city, it is an architectural and urban expression of shaping the city which carries social, economic, urban and territorial stakes.

"The urban project is not a single profession but a skill, it is not a solution but an improvement, it is not a procedure but an approach that requires a culture, an ambition and a vision to long term, and propose to define the specific nature of the urban project based on an

³⁰ Caen Normandy Metropole Urban Planning Agency, wasteland: between constraints and potential for urban renewal, June 2016, available at: http://www.etudesnormandie.fr/upload/crbn_cat/1/1140_3442_ObsFoncier02_friches.pdf

understanding of the urban phenomenon and as a combination of several times and several spaces. "³¹

“ The urban project is both a concerted process and a territorial project: it consists in defining and implementing development measures on a given urban territory, in partnership with all the civil and institutional partners concerned, integrating the different scales and the long term, with a view to sustainable urban development. ” ³²

"The urban project can be defined as a complex operation, in an operator ensuring overall project management, and which brings together various projects in a program, a plan, overall forms, these projects are developed and are defined during a process which associates local elected representatives, developers and designers and which is punctuated by numerous negotiations between all the actors involved in the project. ” ³³

II .2.3.2. The principles of the urban project: ³⁴

To make an urban project it is necessary to follow its principles to obtain the best results and allow its principles:

- The urban project is thought of both as a process and result, and not as a result without its process (its means and its paths).
- The urban project is thought out with the existing city (and not against it or outside it), as a reproduction of the city on itself, not as a growth or spread of the city ("build the city on the city" , substitution: role of the plot of the trace and the traces).

II .2.3.3. The characteristics of the urban project: ³⁵

The main characteristic of urban projects resides in the fact that each operation is nourished by the specific characteristics of the intervention place. We can still observe some constants:

- **Improvement of an existing situation:** the urban project is an improvement of a given situation. It reclassifies places by giving them value.
- **Process of actions:** The urban project should not be conceived as a pretty frozen image but as a process of concrete and dynamic actions which are carried out on a well defined urban tissue which is part of the duration.
- **Global operation:** A complex operation which includes social, economic, urban and environmental aspects and its implementation spans several time and territorial scales.
- **An objective of result:** The urban project stands from the simple orientation, very answered in the management of territories through urban planning, by the fact that it

³¹ Christian Deviller, Extract from the Urban Project '2nd edition of the arsenal pavilion, Paris, 1996

³²Definition of the urban project by Dind Jean Philippe, 2011

³³Ascher, François, professor at the French Institute of Urban Planning and at the University of Geneva.

³⁴MOUDJARI, Messaoud et DAHMANI, Krime, "Projet urbain", Edition office des publications universitaires, (2016), p.70-72.

5 Moudjari.M, Dahmani K, Projet urbain : effience d'un paradigme conceptuel de l'habitat durable

has an objective of result which is formulated and more often than not an idea, or even a foreshadowing of the future state sought.

- **A thought of relationship:** It is not erected as a method, but as a series of multidisciplinary approaches. This intersection of discipline implies being situated in a logic where the urban project does not precede the program, but generates it thanks to its prospective capacity. The urban project involves working from a transversal perspective, as well as (project owners, professionals, private sphere). The urban project was born from the meeting of different disciplines.
- **A sustainable development strategy which integrates the different territorial scales:** the aims of the urban project are operational and must accompany the physical and societal transformations of the city. It presents itself as a conceptual tool that suggests operating modes through the analysis of urban tissue . It is a question of grasping urban realities on different scales, in all their dimensions, by exploring their historical, social, geographic, economic, cultural characteristics, in order to identify the causes of their possible dysfunctions and to operate a reversal by transforming the field of constraints into a field of possibilities.

II .2.4.Urban sprawl :

II .2.4.1. Definitions :

Urban sprawl or suburban sprawl mainly refers to the unrestricted growth in many urban areas of housing, commercial development, and roads over large expanses of land, with little concern for urban planning ³⁶. In addition to describing a particular form of urbanization, the term also relates to the social and environmental consequences associated with this development³⁷. In the postindustrial era , sprawl has entailed no clear-cut disadvantage, such as the loss of protection, nor resulted in a uniquely identifiable cost such as investment in new fortification, however its disadvantages and costs include increased travel time, transport costs, pollution, destruction of countryside, and so on...

Urban sprawl is the propensity of urban centers to grow and develop over very large areas. While some use this term interchangeably with that of peri-urbanization, others make the distinction: urban sprawl is an urban extension in continuity with the compact city, on the other hand, peri-urbanization is an urban extension in discontinuity.

Urban sprawl is a form of urban growth but should not be confused with it: urban growth can be achieved without the need to increase the surface area of the urban area, but by densifying the existing urban fabric.

³⁶ Fouberg, Erin Hogan (2012). Human geography: people, place, and culture. Murphy, Alexander B.; De Blij, Harm J. (10th ed.). Hoboken: Wiley. p. 560.

³⁷ Sarkodie, Samuel Asumadu; Owusu, Phebe Asantewaa; Leirvik, Thomas (March 5, 2020). "Global effect of urban sprawl, industrialization, trade and economic development on carbon dioxide emissions"

- “ uncoordinated growth: the expansion of community without concern for its consequences, in short, unplanned, incremental urban growth which is often regarded unsustainable. ” ³⁸



FigureII.7: Urban sprawl in northwest Calgary-Alberta-Canada

Source: Google image

II .2.4.2.The causes of urban sprawl: ³⁹

Urban sprawl and space consumption resulting from several cumulative causes. These phenomena can be explained in particular by the insufficiency and inadequacy of the supply in relation to the demand for housing in large metropolitan areas and by a propensity of construction players to opt for peri-urbanization at the expense of intensification and the renewal of urban centers, mainly for reasons of financial feasibility and the weakness of the adapted land offer.

II .2.4.3. Consequences of urban sprawl:

The urban sprawl has the consequences:

- ✓ Rurbanization lifestyle .
- ✓ Distance from living quarters to workplaces.
- ✓ Increase in common transport and network infrastructure.
- ✓ Increased impact of pollution.
- ✓ Conflicts between farmer and new rural.
- ✓ Landscape destruction / biodiversity loss.
- ✓ Destruction of agricultural land.

³⁸Batty, Michael; Besussi, Elena; Chin, Nancy (November 2003). "Traffic, Urban Growth and Suburban Sprawl" (PDF). UCL Centre for Advanced Spatial Analysis Working Papers Series. 70. ISSN 1467-1298. Archived from the original (PDF) on September 26, 2015. Retrieved May 17, 2015.

³⁹<https://www.cohesion-territoires.gouv.fr/lutte-contre-letalement-urbain-et-preservation-des-paysages-et-de-la-biodiversite>

II. 2.4.4. The Impacts of Urban Sprawl:⁴⁰

The urban sprawl is generally characterized by:

- low-density development that is dispersed and situated on large lots .
- geographic separation of essential places such as work, home, school, and shopping.
- high dependence on automobiles for travel.
- increased impervious surface area in watersheds.
- habitat fragmentation and degradation.

He have a big impact on :

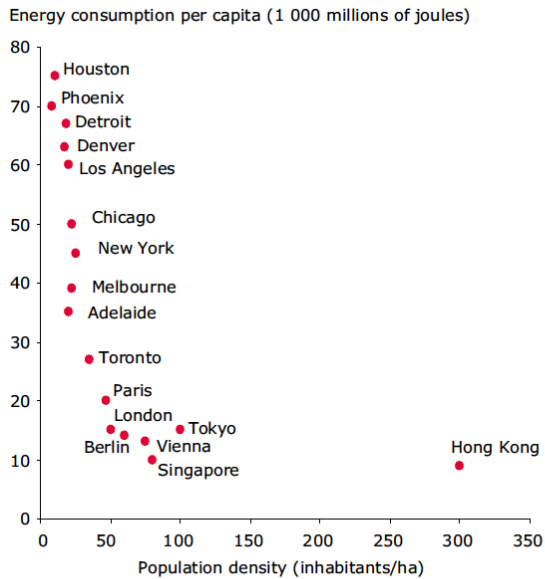
A. Health:

If communities are not walkable or bikeable, we need to drive to schools, shops, parks, entertainment, play dates, etc. Thus we become more sedentary. Residents of sprawling counties were likely to walk less during leisure time and weigh more than residents of compact counties. A sedentary lifestyle increases the risk of overall mortality, cardiovascular disease, and some types of cancer. The effect of low physical fitness is comparable to that of hypertension, high cholesterol and diabetes.

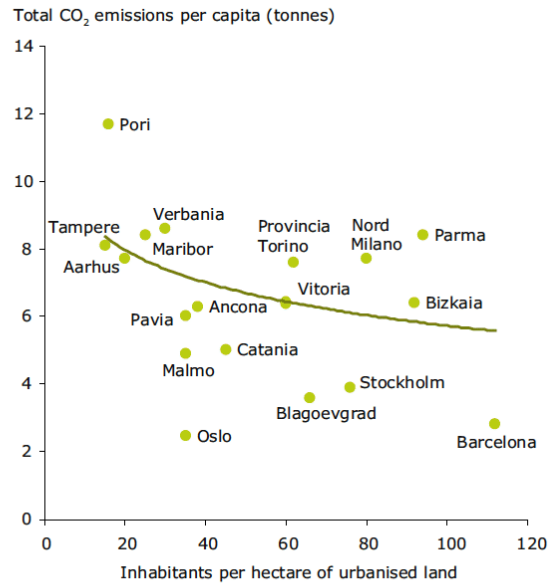
B. Consumption of Energy:

consequence of the increasing consumption of land and reductions in population densities as cities sprawl is the growing consumption of energy. Generally, compact urban development's with higher population densities are more energy efficient. Evidence from 17 cities around the world shows a consistent link between population density and energy consumption (Figure below), and in particular high energy consumption rates that are associated with lower population densities, characteristic of sprawling environments, dependent on lengthy distribution systems that undermine efficient energy use.

⁴⁰<https://courses.lumenlearning.com/suny-monroe-environmentalbiology/chapter/17-3-the-impacts-of-urban-sprawl/>



Source: Adopted from Newman, P. and Kenworthy, J., 1999.



Source: Adopted from Ambiente Italia, 2003.

Transport related energy consumption in cities depends on a variety of factors including the nature of the rail and road networks, the extent of the development of mass transportation systems, and the modal split between public and private transport. Evidence shows that there is a significant increase in travel related energy consumption in cities as densities fall. Essentially, the sprawling city is dominated by relatively energy inefficient car use, as the car is frequently the only practical alternative to more energy efficient, but typically inadequate, relatively and increasingly expensive public transportation systems. Increased transport related energy consumption is in turn leading to an increase in the emission of CO₂ to the atmosphere. Urban sprawl therefore poses significant threats to the commitments to reduce GHG gas emissions.

C. Air pollution:

Using fossil fuels also results in the emission of other gases and particulates that degrade air quality (note that commuters generate emissions of air pollution, which lowers the ambient quality of the air in areas they pass through and causes health problems for other people). Longer transportation distances intensify traffic congestion, resulting in lost productivity, and increase the need for more extensive infrastructure (such as more highways)



Figure II.8: Sprawling area.

Source: Google image

that negatively impact the environment by increasing the amount of impervious cover and by requiring more natural resources. Finally, traffic congestion and air pollution from driving contribute to an estimated 900,000 fatalities per year worldwide.⁴¹

D. Natural and Protected areas:

The impacts of sprawl on natural areas are significant. The considerable impact of urban sprawl on natural and protected areas is exacerbated by the increased proximity and accessibility of urban activities to natural areas, imposing stress on ecosystems and species through noise and air pollution. Immediate impacts such as the loss of agricultural and natural land or the fragmentation of forests (Figure below), wetlands and other habitats are well known direct and irreversible impacts. Urban land fragmentation, with the disruption of migration corridors for wildlife species, isolates these populations and can reduce natural habitats to such an extent that the minimum area required for the viability of species populations is no longer maintained.



Figure II.9: Forrest fragmentation.

Source: Google image

The environmental impacts of sprawl are evident in a number of ecologically sensitive areas located in coastal zones and mountain areas. The Mediterranean coast, one of the world's 34 biodiversity hotspots, is particularly affected, and the increased demand for water for urban use, competes with irrigation water for agricultural land. This problem has been exacerbated by the increased development of golf courses in Spain⁴², where the over-extraction of groundwater has led to salt water intrusion into the groundwater. Increased transit and tourist traffic, particularly day tourism from the big cities, also adds to the exploitation of the mountain areas as a natural resource for 'urban consumption' by the lowland populations.

⁴¹<https://courses.lumenlearning.com/suny-monroe-environmentalbiology/chapter/17-3-the-impacts-of-urban-sprawl/>

⁴²<https://courses.lumenlearning.com/suny-monroe-environmentalbiology/chapter/17-3-the-impacts-of-urban-sprawl/>

E. Rural Environments:

The growth of European cities in recent years has primarily occurred on former agricultural land. Typically, urban development and agriculture are competing for the same land, as agricultural lands adjacent to existing urban areas are also ideal for urban expansion. The loss of agricultural land has major impacts on biodiversity with the loss of valuable biotopes for many animals, and particularly birds. Sprawling cities also threaten to consume the best agricultural lands, displacing agricultural activity to both less productive areas (requiring higher inputs of water and fertilisers) and more remote upland locations (with increased risk of soil erosion).

F. Soil:

Urban sprawl and the development of urban land dramatically transform the properties of soil, reducing its capacity to perform its essential functions. These impacts are evident in the extent of compaction of soil leading to impairment of soil functions; loss of water permeability (soil sealing) which dramatically decreases; loss of soil biodiversity, and reductions of the capacity for the soil to act as a carbon sink. In Germany, for example, it is estimated that 52 % of the soil in built-up areas is sealed (or the equivalent of 15 m² per second over a decade). In addition, rainwater which falls on sealed areas is heavily polluted by tire abrasion, dust and high concentrations of heavy metals, which when washed into rivers degrade the hydrological system.

G. Water Quality:

Increasing numbers of roads and parking lots are needed to support an automobile transportation system, which lead to increased non-point source water pollution and contamination of water supplies (road runoff of oil/gas, metals, nutrients, organic waste, to name a few) with possible impacts on human health. Increased erosion and stream siltation causes environmental damage and may affect water treatment plants and thus affect water quality.

H. Socio-economic Impacts:

From a social perspective urban sprawl generates greater segregation of residential development according to income. Consequently, it can exacerbate urban social and economic divisions. The socio-economic character of suburban and peripheral areas is typified by middle and upper income families with children, who have the necessary mobility and lifestyle to enable them to function effectively in these localities. However, the suburban experience for other groups, including the young and old, who lack mobility and resources can be very different and can reduce social interaction. Furthermore, large segments of urban society are excluded from living in such areas.

From an economic perspective urban sprawl is at the very least a more costly form of urban development due to: increased household spending on commuting from home to work over longer and longer distances;

the cost to business of the congestion in sprawled urban areas with inefficient transportation systems;

the additional costs of the extension of urban infrastructures including utilities and related services, across the urban region.

Urban sprawl inhibits the development of public transport and solutions based on the development of mass transportation systems, and the provision of alternative choices in transportation that are essential to ensure the efficient working of urban environments. These conclusions are reinforced by experience from both Munich and Stockholm where the efficient control of urban sprawl and resulting increase in population densities fosters the use of public transport and reduces the growth of car use.

I. Social Capital:

On the social sustainability side, we can look at social capital otherwise defined as the “connectedness” of a group built through behaviors such as social networking and civic engagement, along with attitudes such as trust and reciprocity. Greater social capital has been associated with healthier behaviors, better self-rated health, and less negative results such as heart disease. However, social capital has been diminishing over time. Proposed causes include long commute times, observed in sprawling metropolitan areas. As of 2011, according to an article in the Chicago Tribune, Chicago commuting times are some of the worst – with Chicagoans spending 70 hours per year more on the road than they would if there was no congestion – up from 18 hours in 1982. They have an average commute time of 34 minutes each way. These drivers also use 52 more gallons per year per commuter.⁴³

In summary, sprawl is not a simple urban or urban problem, it is deeply embedded in our economic and cultural systems: “Urban sprawl should not be seen as a problem in itself; rather, it appears as a particular case of the general process of urbanization, and is characterized by a particular urban morphogenesis, associated with a specific, possibly segregate and unsustainable construction of the contemporary city”⁴⁴. The diffuse city thus presents itself as the spatial side of postmodern consumer society, while being itself an object of consumption.

II .2.5.The urbanization of piedmont:

II .2.5.1.Etymology of piedmont:

The word Piedmont has a rather unknown origin. Term composed of foot and mountain, it would appear in the XIVth century in Italy to designate then this country at the foot of the mountains which is the region of Turin and which we still know today. The word crosses the

⁴³<https://courses.lumenlearning.com/suny-monroe-environmentalbiology/chapter/17-3-the-impacts-of-urban-sprawl/>

⁴⁴ ANTONI, JEAN Ph, YOUSSOUFI S., Urban sprawl and space consumption. Comparative study of Besançon, Belfort and Montbéliard. *Revue Géographique de l'Est*, 2007, vol. 47, no3. [Online]. <http://rge.revues.org/1433>

English Channel and keeps its "d" on the British Isles while it gradually loses it on the continent. As early as 1755, the term Piedmont was used to name the fertile region located at the foot of the Appalachians (East side), still known today. In addition, it was also between 1850 and 1860 that the common name "piedmont" was "anglicized", becoming foot hill. Today the two terms - piedmont and foot Hill - are still used by English speakers. In the German language, it is the word vorberg which is used and which one could literally translate by "premontagne", ie by what there is before the mountain. The horizontal logic then prevails over the vertical logic of the "piedmont" or of what is at the "foot of the mountain".⁴⁵

II .2.5.2. Urbanization oriented towards the foothills:

The Piedmont functions, by the inter spatiality which they imply, would therefore be part of this density-diversity couple defining the urban as a space facilitating relationships, urban forms, it would then be possible to consider the Piedmont as a space or a place of development animated by a three-dimensional logic, it could indeed be defined in the following way: space marked by an organizational logic: altitudinal (the piedmont as articulation between mountain and non-mountain), transverse (the piedmont as a space for crossing / erasing the mountainous "obstacle") and longitudinal (the foothills as space or territory organized along the mountain structure).⁴⁶

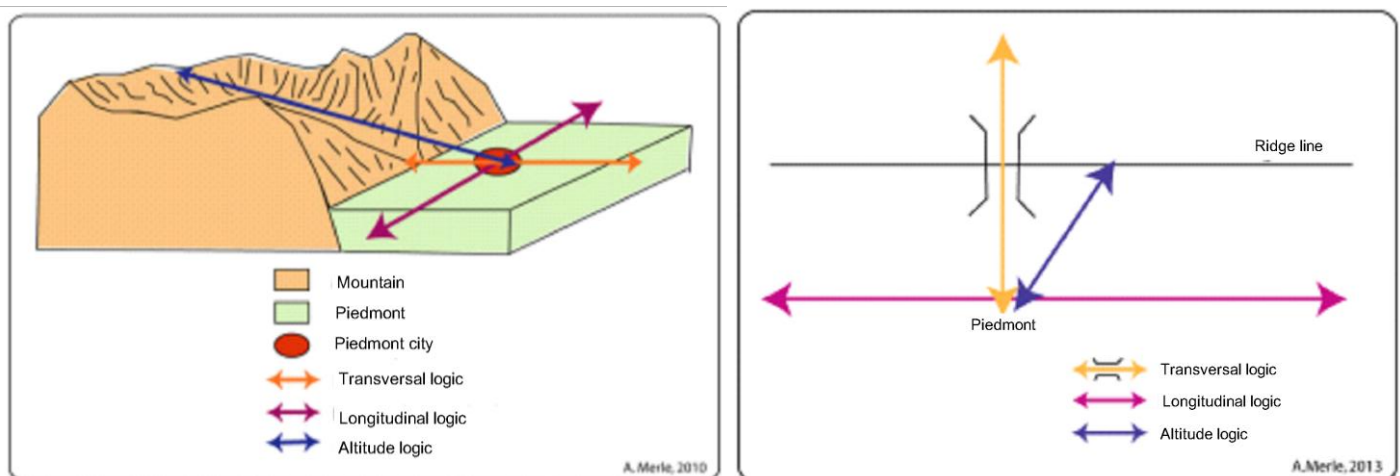


Figure II.10: three-dimensional articulation logic of piedmont

Source: file:///C:/Users/SAMSUNG/Downloads/THESE-MERLE3.pdf

⁴⁵Anthony MERLE, The geographical piedmont Essay for a prism approach to spatial intersections, Cross study between alpine (Franco-Swiss Alps) and carpatic (Romania), L'UNIVERSITÉ GRENOBLE ALPES, August 7, 2006, Available at: file:///C:/Users/SAMSUNG/Downloads/THESE-MERLE3.pdf

⁴⁶Anthony MERLE, The geographical piedmont Essay for a prism approach to spatial intersections, Cross study between alpine (Franco-Swiss Alps) and carpatic (Romania), L'UNIVERSITÉ GRENOBLE ALPES, August 7, 2006, Available at: file:///C:/Users/SAMSUNG/Downloads/THESE-MERLE3.pdf

II .2.5.3. How to urbanize in a piedmont?

Urbanization in a piedmont incites to master the management of the landscape thus discovered. The quality of the views also depends on a careful layout of the foregrounds and the immediate surroundings, the main environmental issues are:

- ✓ The preservation and enhancement of the "road" entity, of the villages and towns, which strongly contribute to the identity of the existing living environment.
- ✓ Maintaining and strengthening the identity and legibility of towns and villages, in particular by enhancing the gates / entrances to the territory, but also by respecting urban boundaries.
- ✓ The integration of new development sectors linked to the quality of the landscapes and the identity of the territory.
- ✓ Preservation of the quality of these landscapes and their readability
- ✓ The conservation and promotion of a diverse landscape, forming the backdrop of the villages.
- ✓ the conservation and enhancement of municipal agricultural roads, real staunch of views, the development of places to enjoy the landscape (stop strip along the roads, etc.), the development of discovery circuits, the development of the routes connecting the hillsides to the villages, the mastery of the silhouettes of the villages visible from afar, the development of the road routes leading to the places of visits (castles, religious buildings) and the development of the reception areas or parking.⁴⁷

The urban challenges are:

- ✓ Reconcile space economy and residential quality
- ✓ Supervise densification and diversify ways of living
- ✓ Highlight the built heritage that forges the identity of the territory
- ✓ Maintain and promote social ties
- ✓ Develop a network of "soft" routes and road connections

II .2.6. The periphery :

II .2.6.1. Definition :

It is the Perimeter or outline of a surface, What extends around a delimited surface, it is a whole of the urban area located around a city. More often, the peripheries are the spaces dominated by the centers, on any scale.

II .2.6.2. The concepts: Center / periphery :

⁴⁷INTERCOMMUNAL LOCAL URBAN PLANNING PLAN, Barr-Bernstein community of municipalities, Diagnostic presentation report, March 2017, available at: https://www.paysdebarr.fr/vivre/sites/paysdebarr.fr.vivre/files/inline-files/Diagnostic_synth%C3%A9tique%20mars%20v_2.pdf

In geography, center and periphery do not necessarily correspond to the location of a space, but most often to the relationship of inequality and domination between two spaces, on any scale. A center is a place of concentration whose weight, size depends on a number of socio-economic, socio-cultural criteria. The center has an impulse and command capacity which depends on:

- ✓ its population (density, share of the total population ...), its standard of living, the length of its development,
- ✓ its production capacities (capital, qualifications,....)
- ✓ its self-development capacities from its own human and financial resources,
- ✓ its research and innovation capacities: investments in research and development, places of research.

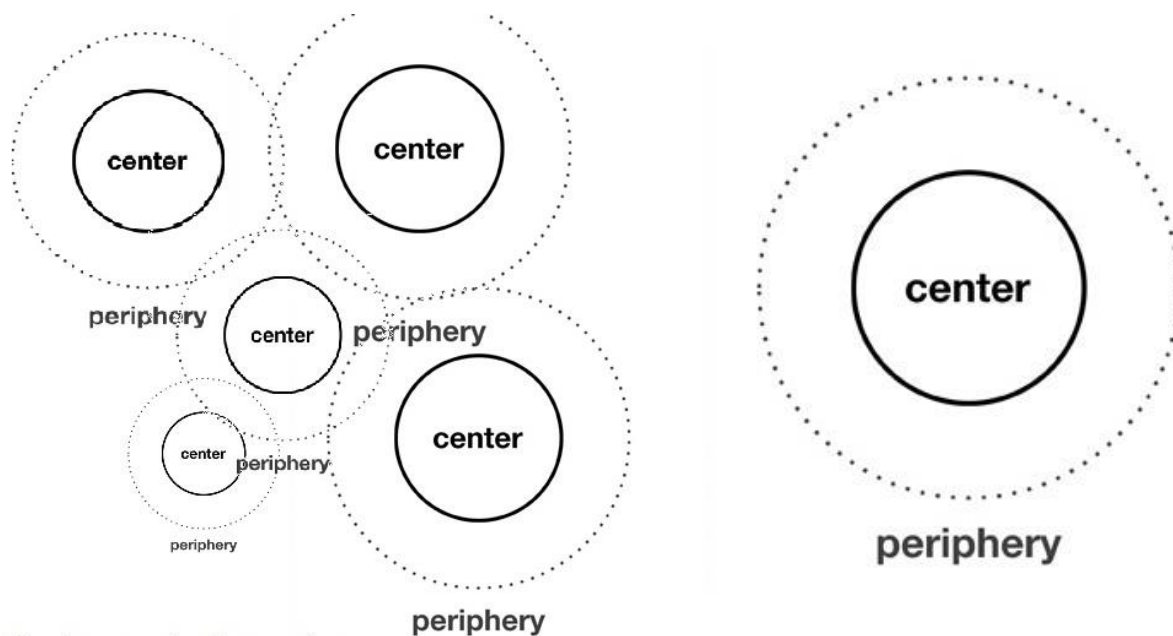


Figure II.11: periphery and center .

Source: Google images .

The weight of a center also includes qualitative, subjective elements ("the atmosphere of place" according to " J. Labasse ", that is to say the attractiveness of its cultural practices, its way of life, the main values who are represented there. By virtue of its center, "the metropolis controls, presents, distributes, gathers" (J. Labasse), While: The periphery corresponds to spaces dependent on a center. The integrated peripheries benefit from the spinoffs while supplying the center (in terms of labor, raw materials, etc., depending on the situation and the

scale). The neglected peripheries are entirely dominated by the center: they are polarized by it but receive very little in return.⁴⁸

Any socio-spatial class, that is to say any human group defined by a criterion of spatial belonging, can be envisaged at any degree of the spatial scale through the center-periphery opposition. But the differences, the contrasts or the inequalities between center and periphery have an extremely variable magnitude, weak in certain cases and almost negligible in practice, strong in other cases, and thus causing dissatisfaction, resentment and protests of the share of the inhabitants of the periphery.⁴⁹

II .2.6.3. Centrality :

Centrality means a concentration of activities with structuring power over a wider territory. The importance of the activities (economic, political, cultural, etc.) and the physical characteristics of the place (location, accessibility, density, etc.) reinforce both the attraction and the spreading effect of a centrality.

There are two types of centrality.

- **The agglomeration centrality** (city center, secondary center) has a structuring power both at the neighborhood level and at the agglomeration level and sometimes expresses a dominant theme, such as leisure or education.
- **The local centrality** (village nucleus, main street, heart of the district) has a structuring power at the scale of the district, or even, in a sparsely urbanized environment, at the scale of a larger territory.

II .2.7. Peri-urbanization :

Peri-urban designates spaces outside the agglomeration which experience a generally discontinuous urbanization (especially in housing estates and individual constructions) and which are polarized by the central city with an increase in the population in the municipalities of the urban periphery.

⁴⁸ Geoconfluences, Geography resources for teachers, Center, periphery, October 2003, Updates: May 2018; November 2018, available at: <http://geoconfluences.ens-lyon.fr/geoconfluences/glossaire/centre>

⁴⁹ Alain Reynaud, "Relations between the center and the periphery: the coefficient of variation, a simple technique for measuring allometry", Works by the Reims Institute of Geography, year 1980, 41–42, p. 71–81. Available in: <http://geoconfluences.ens-lyon.fr/geoconfluences/glossaire/centre>

II .2.7.1. Definition :

Peri-urbanization is a phenomenon of urbanization where city dwellers decide to settle in nearby rural communities while continuing to come to work every day in town, it is the spatial extension of agglomerations .

Peri-urban areas also called rurban space, outskirts or the hinterland are defined by the structure resulting from the process of peri-urbanisation. It can be described as the landscape interface between town and country,⁵⁰ or also the rural—urban transition zone where

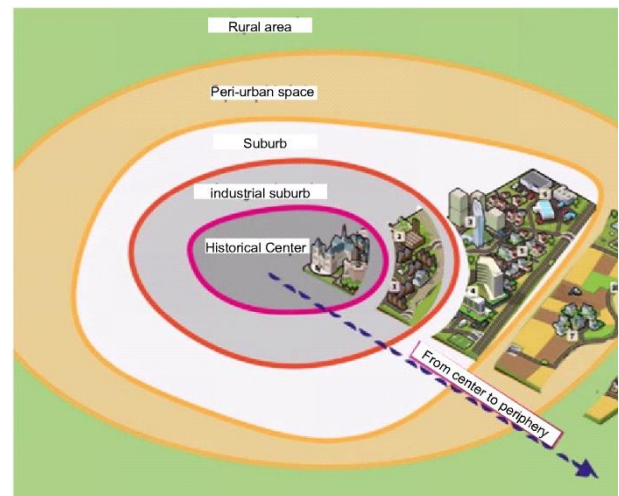


Figure II.12 : Schema of Peri-urbanisation

Source: Google Images

urban and rural uses mix and often clash.⁵¹ It can thus be viewed as a landscape type in its own right, one forged from an interaction of urban and rural land use.

Its definition shifts depending on the global location, but typically in Europe where urban areas are intensively managed to prevent urban sprawl and protect agricultural land, the urban fringe will be characterised by certain land uses which have either purposely moved away from the urban area, or require much larger tracts of land. As examples:

- ✓ Roads, especially motorways and bypasses
- ✓ Waste transfer stations, recycling facilities and landfill sites
- ✓ Park and ride sites
- ✓ Airports
- ✓ Large hospitals
- ✓ Power, water and sewerage facilities
- ✓ Factories
- ✓ Large out-of-town shopping facilities, e.g. large supermarkets

Despite these urban uses, the fringe remains largely open with the majority of the land agricultural, woodland or other rural use. However, the quality of the countryside around urban areas tends to be low with severance between areas of open land and badly maintained woodlands and hedgerows.

Apart from the structural definition dominating English-speaking literature, the concept is sometimes used to fill the gap between suburbanisation and exurbanisation, and thus relates

⁵⁰ "Archived copy". Archived from the original on 2007-03-11. Retrieved 2011-07-23.

⁵¹ Griffiths, Michael B.; Chapman, Malcolm; Christiansen, Flemming (2010). "Chinese consumers: The Romantic reappraisal". *Ethnography*. 11 (3): 331–357. doi:10.1177/146613811037041

moreover to the movement of people in space. In this case, peri-urbanisation is seen as the expansion of functional rural-urban linkages such as commuting.

II .2.7.2.Origin of concept Peri-urbanization:

The expression originates from the French word périurbanisation, which is even used by INSEE ⁵² (the French statistics agency) to describe spaces between the city and the countryside that are shaped by the urbanisation of former rural areas in the urban fringe, both in a qualitative (e.g. diffusion of urban lifestyle) and in a quantitative (e.g. new residential zones) sense. It is frequently seen as a result of post-modernity (not post-modernism). In science, the term was used initially in France and Switzerland.

II .2.7.3.The consequences of peri-urbanization :

Peri-urbanization has the consequences:

- ✓ a very significant contribution from the working population in rural areas.
- ✓ the establishment of a new way of life in an initially rural environment.
- ✓ modification of landscapes.
- ✓ imbalance by waterproofing the soil of natural weathering regulating devices for the rapid melting of snow, abundant rain.
- ✓ conflicts between agricultural and urban activities.
- ✓ conflicts of a sociological type between the rural and the urban.
- ✓ the revitalization of rural areas accessible by journey time from cities.
- ✓ the revitalization of very distant rural areas which have remained traditional countryside.
- ✓ intensification of the pendulum displacement phenomenon.

II .2.8.Urban agriculture:

II .2.8.1.Definition:

Urban and peri-urban agriculture is the production of vegetables, fruits and other foods in the city. It can be practiced on rooftops, in courtyards, shared vegetable gardens and even in public spaces. The United Nations and FAO (Food and Agriculture Organization) advocate this solution to meet the food needs of urbanized areas, especially in cities and poor countries.

Agri-urbanism "is not a recent invention. Parks and gardens, planted mineral spaces, green belts, green spaces of all kinds, public and private, utilitarian or decorative, hanging gardens, pocket gardens or large green frames, woods and groves, farmland, managed or landscaped in the interstices of built-up areas, have always been present in the city. Today we are talking about urban agriculture and peri-urban agriculture. Nature remains a safe bet.

⁵² <http://www.insee.fr/fr/methodes/default.asp?page=definitions/couronne-periurbaine.htm> .

Spontaneous, tamed, domesticated or manufactured, it resists the transformations of urban regimes, its temporalities and its modes of regulation. »⁵³

Paula NAHMIAS, CARO Yvon have defined "as constituents of urban agriculture agricultural practices and gardening experiences that take place within urban fabrics or in the immediate vicinity of cities or conurbations"⁵⁴

Urban agriculture is also defined as "All food production activities in urban areas. This term is most often used to define gardening and market gardening projects for food security or social development, or simply the self-production of food for one's own consumption" (Directorate of Public Health, Quebec, 2011).

II 2.8.2. The outskirts of the city, urban fronts that require mastery:

Urban front refers to the boundary between built-up spaces and open spaces, which represent both a line of contact between city and nature. The aim of mastering these fronts is to:⁵⁵

- ✓ Set a border on urbanization.
- ✓ To reinforce the image and identity of the urban space.
- ✓ To preserve agricultural, wooded and natural units.
- ✓ To ensure continuity and links between these units.
- ✓ To participate in the structuring of urban space, including the ups and downs of breathing spaces.
- ✓ Offer the city views and access to the open space.
- ✓ Allowing nature to return to the city.
- ✓ Their treatment should allow a transition between urban space or urbanization and open spaces and the enhancement of these spaces.

II .2.8.3 The multifunctionality of urban agriculture:

⁵³ Da Cunha, Antonio, Introduction: Plant urbanism and Agri-urbanism, The city between artifice and nature, URBIA Les Cahiers du urban sustainable development, University Observatory of the City and Sustainable Development, Lausanne, No.8, June 2009, p.3. Available on: https://www.unil.ch/files/live/sites/ouvdd/files/shared/URBIA/urbia_08/urbia_08_p001_020.pdf

⁵⁴ NAHMIAS Paula, THE YVON CARO, For a definition of urban agriculture (functional reciprocity and diversity of spatial forms), Urban Environment, volume 6, 2012,.p.5[Online] available on: <https://journals.openedition.org/eue/437>

⁵⁵ Île-de-France Regional Council, Île-de-France 2030, master plan for the Île-de-France region, adopted by the deliberation of the regional council N ° Cr97-13, of October 18, 2013 and approved on December 27. [Online] available at: http://driaaf.ile-de-france.agriculture.gouv.fr/IMG/pdf/689_SDRIF_cle0446c9_cle8c2af3.pdf

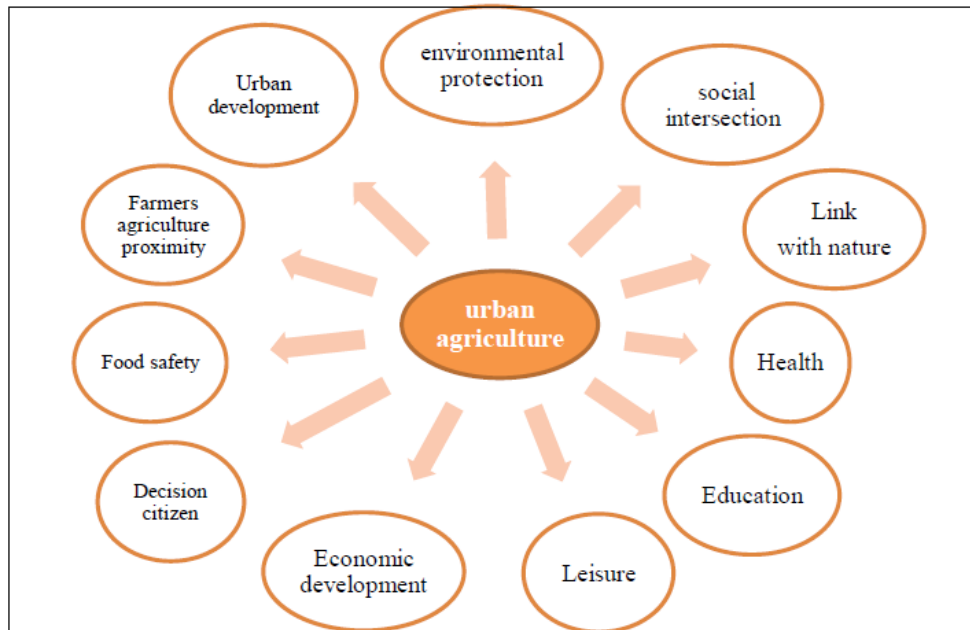


Figure II.13 :The multifunctionality of urban agriculture

Source: <https://maisonagricultureurbaine.com> (processed by author).

II .2.9.Sustainable development:

The term sustainable development appears for the first time in the writings of the International Union for the Conservation of Nature (IUCN) when the strategy is put in place.

II .2.9.1.Definition of sustainable

development: The Brundtland report, published in 1987, proposes, however, an official and dedicated definition of sustainable development as a "... that responds to the needs of the present generations without compromising the ability of future generations to respond to their own.



Figure II.14: The pillars of sustainable development

Source : Cabasse sur Issole available at :

CabassesurIssole[www.mairiecabasse.fr/envinment](http://www.mairiecabasse.fr/envinvement).

This definition insists on a balanced consideration of the values and interests of three aspects: economic, social and ecological, none of the three of which should be privileged or devalued in relation to the Others. Conservation World (1980), showing interest in protecting the environment.

II .2.9.2.Sustainable urban development:

Like sustainable development, sustainable urban development (SUD) raises the question of its implementation and definition. The SUD is presented as a replacement solution to the traditional industrial development of the city. Let us recall that sustainable development is an approach that is available at all scales of the territory. It must be redefined for each of these urban scales, the objectives being different depending on the level concerned. We cannot treat a development project concerning a region and a subdivision in the same way. Neither the issues nor the objectives can be similar, and different methods and tools must therefore be developed for each type of project, for each scale of the territory.

II. 2.9.3.Principles of sustainable urban development:

In 2004, the European Commission defined town planning as “a process by which all actors (national, regional and local authorities, citizens, local representative organizations, NGOs, universities and companies) collaborate in order to integrate functional considerations, environmental and qualitative in order to design and plan a built environment that ensures a certain number of characteristics in order to integrate sustainable development”. From this definition, we find a large number of keywords which must be at the center of the concerns of a planner. Indeed, an urban planning and development project must: ⁵⁶

- ✓ Provide the population with aesthetic, original, safe, healthy and high-quality places to live and work, capable of creating a strong sense of belonging, pride, social equity, integration and identity.
- ✓ Create the conditions for a dynamic, balanced, open to all, equitable economy that promotes urban regeneration.
- ✓ Treats land as a precious resource which must be used in the most efficient way, reusing old land and empty buildings present in the agglomeration in preference to the development of virgin land outside the urban area , thus avoiding sprawl (dense cities and, at regional level, decentralization concentrated in different poles).
- ✓ Guarantees the strategic location of new facilities, their accessibility by public transport and their respect for the natural environment (biodiversity, health, environmental risk).
- ✓ Has sufficient density of activity and use intensity for services such as public transport to be viable and efficient while respecting a quality living environment (privacy and private space, negative effects .e.g. noise minimum).
- ✓ Includes quality and well-planned infrastructure, including public transport services, streets, footpaths and cycle paths promoting accessibility, especially for disadvantaged categories and creates the conditions for a high level of social, cultural activity and economical.
- ✓ Implements modern energy-efficient approaches, such as low-energy housing, efficient transport, district heating and recycling systems.

⁵⁶ Philippe Outrequin and Catherine Charlot-Valdieu, RECOMMENDATIONS FOR SUSTAINABLE PLANNING OF TERRITORIES IN PICARDIA, December 2006 available at: <https://app.box.com/s/2ytu8qo5z2>

II. 2.9.4.Obstacles to sustainable urban development:

In general, the main obstacle to successful urban planning stems from the lack of appropriate structures and regulations at national and subnational level. The disparities between different local situations and national urban planning systems, in particular, are increasingly being felt in many countries. Our cities must become spaces for facilitating social, economic and environmental progress. For them to develop in a sustainable and universal way, they must become more compact and respond to population growth by increasing their density.

II. 2.9.5.The sustainable urban development approach:

Sustainable development is characterized by the implementation of a project approach, which must be the expression of political will and must be characterized by a new way of thinking and acting which is manifested by: ⁵⁷

- **A “systemic” approach:**
 - reasoning in cycle: water cycle, energy cycle and materials cycle
 - thinking in an ecosystem: waste management, flow management;
 - focused on economic coherence, which also has to do with the economic feasibility of projects.
- **An approach which combines the sensitive** (architecture) and technical and economic engineering (performance and evaluation)
- **Taking the long term into account:**

Saving of natural resources, avoided investments (networks), prevention and fight against climate change

 - **New governance:**
 - The participation of the various actors and particularly of the citizens;
 - Multiple partnerships (public-private, business-customers, etc.) and new market rules (public-private partnership, competitive dialogue, etc.);
 - A new urban, multidisciplinary and transversal culture.

II. 2.9.6.The sustainable urban project:

The sustainable urban project is the most effective way to manage contemporary urban complexity and thus achieve sustainable development. It is characterized by its global approach (transport, housing, public space, equipment, infrastructure), its transversal approach based on an effective system of actors (multidisciplinary, transdisciplinarity, coordination and consultation), suggests the use of multiple partnerships in all areas. areas, and affects all areas of the city (district, municipality, agglomeration, metropolitan area).

⁵⁷ Suden.org, EUROPEAN NETWORK FOR SUSTAINABLE URBAN DEVELOPMENT, Sustainable urban development and planning, available at <http://www.suden.org/fr/developpement-urbain-durable/developpement-urbain-et-amenagement-durables/>

In fact, these are practically the same principles adopted at the Rio de Janeiro conference in 1992. These principles are intended for local authorities in the signatory countries with the aim of taking them into account in any urban development strategy. In order to achieve sustainable development and good governance. This new development practice, which is the “urban project”, unlike technical and regulatory town planning, takes into account the upheavals induced by globalization (political, economic, social and cultural) as well as the concern linked to the degradation of environment and sustainable development.⁵⁸

II. 2.9.7. The challenges, objectives and means of a sustainable urban project:

The theme	Issues	Objectives	Means
Promote urban and social diversity	The challenge is therefore to find more diversity urban (housing, shops, activities ...) and social (diversity populations, generations,).	- Develop urban diversity - Promote social and generational diversity	- Associate housing and economic activities Diversify the housing offer - Integrate shops and local services
Develop governance and participatory democracy	The participation of local residents, future residents or users of site, traders, companies ... the most upstream possible reflections, is a conditions for the success of	Involve the population in the project (development phases and realization) - Make this participation long-term (use phase)	- Develop a charter or a participation plan - Modes of communication Interactive through meetings

⁵⁸ The works of CRASC, Center for Research in Social and Cultural Anthropology, Attempts to integrate sustainable development into urban development policies in Algeria, available at: <https://ouvrages.crasc.dz/index.php/fr/>

	project		
Preserving the natural heritage and promoting biodiversity	Preserving natural spaces in their integrity, maintain Ecological continuities between	- Develop a development plan that respects or even strengthens the existing natural patterns	- Preserve the elements of the local natural fabric. - Treat the limits of the developed site.

	strengthen any occasion biodiversity	biodiversity through development choices	circulation of small and medium-sized fauna
Respect and enhance the urban, architectural and landscape identity	questioning of the landscape and historical frameworks, urban dysfunctions (isolation, use of the car for short distances ...), isolation or social compartmentalization, loss of cultural references ... and ultimately degradation of the quality and the living environment	Take into account the existing landscape and urban frameworks - Work on the boundaries between the site and its environment, - Enhance the architectural identity Strengthen the functionality of public spaces	- Respect the urban form - Preserve structuring visual relationships, organize views - Integrate and promote heritage items existing - Work on the quality of furniture and urban signage
Improve local	-avoid the risk of rain flooding phenomena.	-Limit the waterproofing of	- Provide a proportion of

<p>water management</p>	<p>- Amplification of erosion soils</p> <p>-Saving drinking water and reserving it for "noble" uses is therefore, along with rainwater management, an issue to be integrated into development projects.</p>	<p>surfaces, promote infiltration</p> <p>-Control flow and treat pollution</p> <p>-Save water resources, especially drinking water.</p>	<p>natural spaces or "sufficient" green spaces</p> <p>- Choose permeable coverings</p> <p>- Create terraced roofs and planted facade feet</p>
<p>Limit energy consumption and reduce greenhouse gas emissions</p>	<p>-Remember that the priority remains to reduce energy consumption and improve energy efficiency before resorting to renewable energies.</p>	<p>-Limit energy consuming trips</p> <p>- Use low-level equipment energy consumers</p> <p>- Limit energy consumption linked to public lighting</p> <p>Use renewable energies</p>	<p>- Reduce "the place of the car"</p> <p>- Promote bicycle trips within and outside the site</p> <p>- Use low energy consuming processes</p>

<p>Reduce the consumption of raw</p>	<p>demands in order to guarantee the durability and quality of public spaces.</p> <p>-The choice must also relate to materials that</p>	<p>non-renewable raw materials</p> <p>-Favor the use of environmentally friendly products and materials</p>	<p>materials or recycled or recyclable products</p> <p>-Look for locally produced materials</p> <p>-Choose eco</p>
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materials and the choice of eco-friendly products and materials	are easy to maintain, in relation to the means of the municipality and not involving the use of products or polluting processes.	non-harmful - Favor long-lasting and upgradeable equipment	designed street furniture
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Table II.4: The challenges, objectives and means of a sustainable urban project

Source: Oise Regional Nature Park, adapted by the authors available at:

http://www.parc-oise-paysdefrance.fr/files/pnr_oise/fichiers_a_telecharger/GUIDE%202bd.pdf

II.3 Analysis of examples

2.3.1 Example 1 deals with the notion of Agri urbanism project in Geneva- Eaux-Vives-Annemasse:

- **Project situation:**

-Geneva is a Swiss city located at the western end of Lake Geneva, the whitewater “EAUX –VIVES” is a district of Geneva.

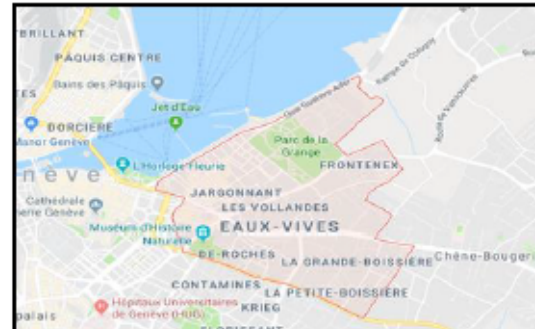


Figure II.15 EAUX VIVES situation

Source : Google earth 2019

- **Selection criteria:**

- The example concerns urban sprawl on agricultural land.
- The vision of nature-city interpenetration with the diversity of the territory.
- The city-nature dialogue and highlighting the city by the presence of elements of nature.
- The enhancement of green space through quality constructions.

- **The issue:**

The territory is experiencing continuous demographic growth, natural and agricultural areas must be preserved from urban sprawl.

-Tala grand’s proposal offers a range of tools and courses of action adapted to different identified project situations. These are particularly projects that aim to rebalance the Swiss and diversify the housing offer.

The territory scale:

- ✓ spatial structuring: lines and mesh

Lines and the mesh of the agricultural fabric define the structure of the territory and urbanization; the analysis leads to a series of mesh discontinuity at the level of administrative division.

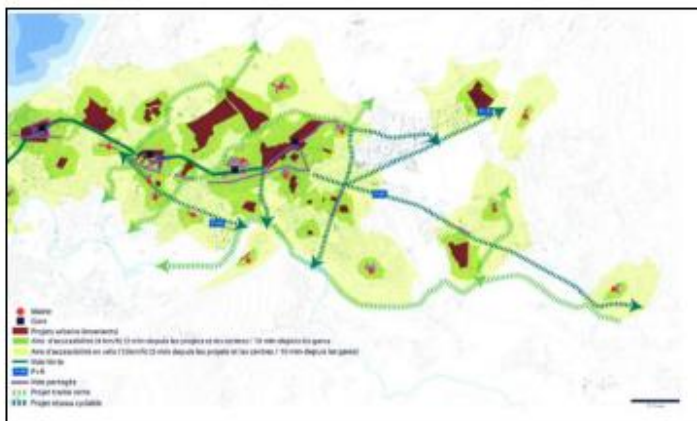


Figure II.17 Map of lines and mesh

Source: Notebook n°60-4-1 – Contribution received after 1st degree presentations and work sessions

City scale:

- The green frame that strengthens the links between neighborhoods.
- A plant fabric to soften the urban climate



Figure II.16 Green frame card

Source: Notebook n°60-4-1 – Contribution received after 1st degree presentations and work sessions

- **Goals:**

Quantitative	Qualitative	Actions
-To welcome 20300, 30’000 inhabitants on the horizon as part of a coherent and balanced development of the cross-border territory and 10’000 inhabitants	- Balanced and sustainable economic development	- Reinforcement of job centers and mixed neighborhoods
	- Agricultural and environmental development	-Preserve and enhance agricultural land - Limit between the building zone and the agricultural production zone
	Nature and landscape development	- Identify the major corridors towards which structure the axis

II.3.2 .Example deal with the notion urban densification quartier griffin town :

Project data sheet:

Project name: Griffintown urban project

Situation: Montreal-CANADA

Client: City of Montreal

Project manager: Devimco group

Total area: 12 hectares

Date of departure 2004

Completion date –2015

Program: Housing, shops, auditorium and cinema, office spaces hotels, underground parking, private and public green spaces and preserved heritage buildings.

Choice criteria: Relationship with the city center Urban operation

Project procedures Intervention scale



Figure II.18 Griffintown neighborhood location

Source: Google image

Project objectives:

The objective is to make Griffintown a **neighborhood respectful of its identity while creating a new mixed living environment** offering a pleasant living environment, **promoting the notions of proximity, conviviality or even security**. Make it a developed neighborhood to recognize and encourage new models of urban behavior. In short, being in agreement with the main principles of sustainable development and giving a revival to a shrinking neighborhood.

given the increased importance given to increasing the density of the sector and the coexistence of different functions, an important challenge is to ensure the simultaneous development of residential uses, equipment, services, and economic activities. Significant diversification of the residential offer is taking place to reach the number of dwellings planned on the site, nearly 4000 dwellings. In addition, the project aims to ensure the establishment of services and equipment that meet the needs of residents and users. The project also has the objective of increasing the outreach of the sector by the establishment of places for cultural dissemination (hotel, performance hall, etc.)

Griffintown project aims to revitalize a former industrial area, partially abandoned, in the Southwest borough of Montreal. This multifunctional project of 1.3 billion\$, on 12 hectares, in district rich in history and heritage, near the City Center is currently the subjected of a specific urban planning program. The Griffintown district is developed by the Devimco company group opted for concertation and continuous consultation for the realization of the project.

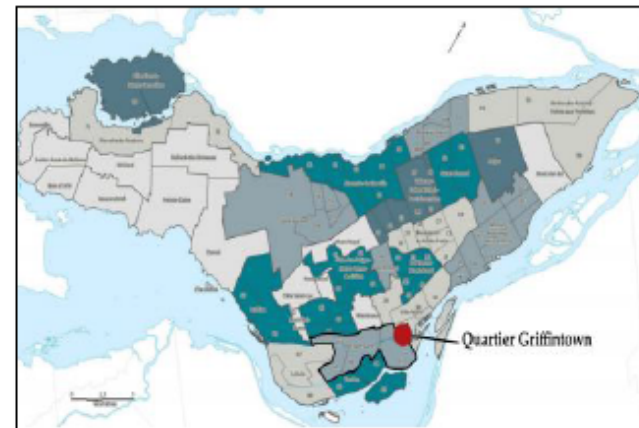


Figure II.19 Griffintown Project

Source: google image

Master plan, program and planning:

Phase 1: spring 2009

Phase 2: fall 2009

Phase 3: spring 2010 in summary, the Griffintown project will create a new urban living environment that will bring people back to Montreal. The project will allow Montrealers to live, work and have fun in a harmonious living environment. The project will exert a great power of attraction for the benefit of the South-west borough and the city of Montreal.



Figure II.20: Project program

Source: GRIFFINTOWN-2012, available at: https://zovile.com/projets/Grif_INtoon/images/Planif-griffintown_Nov_3c5.jpg

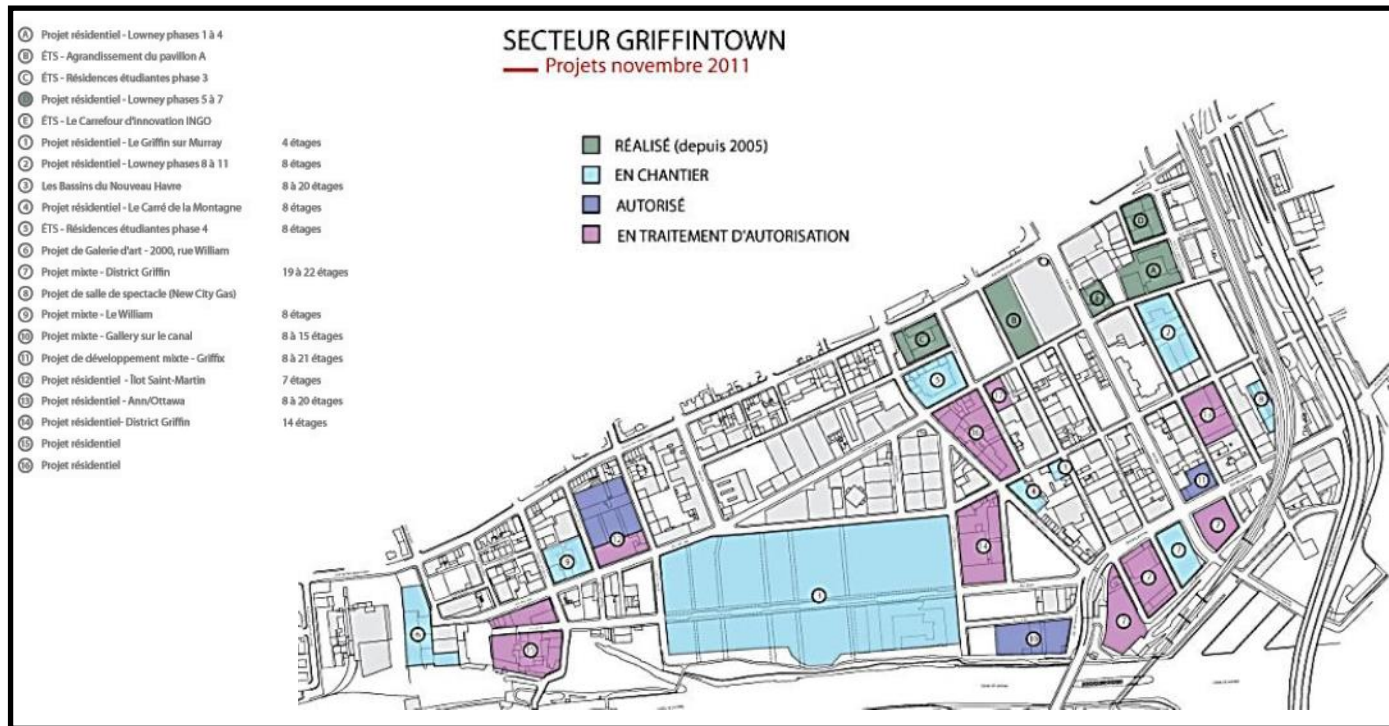


Figure II.21: Project program

Source: GRIFFINTOWN-2012, available at: https://zovile.com/projets/Grif_INToon/images/Planif-griffintown_Nov_3c5.jpg

Project features :

Urban proximity and strategic location:

The Griffintown town district has a strategic location. Its location just south of the business center in the southwest district presents significant potential. The territory is adjacent to the multimedia city, the suburb recollects and international district near old Montreal

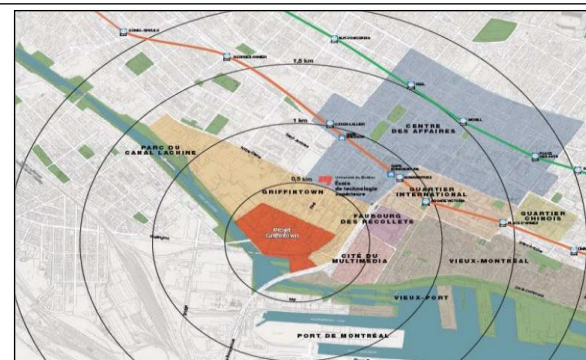


Figure II.24: Neighborhood characteristics
Source: Promenade Smith Urban Design Competition, Griffintown

Functional diversity:

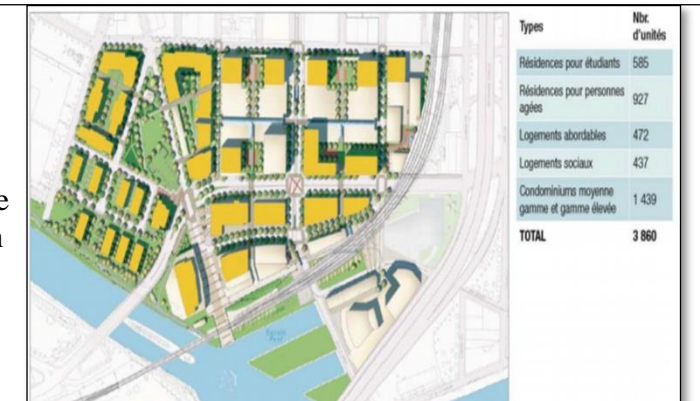
The Griffintown project covers almost 5 million pi² of construction. The commercial offer will be diversified. South of the CN track, the cultural and heritage “bloc will be developed. A performance hall, a historic building and a hotel will animate the latter. In addition, several heritage buildings will be preserved, relocated and restored. The area of the network of public squares, green spaces and new public places totals more than 600 000 pi².



Figure II.22 : Neighborhood characteristics
Source: Design competition turban promenade Smith, Griffintown

Social and residential mix:

The residential component represents 65% of the project. Firstly, the residential program meets the objective of the city of Montreal in order to increase the supply of housing on the island of Montreal. On the other hand, of another, it corresponds to the objectives of the social and affordable housing inclusion strategy. Some residences will be built in the first phase of the project. Residence for elderly will be built towards the final stages of the project, in the western part of the territory around Park Sainte-Anne.



Figures II.23: Neighborhood characteristics
Source: Design competition turban promenade Smith, Griffintown

Biodiversity and green spaces:

The network of public places and green spaces counts nearly 600 000 pi². This network includes the Sainte-Anne Park, the Peel basin developments, and the canal sector. Nearly 5000 pi² of new green spaces and public spaces have been created. Devino invested more than 25 million dollars in the redevelopment of existing public spaces.



Figure II.25 : Neighborhood characteristics
Source: Design competition turban promenade Smith, Griffintown

Heritage preservation:

In the intervention area the project plans: - Relocation of two buildings. -Demolition and partial reconstruction of four buildings. -Strengthening the heritage value of the Wellington and Peel axis. -The enhancement of the remains of the Sainte-ANNE church.

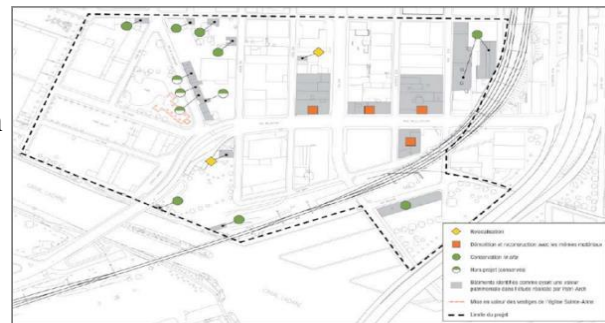


Figure II.26 : Neighborhood characteristics
Source: Design competition turban promenade Smith, Griffintown

Intergenerational diversity:

It translates into the different types of accommodation offered and their recipients, noting the presence of the variety of ages and accommodation.

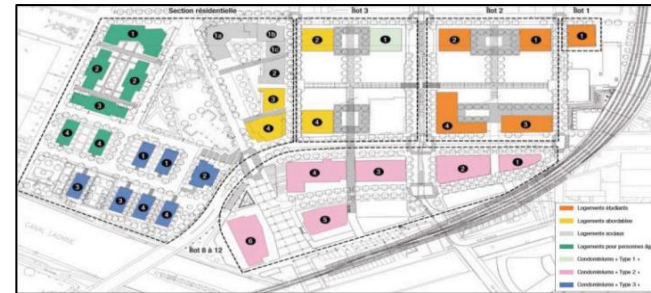


Figure II.27 : Neighborhood characteristics
Source: Design competition turban promenade Smith, Griffintown

The commercial program of the project:

The commercial part of the project represents 18% of the total surface, including 4% of large surfaces, 6% of medium surfaces and 8% of small surfaces. Pedestrian streets furnished and lined with shops and restaurants will enliven it. The commercial offer will be diversified and complementary compared to what exists in the neighboring sectors.

LEED criteria obtaining LEED accreditation is targeted. The Griffintown project already meets LEED criteria concerning - The choice of site location –The proposed development density – The redevelopment of contaminated sites: - almost the entire site is contaminated. The 1.1 M ft2 decontamination totals almost 30million dollars. The presence of alternative means of transportation. -The development of green roofs. Water treatment. -The choice of ecological materials.

II.3.3. Example 3:Redevelopment of the banks of wade EL HARRACH

One of the main Wadis of the city of Algiers, its watershed covering an area of 1200km2 and the population of the basin 3 million people, Wadi el Harrach it is a barometer of the environment and the state ecological of the city of Algiers.¹

It comes in several directions:

The recon quest of port spaces through the relocation of industrial and commercial activities to a new deep-water port.

The rebalancing of centrality in articulation with a new structuring and hierarchical transport network.

The control of urban sprawl through the recon quest of central spaces and large industrial wasteland.

The restauration of major balances and ecological continuities through the consolidation of large natural and agricultural entities.

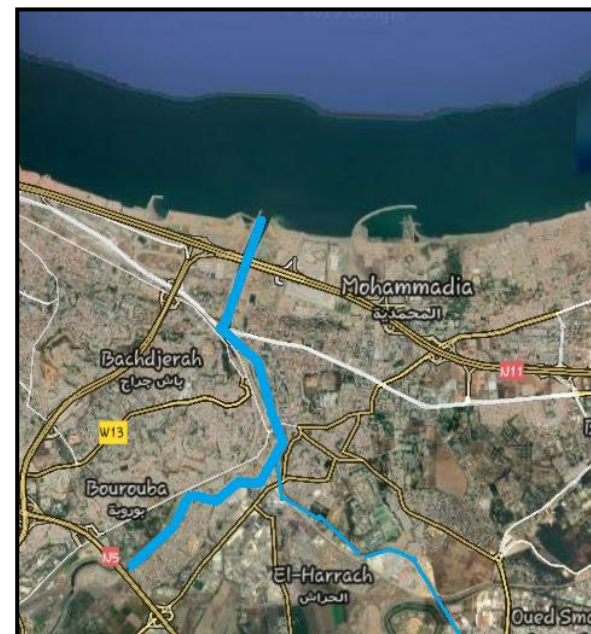


Figure II.28: Wadi el Harrach situation
Source: Capture Google earth 2020 processed by author

The rehabilitation of historic parks and gardens, the restoration of the banks of the Wadi, the enhancement of landscape entities and the development of a coherent network, the reduction of natural and technological risks through the implementation of new planning principles.¹



Figure II.31: Master plan of Wadi El Harrach
Source: Mediterranean Review environmental quality in an urban environment 2014/2 (n° 123)



Figure II.29 : Korean garden
Source : <http://www.kassaman.com/article-oued-el->



Figure II.30: Football stadium
Source: www.presse-dz.com

Program

Children’s playgrounds and soccer fields: There will be six football fields with natural grass. Six others for handball and four for basketball.

Filter gardens: Three filter gardens on an aquatic surface of almost 193m², also known as Korean gardens.

Walks: Several cycle paths are planned along the Wadi.

Walkways: Along the Wadi, fifteen reinforced concrete bridges 3,5m wide will be built for pedestrians.

Comparative table :




Project	Selected concepts
<p>1. Example Whitewater Annemasse deals with the concept of an urban planning project:</p> 	<ul style="list-style-type: none"> * Enhance the identity of the attractive and competitive city through the city-nature relationship. * Reinforce their agricultural vocation * Bringing the city closer to agriculture
<p>2. Urban densification Project « QUARTIER Griffintown »</p> 	<ul style="list-style-type: none"> * Make Griffintown a neighborhood respectful of its identity * Creating a new mixed living environment offering a pleasant living environment
<p>3. Redevelopment of the banks of Wadi EL HARRACH</p> 	<ul style="list-style-type: none"> * The concept of «ecological corridors" in urban areas: challenges and constraints of an environmental requalification approach. * Transform systematically without breaking creating continuity. * Landscape treatment with green and blue frames.

Table II.5:Comparative table .

Source: Authors

II.4 . Definitions of main research concepts of the architectural project :

II .4.1.Sport ;

II .4.1.1.Definition :

an activity involving physical exertion and skill in which an individual or team competes against another or others for entertainment. "team sports such as soccer and rugby" ⁵⁹



Figure II.32: Example type of sport " Rugby " .

Source: Google images

II .4.1.2.The importance of sport :

Sport has great importance allowed this importance :

- ✓ The physical and moral development of citizens and the preservation of their health
- ✓ Youth education and its cultural and social promotion.
- ✓ The enrichment of the national cultural and sports heritage.
- ✓ The development of the ideals of rapprochement, friendship and solidarity as factors of national cohesion.
- ✓ The fight against social ills by promoting moral values linked to sports ethics.
- ✓ The dignified representation of the nation in the concert of international sports confrontation.

II .4.1.3. Different Types of Sports :

As it known , there are many different sports that a person can play. In fact, a sports event like Olympics features a long list of sports. Therefore, it only goes to show that the field of sports is diverse and extensive. Here is the list of the different types of sports :

⁵⁹ <https://www.lexico.com/en/definition/sport>.

A. Ball Sports :

First on the list of the sports' different types is the ball sport which is the most common one among of all types as well. Ball sports are any sports that involve and use the balls. The ball sports are divided into three classifications which are the ball only, ball and a stick or bat, and ball over the net. Under the classification of the ball only are the basketball, soccer or football , bowling, football, paddleball, handball, and table tennis.

On the other hand, some examples of the ball and a stick or bat are the golf, baseball, field hockey, cricket, lacrosse, billiards, and softball. Tennis, badminton, water polo, pickleball, and volleyball are some of the sports which are under the classification of the ball over the net.



Figure II.33: Sport ball .

Source: Google images

B. Strength and Combat Sports :

Another type of sports is the strength and combat sports which are sports that involve strength and fighting. Some examples of sports that are strength – based include bodybuilding, weightlifting, and powerlifting.

Meanwhile, some examples of the combat sports are boxing, ultimate fighting, wrestling, and the ancient martial arts such as jujutsu, karate, and taekwondo. Kendo and fencing are some examples of the combat sports that allow and use weapons.



Figure II.34: Karate, Strength and Combat Sports .

Source: Google images

C. Track and Endurance Sports :

Track and endurance sports is another type of sports which exists in this field. Under the track, sports are the marathons, sprints, relays, long jump and high jump, javelin throwing, pole vault, and discus throw which are some can be played either by a single person or by a team. Mountain biking, road cycling, BMX, track cycling, and cyclocross are included in the track sports as well.

With the endurance sports, the duathlon which consists of biking and running, the biathlon which consists of skiing and shooting, and the triathlon, consisting of swimming, biking, and running are some examples of this type of sports. The decathlon which consists of running, long jump and high jump, hurdling, throwing such as javelin throw, discus throw, and shot put is under the endurance sports as well.



Figure II.35: Middle distance , Track and Endurance Sports .

Source: Google images

D. Water, Snow, and Ice Sports :

Lastly is the water, snow, and ice sports which are any sports that associated with the elements of water, snow, and ice. Some examples of the water sports are swimming, synchronized swimming, diving, wake boarding, surfing, sailing, and rowing. Some of the sports which can be played on the ice are the popular ice hockey, figure skating, speed skating, and curling. Meanwhile, under the snow sports are the snowboarding, skiing, sledding, luge, skeleton, bobsled or bobsleigh, and ski bobbing.



Figure II.36: Ice sports: ice climbing

Source: Google images

II .4.1.4. Types of sporting activity :

Sports activity is broken down into three types: training, competition and recovery .

A.Training : Aim to train and train the practitioner so that his performance increases. To be beneficial, training must be spread over a succession of regular, progressive and complementary sessions.

B.The competition: The objective is to measure the athletes among themselves and to reward the best. For many athletes, competition is the strongest and most enjoyable time in the sport.

C.Recovery and relaxation: The objective of these sessions is to give the athlete's body the time and rest necessary for it to recover to produce the best efforts.

II .4.2.Sports buildings :

II .4.2.1.Definition

Sports buildings is a spatial layout or construction allowing the practice of one or more sports. Most often this equipment is called a field (football, handball, basketball, tambourine, etc.), but it sometimes has a specific name (Patrick, 2013).

II .4.2.2.Role of sports facilities

There are three main roles of sports equipment :

Social role :

Cultural role :

Economic role

- ✓ strengthened the principles of brotherhood
- ✓ sportsmanship in everyday life
- ✓ physical and mountain well-being
- ✓

II .4.2.3.Types of sports buildings :

There are two very distinct types of sports equipment which are:

A. Outdoor sports facilities :

An even greater diversity of sports are played outdoors, including field hockey, racing/running, baseball, football, archery, horseback riding, kayaking, rock climbing, and a countless number of other activities. Outdoor sports surfaces are just as diverse as the activities played on them. While some sports are set directly within the elements, as in hiking up mountains, wind surfing on the sea, skiing cross-country over the snow, and so on, other sports need a special court or flooring system to play on.

All outdoor surfaces are designed to either perform in or withstand all types of weather. Even if you don't want to walk out into the snow for a brisk game of tennis, your court will be there ready to go when the weather clears up in spring. Surfaces also must provide both traction and shock absorbency so that players can perform well.

There are three main types of outdoor recreational surfaces: tracks, turf, and courts. Artificial tracks and the infill for synthetic turf often contain recycled materials, such as small cubes from rubber shoe soles or car tires. Reusing these materials helps to reduce the amount of waste sent to landfills. This material also provides good traction and cushioning for athletes as well as adequate drainage in the event of rain. The look and feel of the turf is designed to resemble and behave like natural grass without the hassle of watering, mowing, fertilizing, and replanting. Outdoor courts for basketball and tennis are made of a acrylic, which provides a finer surface than that of tracks, but still provides reliable traction as well as a firm surface so that the balls have a better bounce that won't interfere with game play.

B.Indoor Sports Surfaces :

Gymnasiums have to cater to a wide array of sports and are often used as multi-purpose activity areas. Indoor sports surfaces have to be durable enough to keep up with the athletes no matter what they are doing. Basketball, badminton, volleyball, and handball all may share the same court, which could be used multiple times a day for hours at a time.

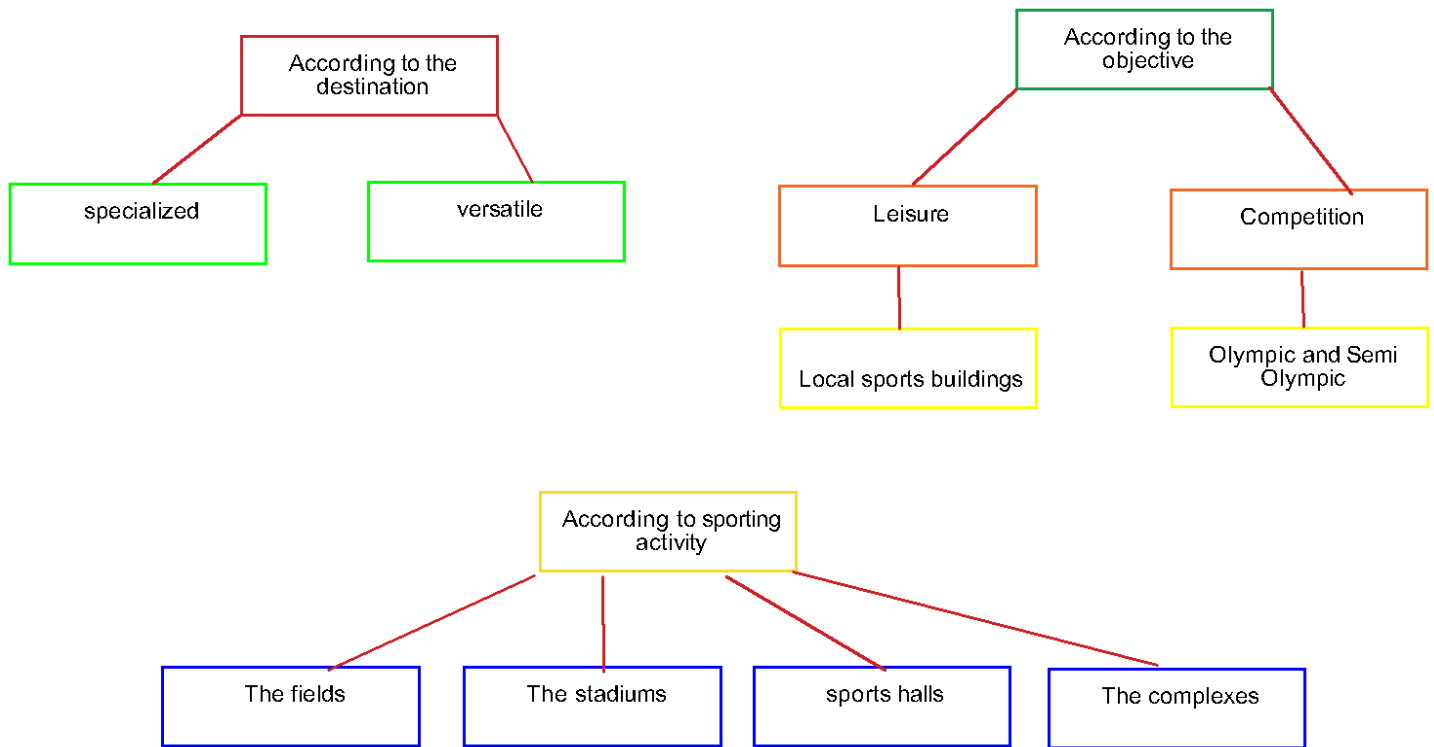


Figure II.37:Indoor and Outdoor sport facilities .

Source: Google images.

II .4.2.4.Classification of sports facilities :

The following schema represents the classifications of the equipment according to the destination, the objective, and the sporting activity.



FigureII. 38: schema represents the classifications of the equipment.

Source: Author.

II .4.3.Sport center :

II .4.3.1.Definition:

A sports centre is a distinct facility where sports take place within an enclosed area. It can be a building (indoor sports centre), just outside (outdoor sports centre) or contain indoor and outdoor sports features mixed together.

Facilities within a sports centre may include swimming pools, spa, solarium, sauna and/or steam room, sports hall, squash courts, fitness suite, aerobics studios, outdoor grass and/or artificial pitches for football (soccer), hockey etc and also any associated cafeteria, bars and other facilities.

II .4.3.2. The deferent between sports center and sports complex :

A sports complex is a group of sports facilities. For example, there are track and field stadiums, football stadiums, baseball stadiums, swimming pools, and Indoor arenas. This area is a sports complex, for fitness. Olympic Park is also a kind of Entertainment complex.



Figure II.39: Azadi sports complex main gate and Stadium .

Source: Google images.

II .4.4. Analysis of examples:

Example 01: Khalifa Sport City sports complexes (Qatar):

1- Presentation:

-The land has an area of 1,624,000,000 m² located on the outskirts of West of the center, it has a hilly topography from level + 13.00m to level + 20.00m. The high points are located at the site of the existing stadium (+19.00) and at the far west (+20.00) The lowest point at road level existing semi buried (+13.00).

- On this site, the competition stadium with grandstand and parking, the swimming pool and a small sports hall are served by the North-South transverse path. rest of the land is free of any construction.

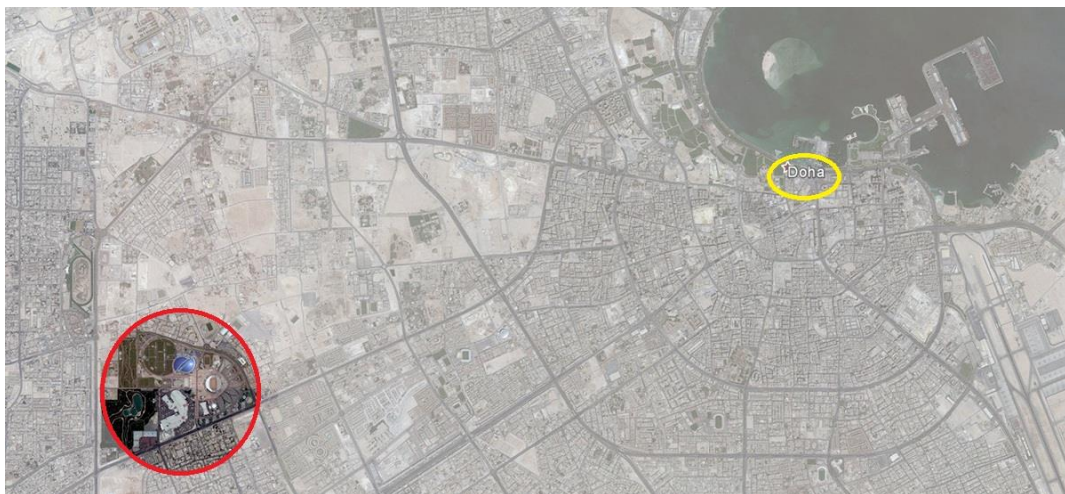


Figure II.40 : Situation of sports complexes Khalifa Sport City (Qatar)

Source : Bing maps treated by the author.



Figure II.41 : View of the Khalifa Sport City sports complex (Qatar)

Source : Google image .

2-Spatial organization:

The project is organized around two main axes:

- A North-South service axis consisting of the redeveloped existing road network.
- An East West axis passing through the center of the stadium and constituting the perspective structuring the project.

These two axes define three major areas corresponding to the different functions defined by the program :

- The new competition stadium, the mosque, the warm-up stadium and its parking lots occupy the entire east. The south of the area includes an annex around the existing sports hall for women.
- The area dedicated to training and learning in the North-West including the sports hall, the academy, the swimming pool and the training stadiums for all sports as well as a relaxation area with water at the far west.
- The South West section is devoted to leisure activities around a hotel complex, cinemas, bowling, entertainment, velodrome. Different equipment dedicated to cycling, skateboarding, BMX, rollerblading as well as a fitness trail constitute the structuring elements of a green, hilly and planted landscaped park.



Figure II.42 : General view on the spatial organization of the Khalifa Sport City sports complex (Qatar)

Source : Google image

- All of this equipment is surrounded by a track system with a service function, a cycling circuit and running training with a length of approximately 5 km.
- The east-west perspective axis, from the competition stadium to the far west, constitutes a large area for walking and enjoying. Below the stadium, above the central parking lot. Going down to the renovated swimming pool, the pedestrian forecourt connects the three main functional areas of the project.
- This forecourt is bordered by a shopping center opposite the renovated swimming pool.
- Transparencies will be installed there on the ground floor towards the set of pools and fountains in cascades in the shade of palm plantations.

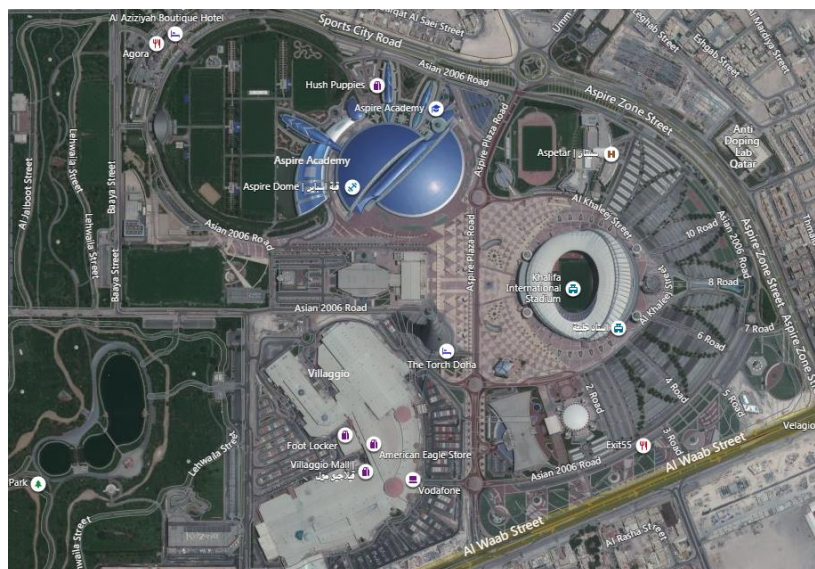


Figure II.43 : Aerial view on the Khalifa Sport City sports complex (Qatar)

Source : Bing maps.

Facilities :

The stadium and its annexes:

Centre of the draft ground plan, the stadium resumes and includes the grandstand and the track. Its capacity of 45,000 seats. The sports field and its athletics track at level +19.00 is surrounded to the east by a grandstand, to the west by the creation of a new grandstand comprising all of the stadium's associated equipment, to the north and to the South by walk-in access desks with the track and the bottom of the stands.

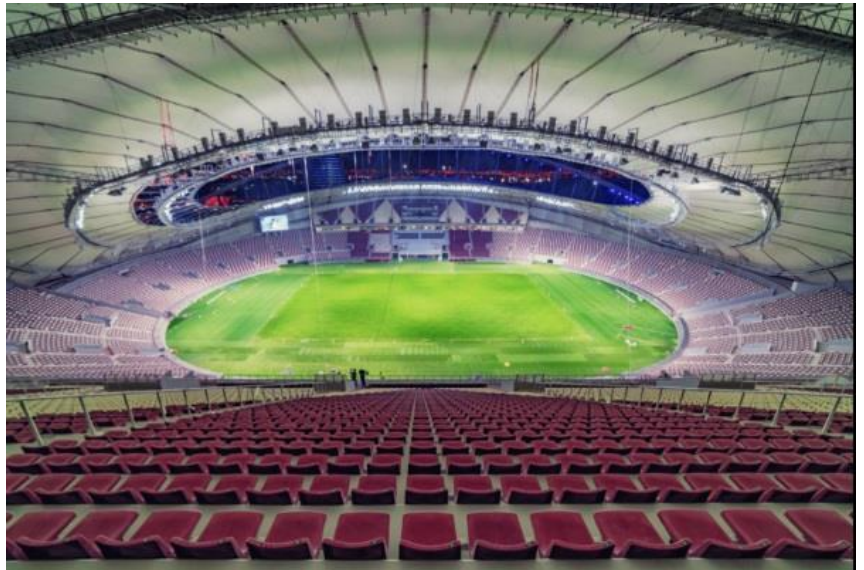


Figure II.44 : View inside the stadium of the sports complexes sportifs Khalifa Sport City (Qatar).

Source : Google Images



Figure II.45: View outside the stadium of the Khalifa Sport City sports complex (Qatar)

Source: Google image.

- the grandstand is directly accessible from the North-South lane by a car park with 1000 spaces at level +14.00. This car park located in the center of the triangle consisting of major equipment from the three areas of the ground plan, allows the parking of vehicles for VIPs, the press and audiovisual coaches. The various storage and technical areas on this level are also connected to the service axis by this car park.
- Above, the vast pedestrian forecourt (+19.00) gives access to the bleachers for the public. Under these bleachers, the changing rooms and their annexes are developed

(control, press / players liaison, referees and storage rooms for the equipment A traffic lane on either side of the stands allows access to endurance competitions and service vehicles.



Figure II.46: View of the grandstand and the public bleachers of the Khalifa Sport City stadium (Qatar)

Source : Google image .

- Officials access is directly at +25.00 level via a special route created from the south roundabout. This level includes the salons and honors galleries, the exhibitions salons, the press salons.
- Three levels of balcony complete the set. Right next to or north of the warm-up stadium, by its proximity benefits from the annexes of the main stadium to the south, the mosque is accessible from the pedestrian forecourt and has its own nearby car parks.



Figure II.47: View of the access to the stadium of Khalifa Sport City (Qatar)

Source : www.gettyimages.fr.

Sports training and teaching equipment:

Sport hall:

North element of the triangle formed by the major facilities of the ground plan, the sports hall is accessible from the pedestrian forecourt at level +19.00 and from the 1000-space car park.



Figure II.48: view of the sports hall of Khalifa Sport City (Qatar)

Source : www.gettyimages.fr.



Figure II.49: view of the sports hall of Khalifa Sport City (Qatar)

Source : www.gettyimages.fr.

Under the clearance hulls a single volume without pillar is grouped around the athletics track, basketball and handball courts, judo, fencing. Each sports field is equipped with bleachers accessible by the public from the high. The lower level of the grounds is occupied by the changing rooms and the equipment storage rooms.

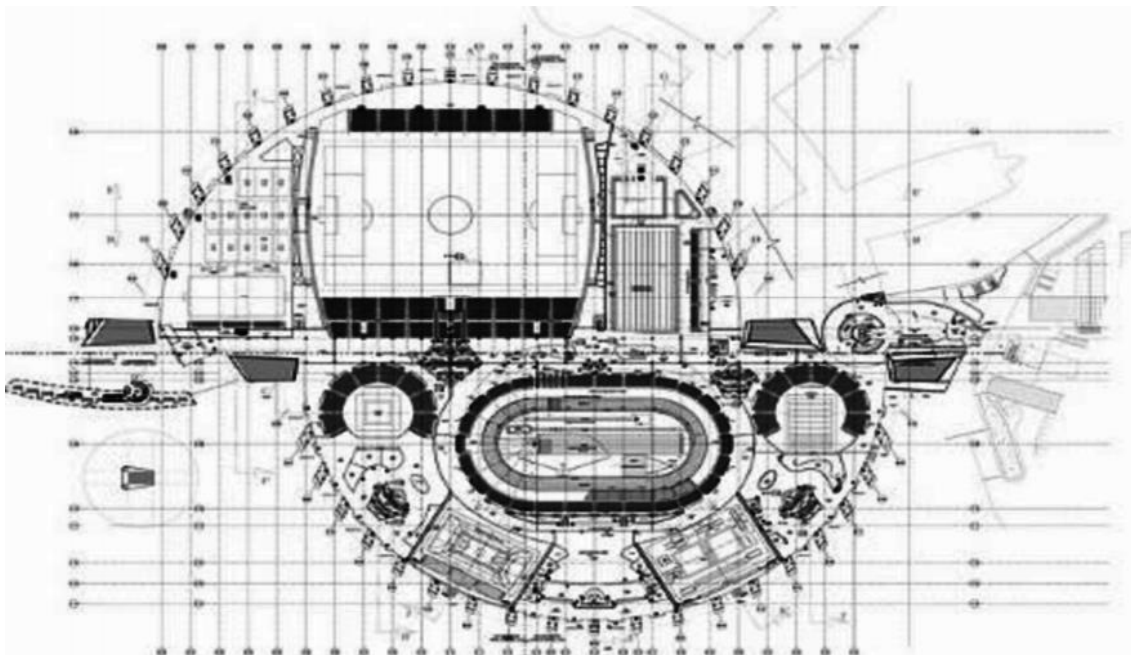


Figure II.50: Plan of the sports hall of Khalifa Sport City (Qatar)

Source : Google image.

The Academy:

Continuing the dimension of the triangle towards all the outdoor training stadiums, the academy develops around the accommodation and meeting building two wings:

- One for classrooms, the other for catering. Students are thus in direct contact with sports halls and outdoor fields.
- A ramp lined with parking lots connects them to the North-South route



Figure II.51 View of the Khalifa Sport City Academy (Qatar)

Source :Google image.

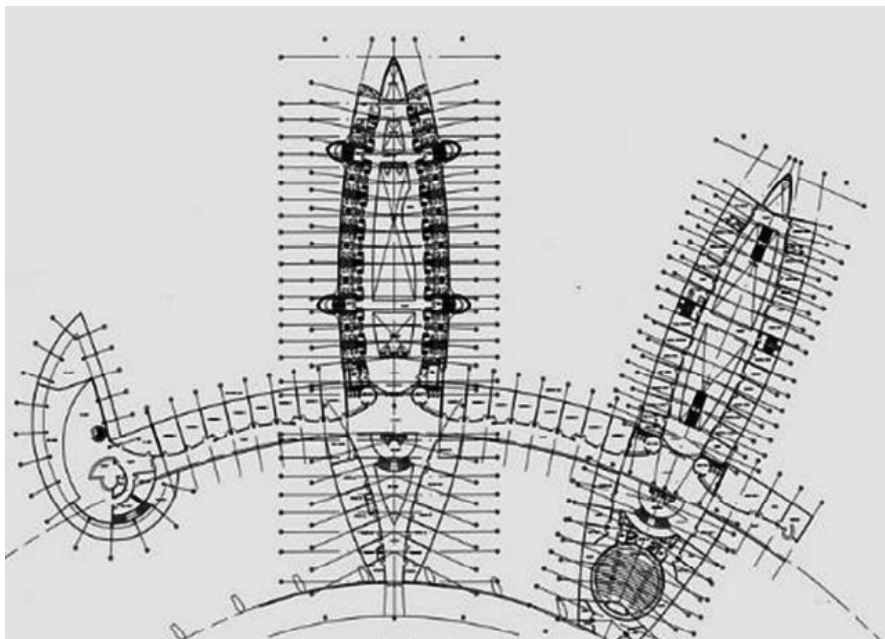


Figure II.52: Plan of the Academy of Khalifa Sport City (Qatar)

Source :Google image.

The training grounds:

They are all grouped around secondary axes constituting service and maintenance routes. They are connected to the peripheral zone and to the western relaxation zone allowing the background training. A secondary North-South axis links them to equilibrium sport areas (skateboarding, rollerblading), in direct communication with the Academy and the Sport Hall.

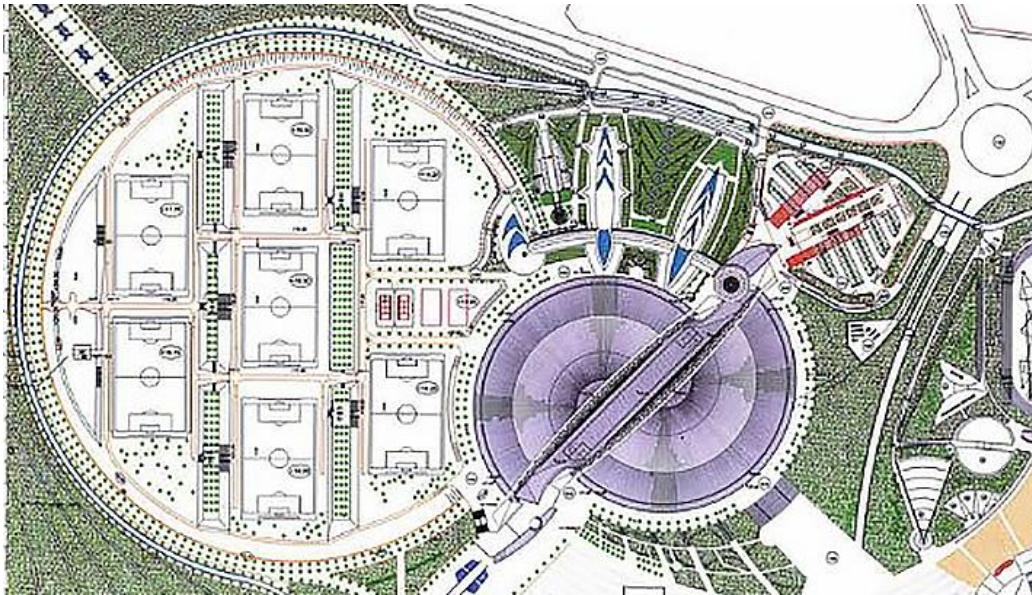


Figure II.53: Khalifa Sport City training ground (Qatar)

Source :Google image.

Leisure, entertainment and accommodation facilities:

The South of the triangle is centered around a set made up of the hotel accessible from the pedestrian forecourt at level +19.00 and from the 1000-space car park at the bottom level two sets of symmetrical shells house the cinemas and the bowling alley as well as the leisure.



Figure II.54: View of the accommodation block of Khalifa Sport City (Qatar)

Source: Google image.

In the south, the velodrome surrounded by terraces allows you to follow the competitions and the arrivals of the outdoor races of the cycle tracks.

Particular attention will be paid to landscaping planted to create an attractive setting in a place for



Figure II.55: View of the entertainment and leisure block of Khalifa Sport City (Qatar)

Source :Google image.

Car parks, access and evacuation:

- Vehicle accesses are differentiated according to functional uses: The North-South axis which connects the two external roundabouts defines two main areas. The stadium area and its 5000 parking lot, the training and leisure areas.
- The stadium's public car park has its own six entrances and exits distributed along the exterior lanes according to the division of parking into smaller areas. Players and the press have access to the 1000-space car park under the Parvis. This car park is accessible from the sports hall and the hotel, the shopping center and the swimming pool.
- The park is not closed overall. However, a fence will be provided for the areas of the training grounds for the tranquility of athletes. In the training and leisure areas, nearby parking lots are located at the level of the academy, the mosque, the women's activity rooms as well as near the health trail and the lake. -They are accessible from the main track and from an entrance at the west end.

Power plant :

This building concerns all the powers necessary for the site (power greater than 100 megawatts) for the supply of electricity, air conditioning, and serves all the buildings by galleries or underground networks, To carry out control and distribution , the surface of the technical building (i.e. the interior surface of this building and the terraces) is: 15000m².

Spatial organization of the complex:

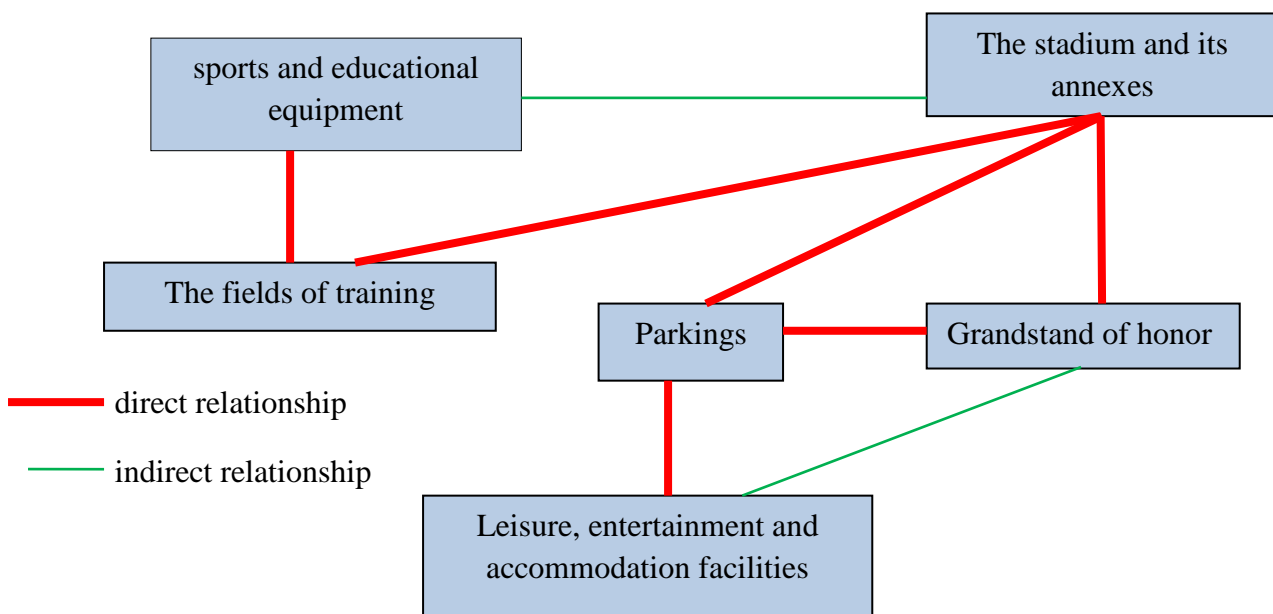


Figure II.56: Spatial organization chart of Khalifa Sport City (Qatar)

Source: Authors.

Example 02: The London Aquatic Center:

1- Presentation:

Coordinates

- **Location** Queen Elizabeth Olympic Park ,London, E20 , United Kingdom
- **Operator** Greenwich Leisure Limited
- **Capacity** 17,500 (2,500 post-Olympics)

Construction

- **Broke ground** July 2008
- **Built** 27 July 2011
- **Construction cost** 269 million
- **Architect** Zaha Hadid Architects
- **Structural engineer** Ove Arup & Partners
- **General contractor** Balfour Beatty

Tenants

- 2012 Summer Olympics
- 2012 Summer Paralympics
- 2016 European Aquatics Championships



Figure II.57: View of the London Aquatic Center

Source: Google image.

The London Aquatics Centre is an indoor facility with two 50-metre (164-foot) swimming pools and a 25-metre (82-foot) diving pool in Queen Elizabeth Olympic Park in Stratford,

London. The centre, one of the main venues of the 2012 Summer Olympics and the 2012 Summer Paralympics, was used for the swimming, diving and synchronised swimming events. After significant modification, the centre opened to the public in March 2014.



Figure II.58: Aerial view of the London Aquatic Center

Source: Pinterest.

- The site is positioned on the southeast edge of the Olympic park with direct proximity to Stratford. The pedestrian access from the east-west bridge called the bridge that connects the city of Stratford the development of Stratford City with the Olympic Park will cross over the BAC. This will provide a highly visible facade for the BAC along the bridge. Several small pedestrian bridges connect to the Olympic Park site on the existing canal.
- The Aquatic Center addressed in its design of the main kingdoms public spaces involves in the Olympic Park and planning of Stratford City. This is mainly the east-west connection of the city bridge of Stratford and the continuation of the Olympic Park space along the canal.
- The architectural concept of the London Aquatic Center is inspired by the fluid geometry of the moving water, creating spaces and an environment that surrounds in sympathy with the river landscape of the Olympic Park. A wavy roof sweeps across the ground like a wave - enclosing the Centre's pools with its gesture of unification of fluidity, while describing the volume of swimming and the diving pools.



Figure II.59: Ground plan of London Aquatic center

Source: Google image.

- The London Aquatic Center is designed to have the flexibility to adapt to the size and capacity of the London Olympic Games while also offering the optimal size and capacity for proper use.



Figure II.60: Profile view of London Aquatic Center

Source: Google image.

- The Aquatic Center is planned on a perpendicular axis orthogonal to the city of Stratford bridge. Along this axis are arranged the three swimming pools. The training pool is located under the deck, while the competition and diving pools are in a large volumetric pool hall. The overall strategy is to frame the base of the billiard room like a podium by surrounding it and connecting it to the deck.



Figure II.61 : Interior view of London Aquatic Center

Source: Google image.

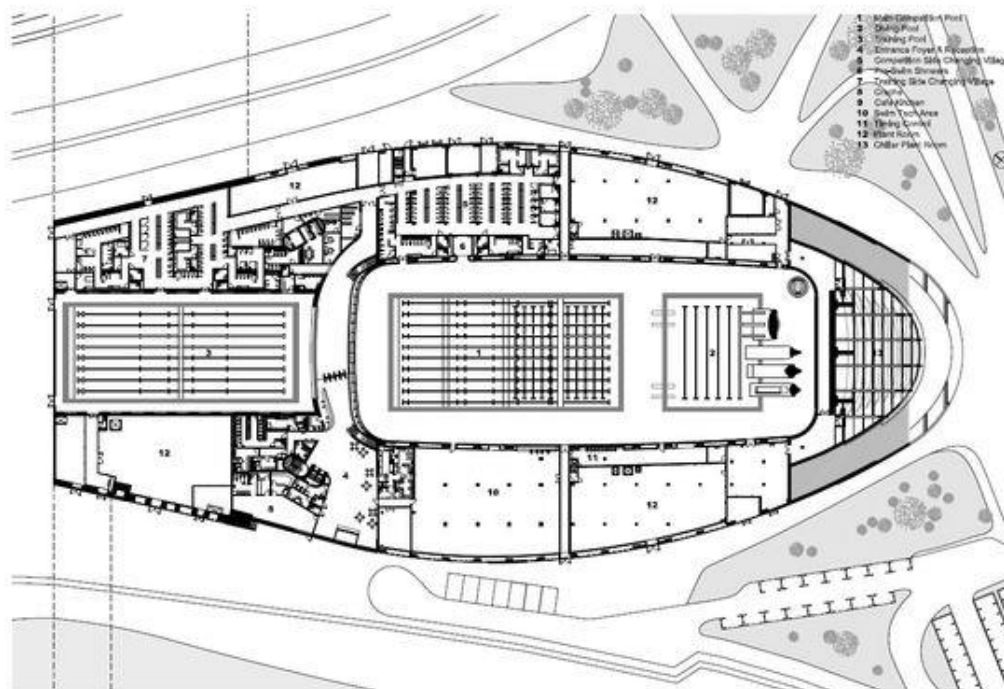


Figure II.62: Ground floor plan of London Aquatic Center

Source: Google image.

- The pool hall is expressed above the podium level by a large roof which is arched along the same axis as the pools. Its shape is generated by the sight lines for spectators during the Olympic mode. Double curvature geometry was used to create a structure of parabolic arches that create the special features of the roof. The roof undulates to differentiate an internal visual separation inside the pool hall between the volume of the competition pool and the volume of the diving pool.

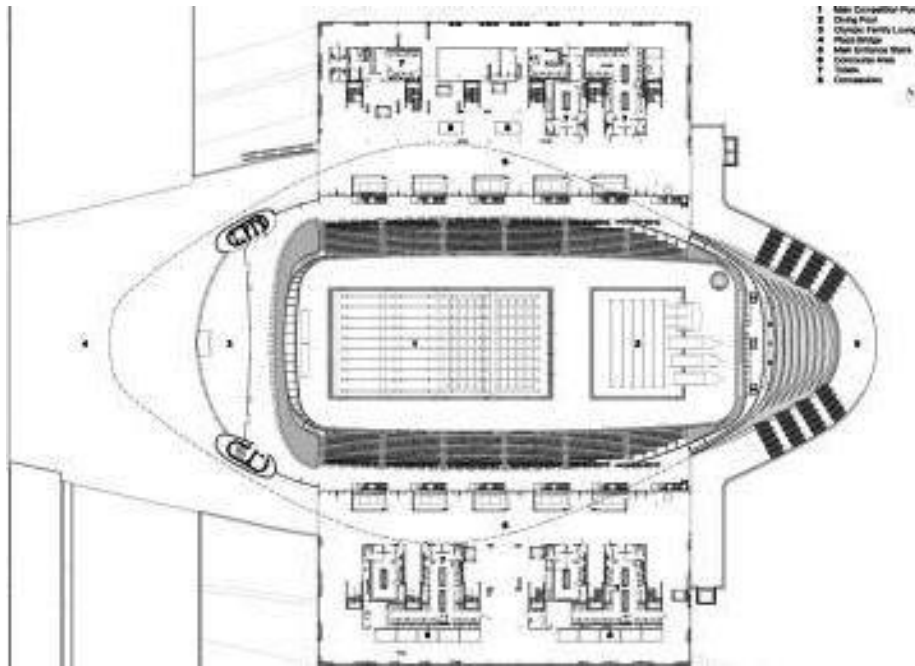


Figure II.63: First floor plan of London Aquatic Center

Source: Google image.

- The competition and diving pools are sheltered below this steel roof, enclosed in the main room. A third pool to be used for training is located under the city bridge of Stratford, which is also protected by the curved canopy. Wings on either side of the building provide additional seating but will be removed once the games are over.

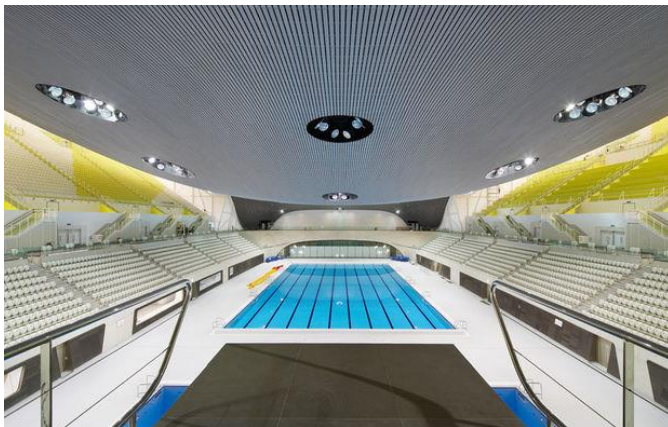


Figure II.64: Interior view of London Aquatic Center

Source: Google image.



Figure II.65: Interior view of London Aquatic Center

Source: Google image.

- Structurally the roof is earthed at 3 primary positions. Otherwise the opening between the roof and the podium is filled with a glass facade.

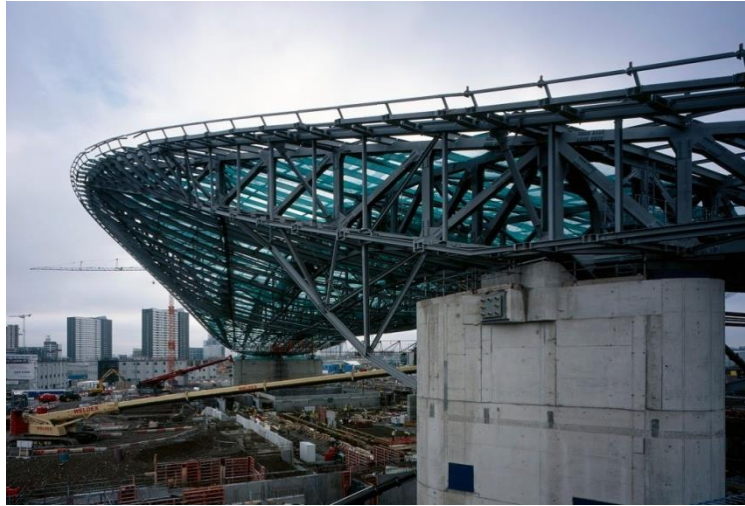


Figure II.66: London Aquatic center structure

Source: www.archdaily.com.

Comparative tables :

<p align="center">Program of Khalifa Sport City sports complexes (Qatar)</p>	<p align="center">Program of The London Aquatic Center</p>
<ul style="list-style-type: none"> • The eastern part: stage of competition, mosque, the warm-up stage and the car parks • The southern part: the rooms of sport, dedicated equipment female activities. • The north-west part: the sport hall (the basketball and handball, the judo, fencing.), the academy, the swimming pool and training stages of all sports as well than a relaxation area. • The southwest part: of a whole hotel, cinemas, bowling, entertainment, Velodrome. Different equipments (dedicated to cycling, skateboarding, B.m.x, rollerblading as well as a fitness trail) constitute the elements mall. 	<ul style="list-style-type: none"> ✓ Arranged the three swimming pools ✓ Others spaces (changing rooms, dressing rooms, technical local) ✓ Administration ✓ Parkings ✓ An area of ✓ Relaxation

Table II.6:Comparative table .

Source: Authors

Synthesis :

A) Orientation of the stadiums:

Most sports fields are oriented North while according to standards sporting the suitable orientation is 15 ° Northwest.

B) Circulation:

a-Exterior:

- ✓ Ways which surround the project. (Possibility of accessibility).

b-Interior:

- ✓ Vast esplanade (easy pedestrian circulation).
- ✓ Main axis, links the exterior with the interior.
- ✓ Rifts that facilitate rapid evacuation of land.
- ✓ Secondary routes link the main Axis with the other spaces of the project.

C - Shape:

- ✓ Technical aesthetics ensured by a form of an architectural creation.
- ✓ The dominant height.
- ✓ organic shape: spherical, ellipse ... (freedom of choice of shape)
- ✓ roof shape composes the general volumetry of each space (large doors).

D -Constructive system:

Most of the projects studied are designed with constructive systems that ensure large ranges such as:

- ✓ The reinforced concrete shell structure (prestressed)
- ✓ Tubular steel structure + steel cable
- ✓ The three-dimensional metal structure
- ✓ -Prestressed gantries

E- Construction materials:

- ✓ Concrete, steel, wood.
- ✓ Light color such as white color to decrease the rigidity of
- ✓ Materials Used like concrete and steel.
- ✓ Smooth texture, smooth front in light color.

II .4.5.Equipment standard:

To establish our program, there is a process that we must follow after having thematic examples that present us with fairly rich information that we are obliged to go through this process of approach so that we can master our project. In order for our thinking to be logical in the overall project, it is good to define all the users and to study how it works in sports equipment to arrive at a basic program and then a specific program.

II .4.5.1Program development:

The program is an essential tool, serving as a basis for the formulation of the intentions that we have in the formation of the project.

"The three questions asked by the programmer can be summed up in : "

- for who ? The different types of users in relation to their situation.
- Why? The different activities offered in relation to the site's vocation.
- How? The specific characteristics of the different activities

A/-Users :

a/- Athletes (young talents, teams) :

These are the practitioners who present one or more games of which they are of great importance for the design of the project, everything depends on the nature of the sport practiced, the discipline, the age group ...

b / - The public:

It is the major user for sports equipment, so it depends on the sport practiced, its popularity without forgetting the culture and mentality of the spectators.

These elements have a direct impact on the facilities , in particular the investments which are very heavy when it comes to a sports complex of large size.

c/- Teachers and coaches:

These are the users who organize the training and training function of the sport according to the different levels.

d/- the staff:

It is the body that cannot be neglected thanks to these essential services: health, safety, maintenance, cleanliness, services ...

e/- managers and administrators:

These are the people who present professional secrecy, the operation and organization of the center in all its functionality, which they play a very important role in the implementation of organizations that presents itself.

B/- Equipment standard:

a.Hand –Ball

It is a team and ball sport that is played by hand, most often indoors but also outdoors.

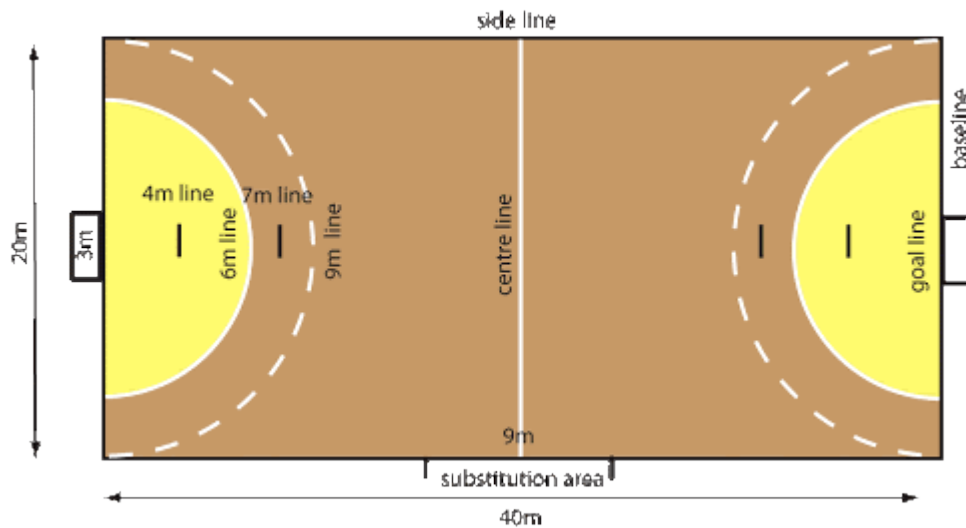


Figure II.67: Size of the playing area of Hand-ball

Source: Google images .

Size of the playing area	40m (length) x (20m width)
Clearance area	(1 to 2m) minimum along the lines of keys. (2m) minimum behind the lines of goal.
	44m x 24m = 1056m (minimum)

Surface of the playing area plus clearance	7m of free height over the entire the playing area
Nature of land	The ground must allow an evolution normal players in all game situations as well as a rebound regular balloons.

Table II.7: Size of the playing area of Hand-ball .

Source: Authors

a.1.Accommodation capacity :

In competition: 2 delegations of 20 people including 2 teams of 7 players on the field.

a.2.The room:

- High level category (1) room
- play air: $(40 \times 20) \text{ m}^2 = 800 \text{ m}^2$.
- evolution air: $(44 \times 24) \text{ m}^2 = 1056 \text{ m}^2$.
- two stands on either side of the field
- installation for recording, video, tele-press stand.
- Press room with telephone lines and a fax machine.
- 4 changing rooms of 16 places for the players.
- a location for a message table.
- each cloakroom must have 8 shower heads.

b.Volley-ball :

Game practiced with two teams of six players, consisting of sending a ball on either side of a net attached to two posts. A team scores when the ball hits the opposing court.

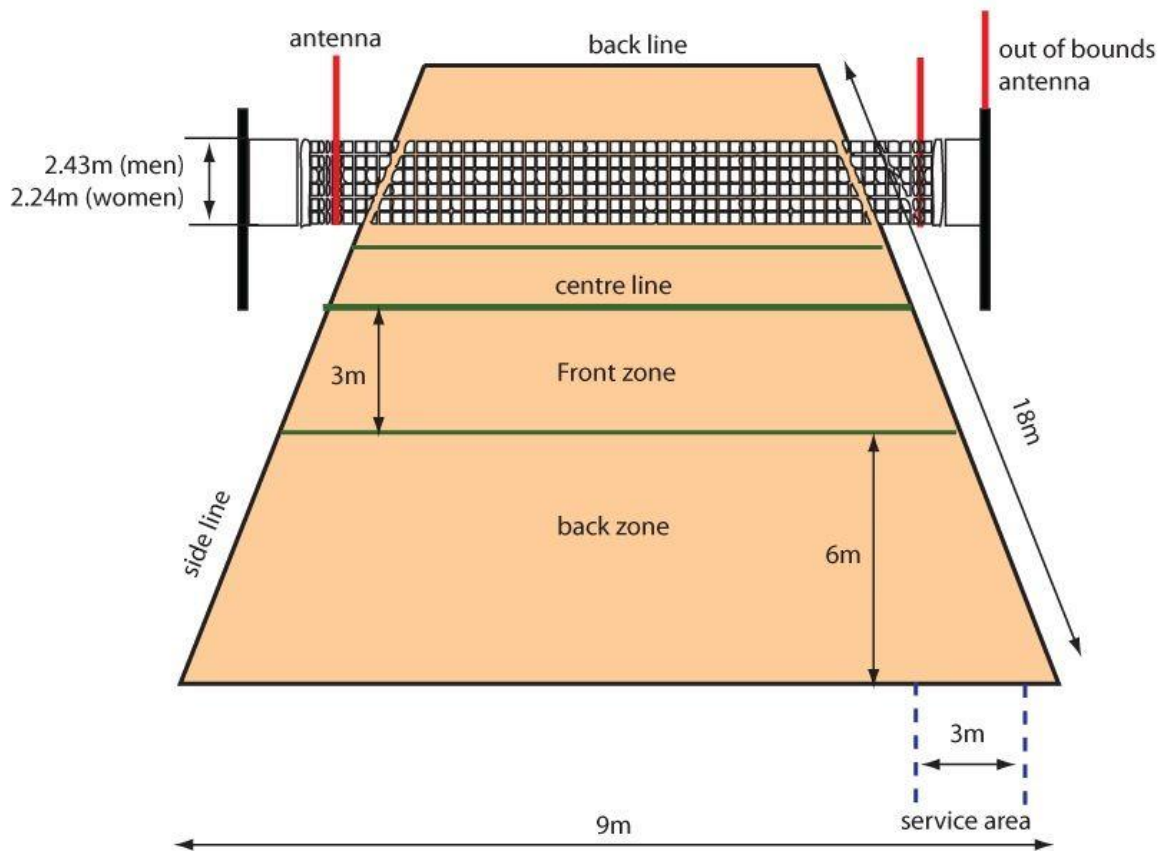


Figure II.68: Size of the playing area of Volley-ball

Source: Google images .

<p>Play air</p>	<p>playground = 162 m² free area = 3m minimum width all around the playing field (5m for international competitions).</p>
<p>Clearance</p>	

7 m to 9 m above the playing area.
12.50m at least for competitions

Table II.8: Size of the playing area of Volley-ball .

Source: Authors

c. Basket-ball :

It is a collective ball sport, which is usually played indoors, in which two teams of five players attempt to score points by throwing the ball into a basket suspended above them.

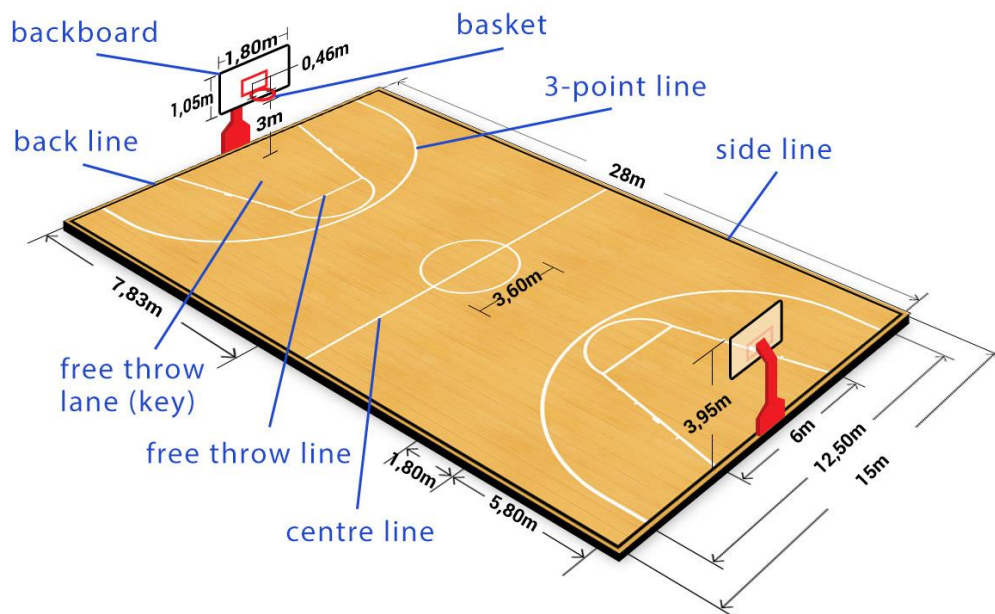


Figure II.69: Size of the playing area of Basket-ball

Source: Google images .

d. The semi-olampic swimming pool :

Subdivided into two 25-meter pools - 6 corridors

52 feet 6 inches x 164 feet pool - 50 meters (58,887 square feet) - Depth 40 inches to 12 feet

To practice various aquatic activities including swimming, diving, aquafitness, synchronized swimming, water polo, etc...

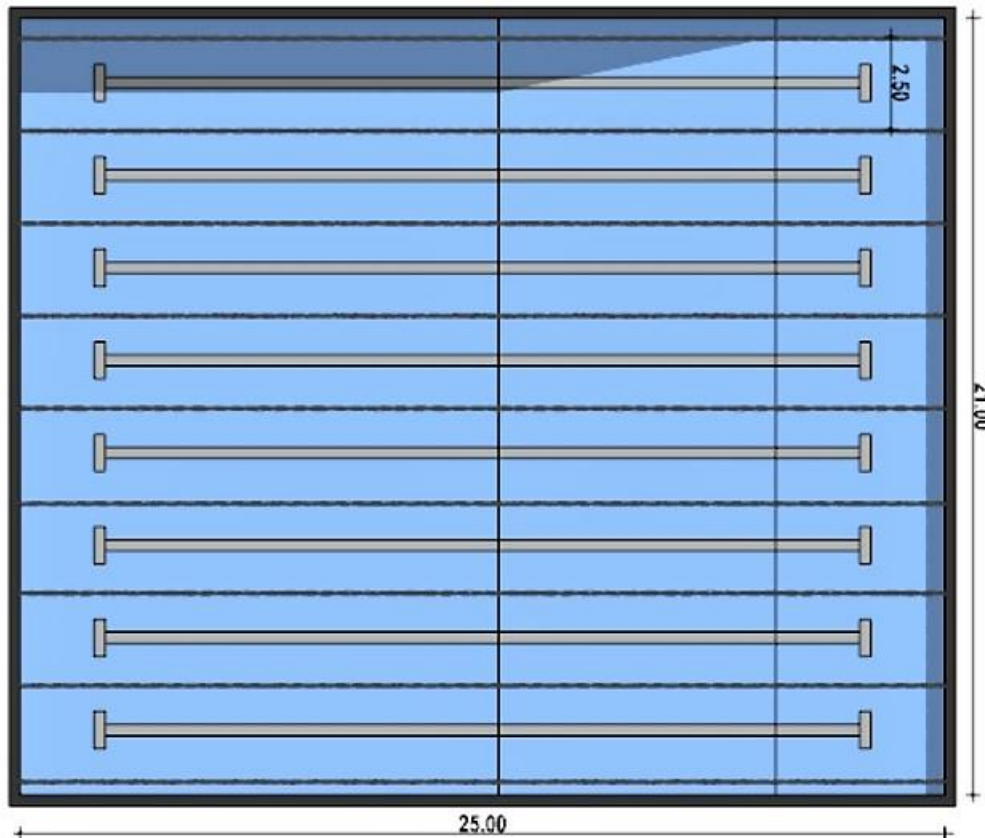


Figure II.70: Size of semi-Olympic swimming pool

Source: Google images .

II .4.6.Brief presentation of the Typo morphological approach:

II .3.6.1.Definition :

Typo-morphology is a method of analysis that appeared in the Italian school of architecture in the 1960s (S. Muratori, A. Rossi, C. Aymonino, G. Caniggia). It is a combination of the study of urban morphology and that of architectural typology, at the junction of the two disciplines of architecture and urban planning. Typo-morphology addresses the urban form by the types of buildings that compose it and their distribution in the road network. More precisely, this consists in thinking in terms of relationships of the urban form (road network, plots, boundaries, etc.) and the typology, that is to say the types of construction (position of the building in the plot, internal distribution, etc.). The types thus fit into certain urban forms more than others. We are therefore particularly interested in:

A.Morphology: study of the urban form in its historical development, from the elements constituting it (the site of establishment, the plan of the city, the layout of the tracks ...).

B.Typology: analysis of the specific characteristics of the components of a set or a phenomenon, in order to describe them and establish a classification. In our case, it is the

study of the types of buildings and their classification according to several criteria (dimensions, functions, distributions, constructive and aesthetic systems).

Here is a little schema that summarizes what we said :

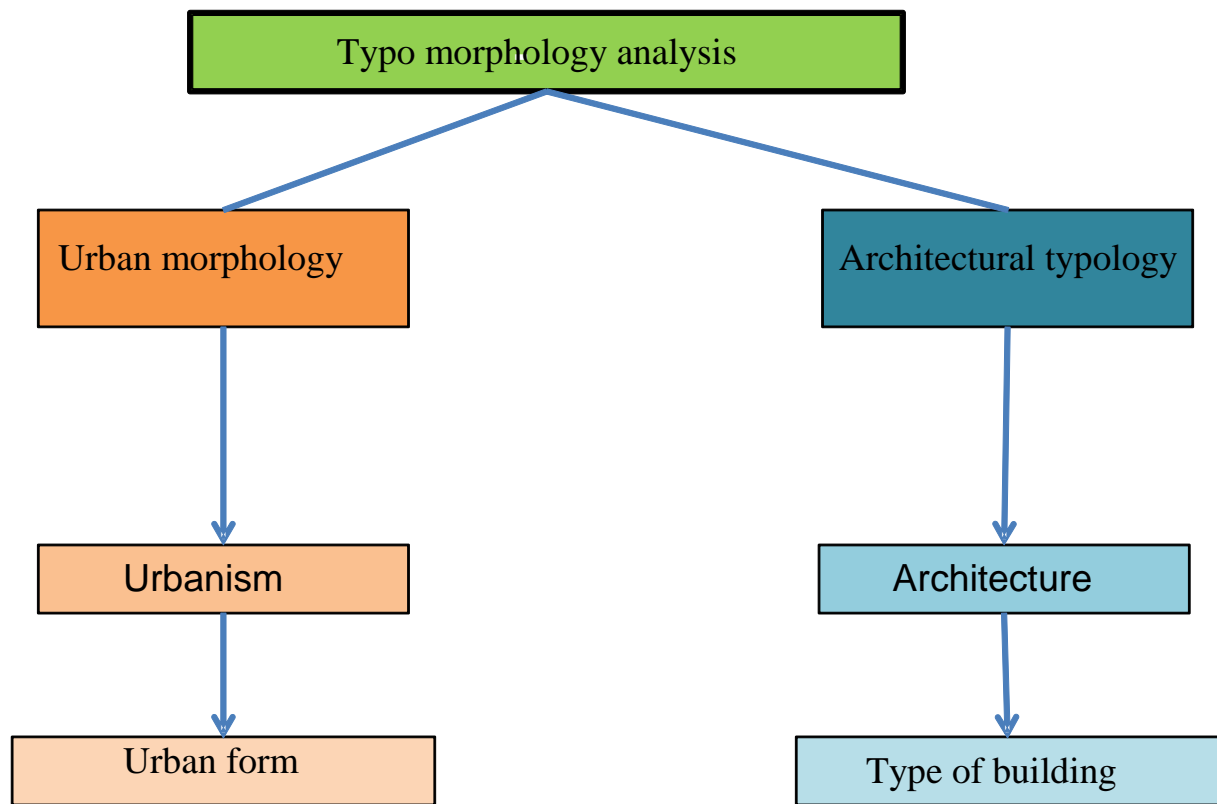


Figure II.71: Schema summarizes the definition of Typo morphological approach .

Source: Author.

II .4.6.2.The objectives of the typo-morphological analysis :

The objectives of the typo-morphological analysis are:

- ✓ To make a critical evaluation of the shape of fabrics and urban organisms.
- ✓ Identify permanent structures associated with the cultural identity of places and constraints relating to the conservation of built heritage and cultural landscapes.
- ✓ Define measures to control changes in the built environment and to supervise intervention projects.

II .4.7.Conclusion:

In this chapter, theoretical research is the most important point in this work which has been carried out through a conference of different articles and books as well as the study of examples touching the problematic of our case of study which is ""Urban sprawl" and "Consolidation of a periphery of a city ".

The thematic research has enabled us to better understand and enrich our knowledge of the various actions and developments of this type of city on the one hand, on the other hand to better understand the way of carrying out the urban project in order to respond to the issues and needs. of the city and its inhabitants.

In addition, it also allowed us to draw planning principles from the examples studied and the concepts established (urban project, consolidation, urban densification).

In order to carry out an urban project responding to the issues of our city, the intervention will revolve around:

- Consolidation of the periphery.
- Urban densification.
- The upgrading of public spaces.
- Urban landscaping.



**Chapter III :
Case Of Study**

III.1. Introduction:

"The constructive practice of society, whether spontaneous or planned, and highly structured; it does not emerge or transform at random but derives from a constant evolution guided by a unitary system of laws, planning or spontaneity" ⁶⁰.

Before intervening, it is necessary to acquire knowledge, to have a certain understanding of the structure and operation of the case study (Ouled Slama)

In order to ensure an integration of the project into its environment, in form and in function, then to achieve homogeneity in terms of constructive practices.

The objective of this phase of the study is to prescribe the various solutions in terms of development, concerning all the needs of the territory of the case study, therefore it is an operational phase which contains a territorial, diachronic, synchronic analysis of the town of Ouled Slama by studying the formation and urban transformation process of the latter, thus extracting all the problems detected during this analysis, this will allow us to define the best solutions as we have already mentioned.

III.2. Presentation of the town of Ouled Slama:

III.2.1. Territorial situation:

Ouled Slama is located at the foothills of the Atlas Blidéen, part of the plain of Mitidja and depends on the Wilaya of Blida to the east, it is located 24.88 Km from the chief town of Blida and 26.41 Km from the chief town of 'Alger' . ⁶¹

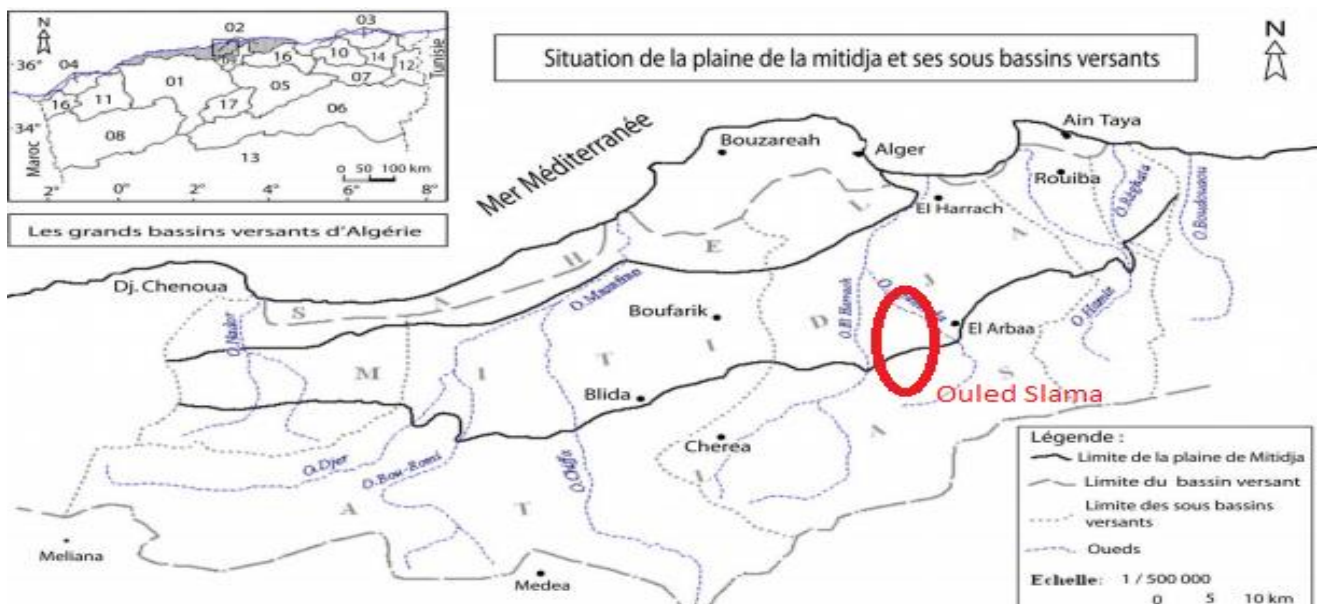


Figure III.1: Situation of the town of Ouled Slama in the Mitidja plain

Source: ANRH processed by the author

⁶⁰Caniggia, Gianfranco, “ architectural composition and typology of the building ”, Ed Sud 1988, P12..

⁶¹ Master plan for development and town planning 2016 of the town of Ouled Slama.



Figure III.2 : Situation of the town of Ouled Slama at the national scale
Source : Google image

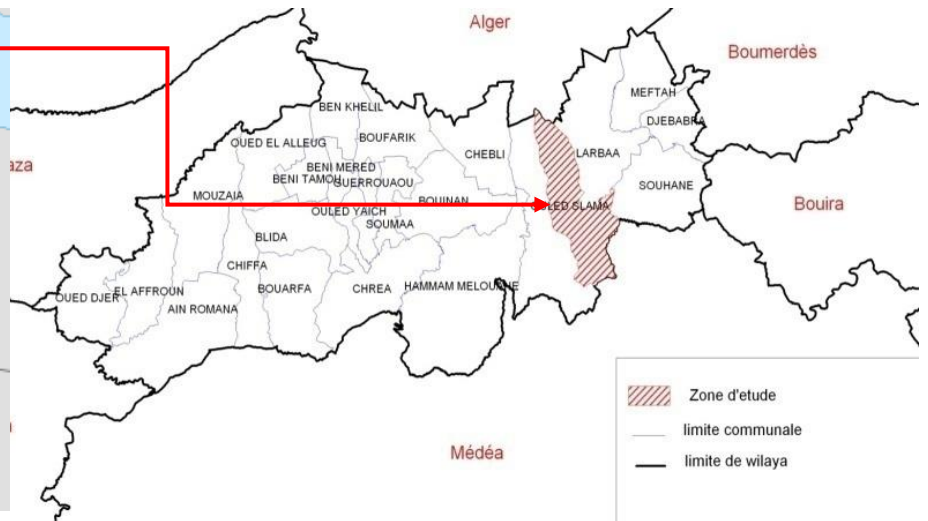


Figure III.3 : Situation of the town of Ouled Slama at the scale of the Wilaya of Blida
Source : Master plan for development and town planning 2016 of the town of Ouled Slama

III.2.2. Communal situation:

Ouled Slama forming part of the wilaya of Blida to the east depends on the daïra of Bougara, it is located at a distance approximately:

- ✓ **2.39 km** from the chief town of Bougara, to the west.⁶²
- ✓ **4.2 4.28 km** from the chief town of Arbaa, to the east.⁶³
- ✓ **26.41 km** from the chief town of Algiers, to the north.⁶⁴
- ✓ **8 24.88 km** from the chief town of Blida, to the west.⁶⁵

It is limited by:

- ✓ In the North by the cities of **Larbaa** "W. Blida" and **Sidi Moussa** "W. Algiers".⁶⁶
- ✓ In the South by the cities of **Bougara** "W. Blida" and **Aissaouia** "W. Médéa".⁶⁷
- ✓ In the East by the cities of **Souhane** "W. Blida" and **larbaa** "W. Blida".⁶⁸
- ✓ To the West by the city of **Bougara** "W. Blida".

⁶² Master plan for development and town planning 2016 of the town of Ouled Slama
⁶³ Master plan for development and town planning 2016 of the town of Ouled Slama
⁶⁴ Master plan for development and town planning 2016 of the town of Ouled Slama
⁶⁵ Master plan for development and town planning 2016 of the town of Ouled Slama
⁶⁶ Master plan for development and town planning 2016 of the town of Ouled Slama
⁶⁷ Master plan for development and town planning 2016 of the town of Ouled Slama
⁶⁸ Master plan for development and town planning 2016 of the town of Ouled Slama



Figure III.4: Situation of the town of Ouled Slama at the municipal scale.

Source: Master plan for development and town planning 2016 of the town of Ouled Slama

III.2.3. Geographic data:

Ouled Slama covers 7,118 ha in area⁶⁹, it is made up of and three types of relief, with an altitude varying between 58 m (North of the town)⁷⁰.and 1185 m (South of the town)⁷¹.

- ✓ **30%** of the area is in the eastern plain of **Mitidja**.⁷²
- ✓ **10%** of the area is on the foothills of the **Tellian Atlas**.⁷³
- ✓ **60%** of the area is on the first foothills of the **Tellian Atlas**.⁷⁴

III.2.4. Accessibility:

Ouled Slama is crossed mainly by an important road axis which is the N.R n°29, it ensures a good connection between the two major economic and administrative centers which are Blida and Algiers. There is also another connecting road which is N.R.n° 64 to the south of the town of Ouled Slama and the vicinal road N ° 01 to the north of the town.

⁶⁹ Master plan for development and town planning 2016 of the town of Ouled Slama

⁷⁰ Master plan for development and town planning 2016 of the town of Ouled Slama

⁷¹ Master plan for development and town planning 2016 of the town of Ouled Slama

⁷² Master plan for development and town planning 2016 of the town of Ouled Slama

⁷³ Master plan for development and town planning 2016 of the town of Ouled Slama

⁷⁴ Master plan for development and town planning 2016 of the town of Ouled Slama

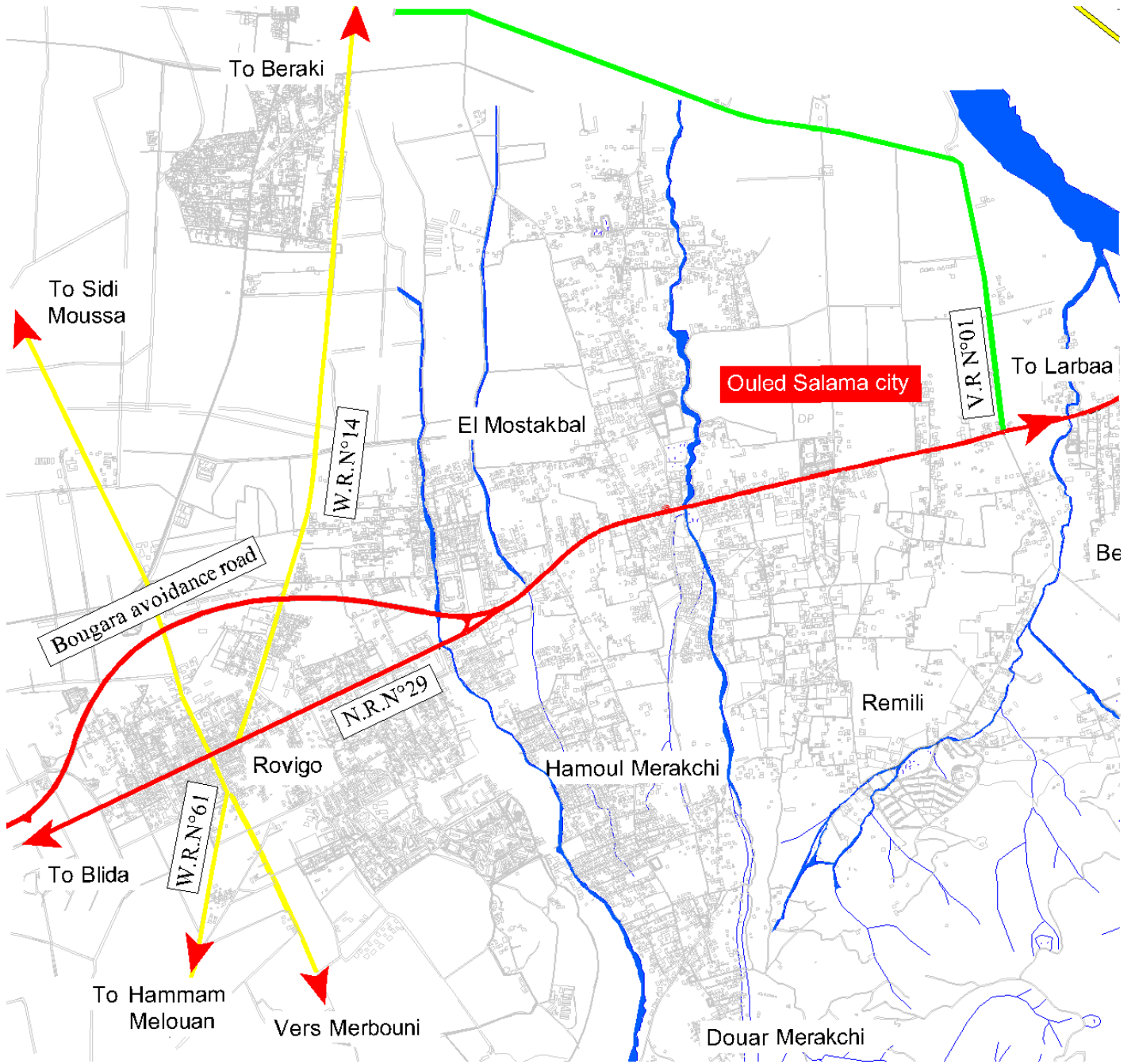


Figure III.5: Accessibility map of the town of Ouled slama

Source: Master plan for development and town planning 2016 of the town of Ouled Slama

treated by the author

III.3. Typo morphological reading of the town of Ouled Slama:

III.3.1 Reading of the territory of Ouled Slama:

The reading of territory makes it possible to reach a level of understanding of human settlement, of all the modalities that man implements in the development of his environment, So understanding of territory consists in studying the structures generated by human activities on the natural structures that characterize each place.

The Italian approach of **Caniggia** is done gradually through the succession of four cycles: **Implantation, Consolidation, Recovery, Restructuring.**

Each of them is made up of several phases which obey a chronological logic in such a way that the previous phases are assumed by the next phase in a new hierarchical order. There is no one way to just occupy territory with this or that other culture; but there is a logic which means "common sense" or "spontaneity".

III.3.1.1.Ouled Slama territory appropriation process:

A- implantation and decent cycle from the mountains to the plains:

a.Phase 01: the prehistoric man traversed the territory by a course nicknamed the course of main ridge; because he didn't know how to cross water streams , as it was for safety reasons; it's nomadism.



Figure III.6: An example schema of main ridge line

Source: Google image

b.Phase 02: From the main ridge route are derived the secondary ridge routes and on which the high promontory establishments are formed at the level of water sources and for the spontaneous productive use of the site. This phase is marked by the start of establishments occupied seasonally and temporarily.

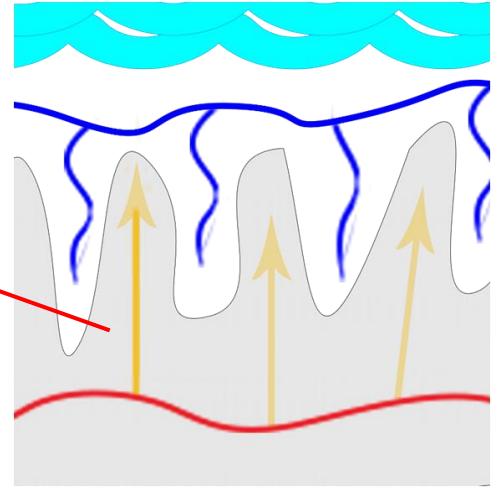
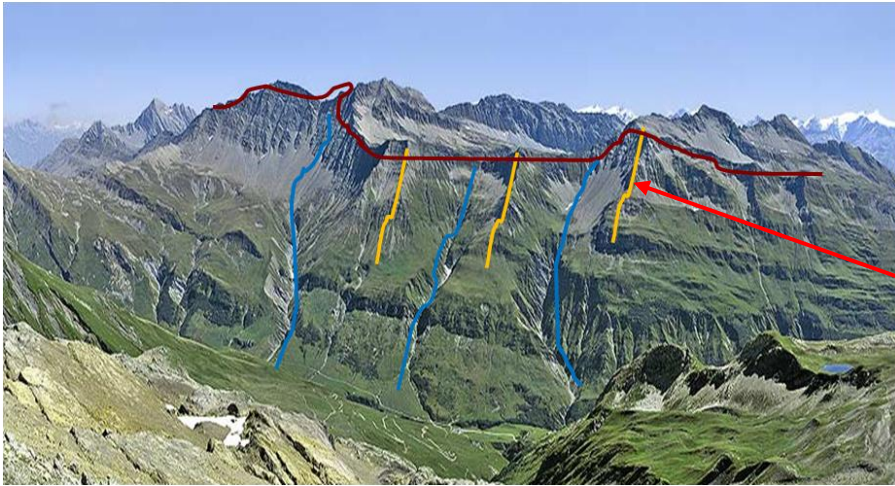


Figure III.7: An example of schema of the secondary ridge routes

Source: Google image processed by the author

c.Phase 03: The establishment of the high promontory, after its installation, will begin to exploit the land and produce it, initially to provide for his needs and by developing its activity will generate an area of production which it will seek to share with the other establishments, which will give rise to a link course called local counter crest course.

This is how sets of establishments will be formed which will be suitable at a market place to exchange their products through a route against a continuous ridge. This place will generally be lower than the local counter-crest course (proto-urban establishment).

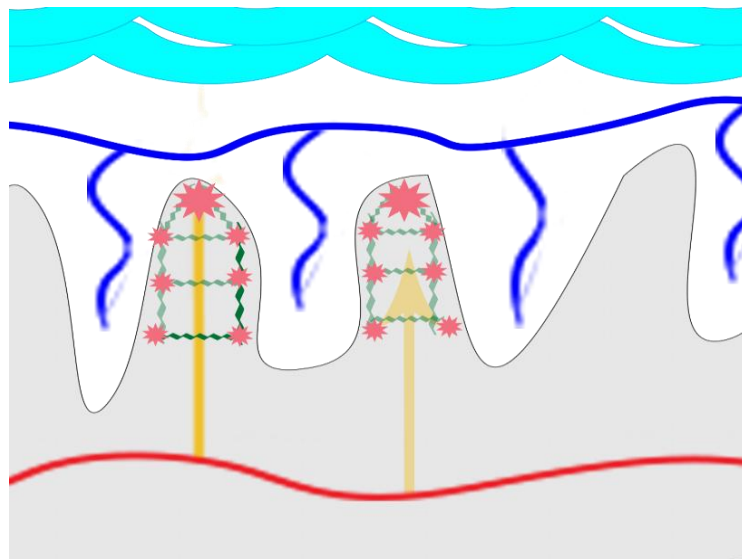


Figure III.8: Schema of counter crest routes.

Source: Google images

d.Phase 04: Consolidation of establishments where there is trade and appearance of: Course against the synthetic crest Allows reaching the valley bottoms; as it also allows crossing them by ford.



Figure III.9: Passage a travers un gué .

Source : Google image .

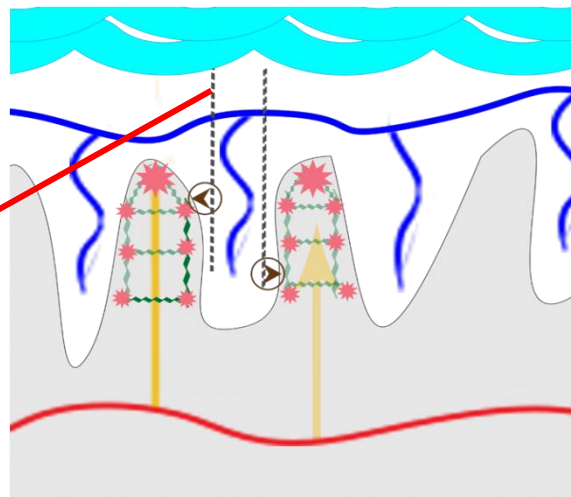


Figure III.10 : Schéma de passage des fonvallées

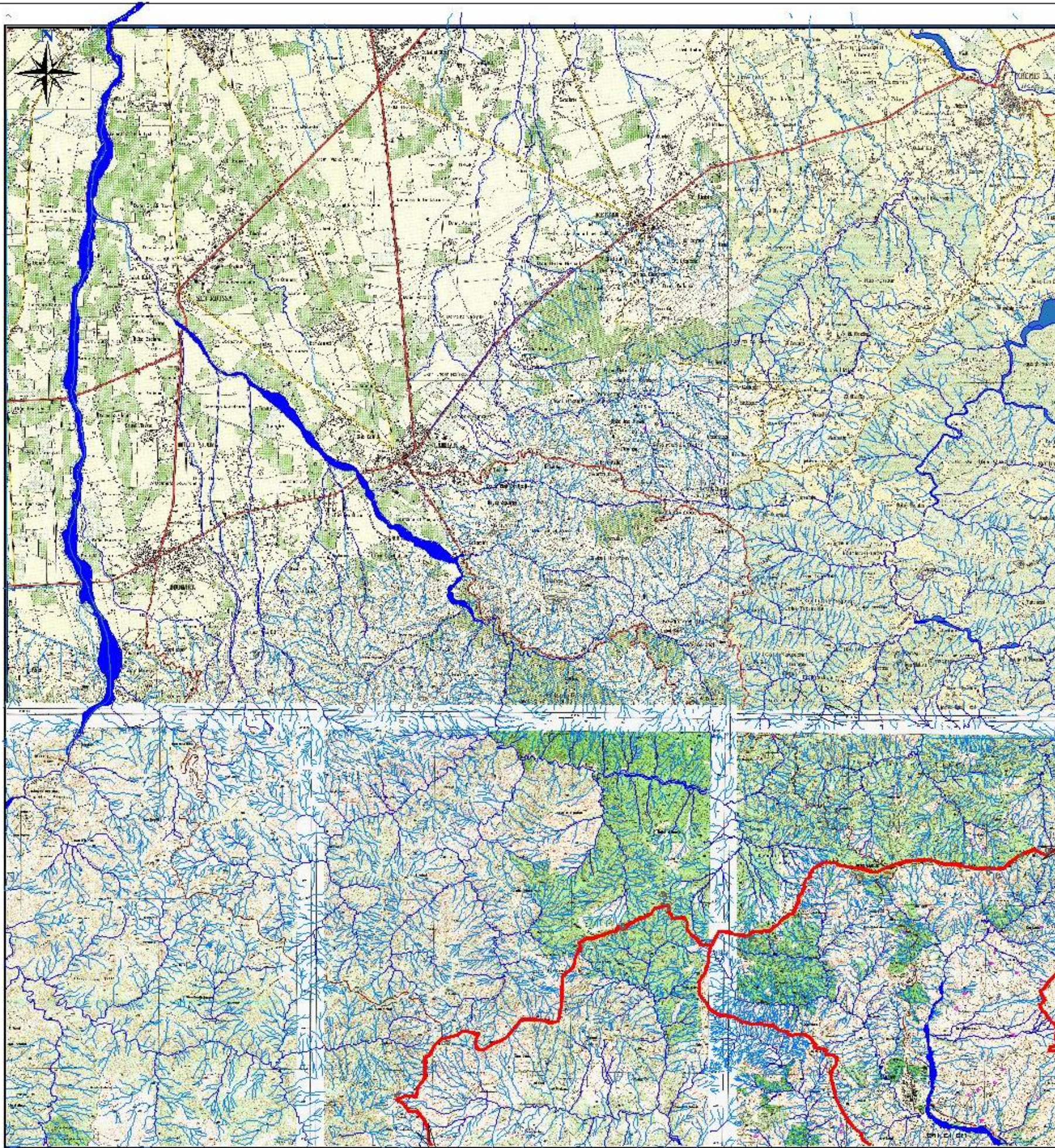
B- cycle of ascent from the plain to the mountain:

The ascent from the plain to the mountain along the rivers. The evolution of the territorial structure in Ouled Slama is currently in the first phase of the second cycle. This phase is in the process of consolidation.

C.Synthesis :

After studying the process of formation and humanization of the Ouled Slama territory, we have summarized that:

- ✓ The town of Ouled Slama was founded as a valley bottom establishment on the Mitidja plain, it is part of the 4th phase `` Consolidation of establishments and occupation of the plain ''.
- ✓ The future consolidation of territory according to this reading will be on the main ridge line passing through the small villages in the mountains and by the consolidation of the routes (secondary ridge lines), by this vision the urban sprawl on the agricultural lands of the Mitidja plain will be controlled and the agricultural land will be preserved.



Comments:

Phase I: The ridge path is the first road that structures the territory.

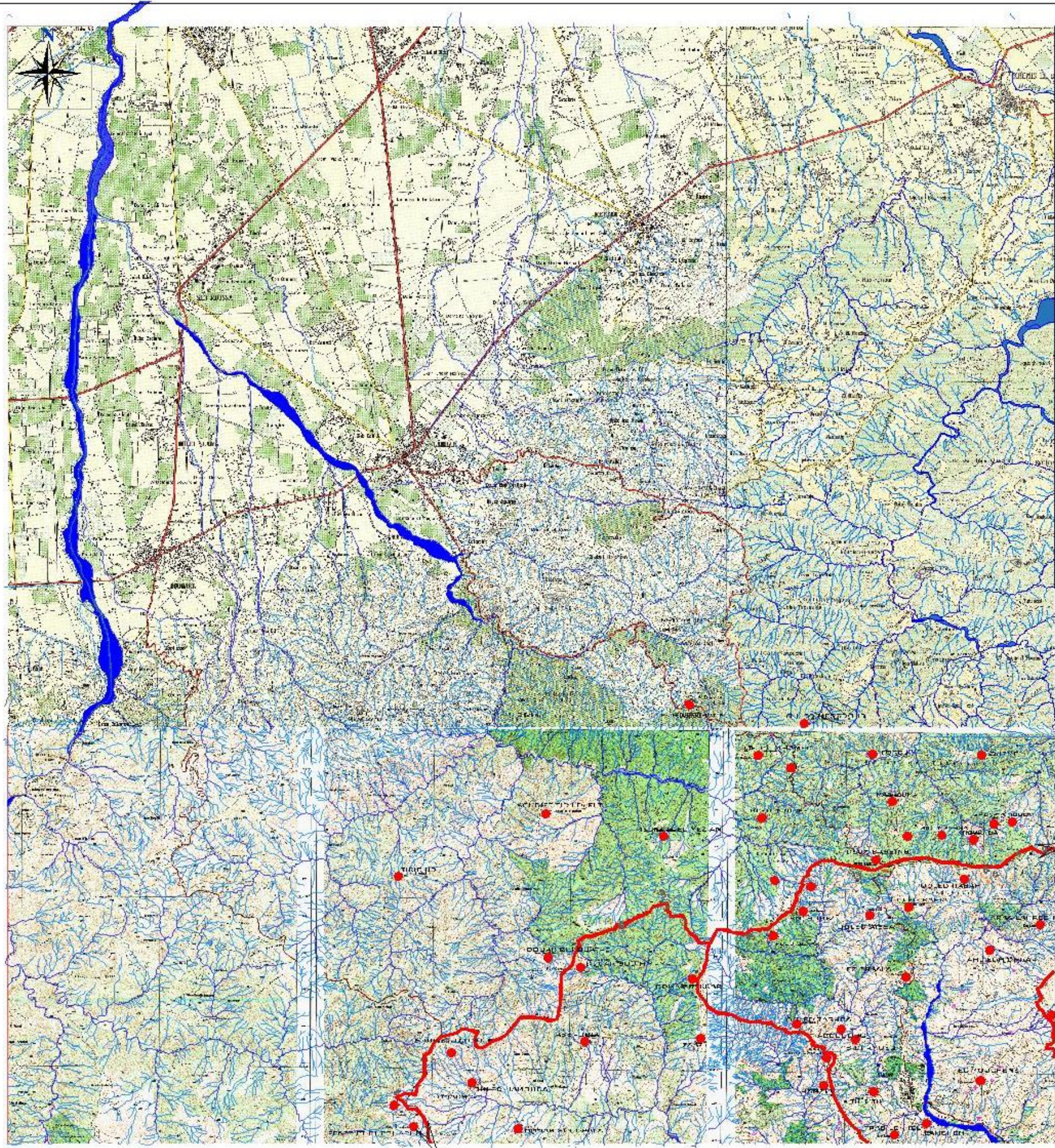
Legend

-  Big wadis
-  Wadis
-  Talweg
-  Sources
-  Mountain peak
-  Altitude

- first phase**
-  main ridge course

Implementation phases of the city of Ouled Slama
 Source: 1983 staff maps treated by the authors.

01



Comments:

Phase II: This phase is characterized by the formation of an agglomeration along the secondary ridges.

Legend

- Big wadis
- Wadis
- Talweg
- Sources
- Mountain peak
- Altitude

Second phase













- main ridge course
- secondary ridge course
- high promontory establishment

Implementation phases of the city of Ouled Slama
 Source: 1983 staff maps treated by the authors.

Comments:

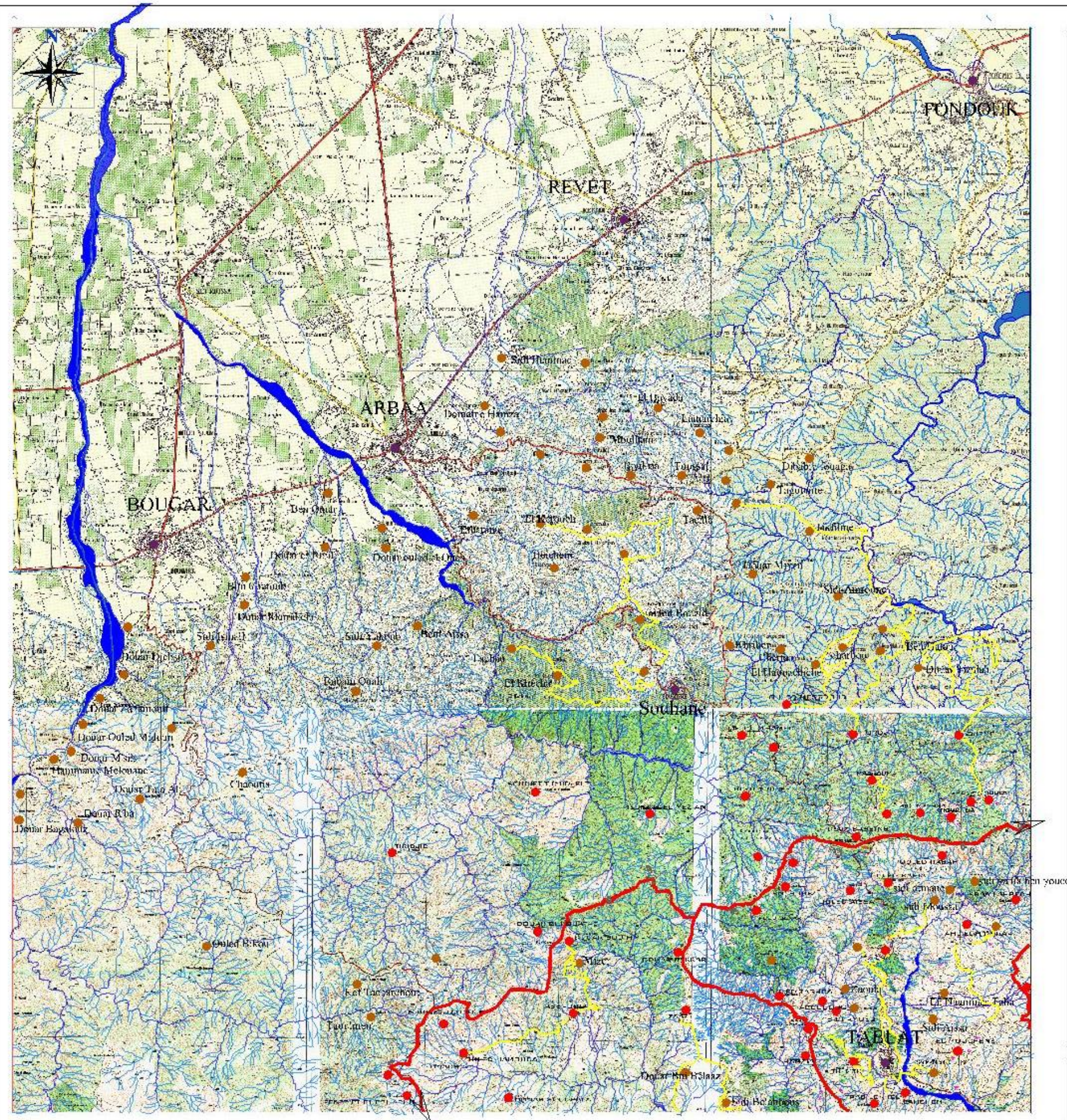
Phase III: The development of the territory continues through the formation of an agglomeration in the plain.

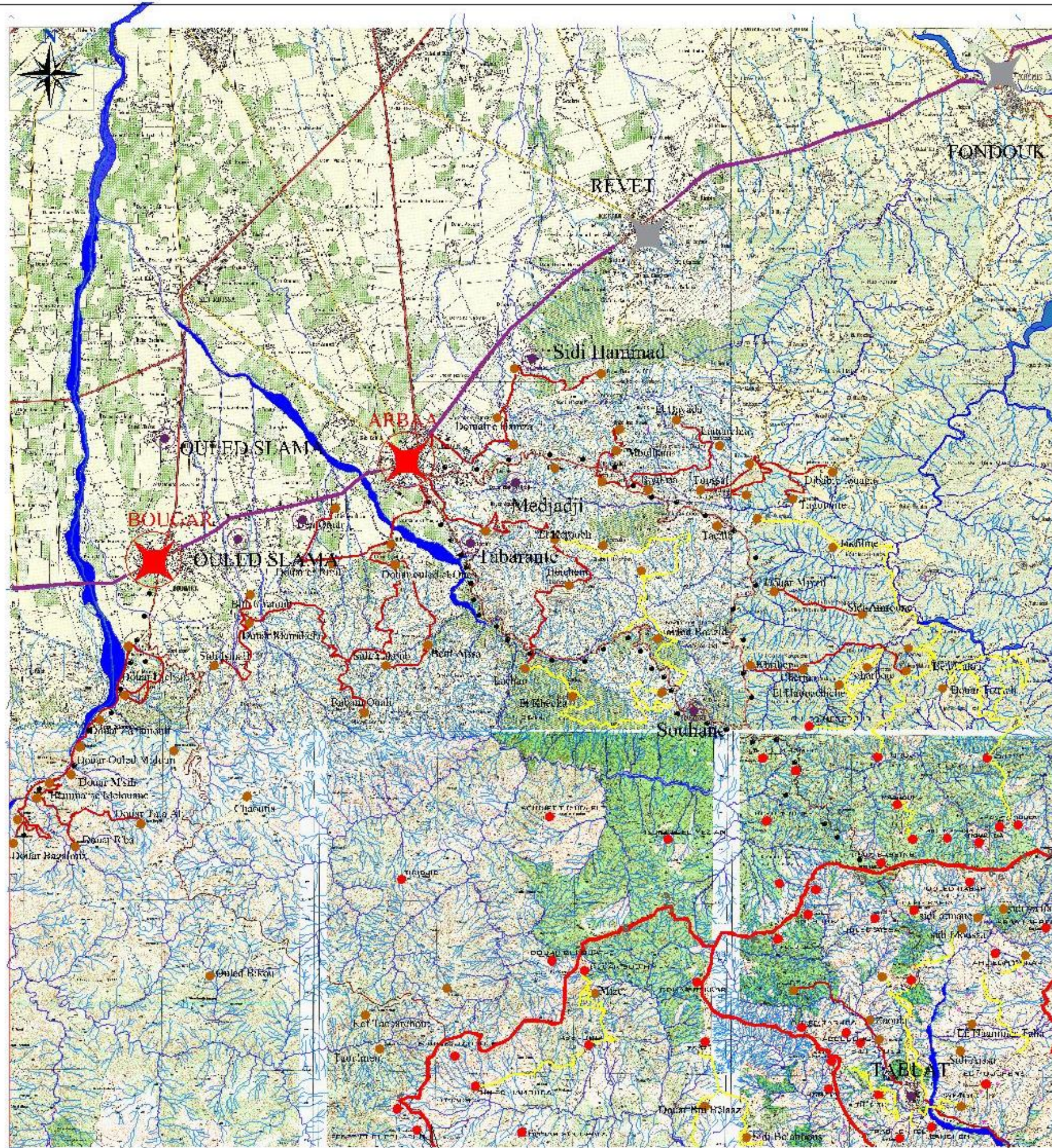
Legend

-  Big wadis
-  Wadis
-  Talweg
-  Sources
-  Mountain peak
-  Altitude
- Third phase**
-  Main ridge course
-  Secondary ridge course
-  Local counter crest course
-  High promontory establishment
-  Down promontory establishment
-  Proto urban cores (exchange places)

Implementation phases of the city of Ouled Slama
Source: 1983 staff maps treated by the authors.

03











Comments:

Phase IV: This phase, which coincides with colonization, is characterized by the colonists' possession and occupation of agricultural land, with the formation of intermediate agglomerations to consolidate control of the territory.

Legend

-  Big wadis
-  Wadis
-  Talweg
-  Sources
-  Mountain peak
-  Altitude

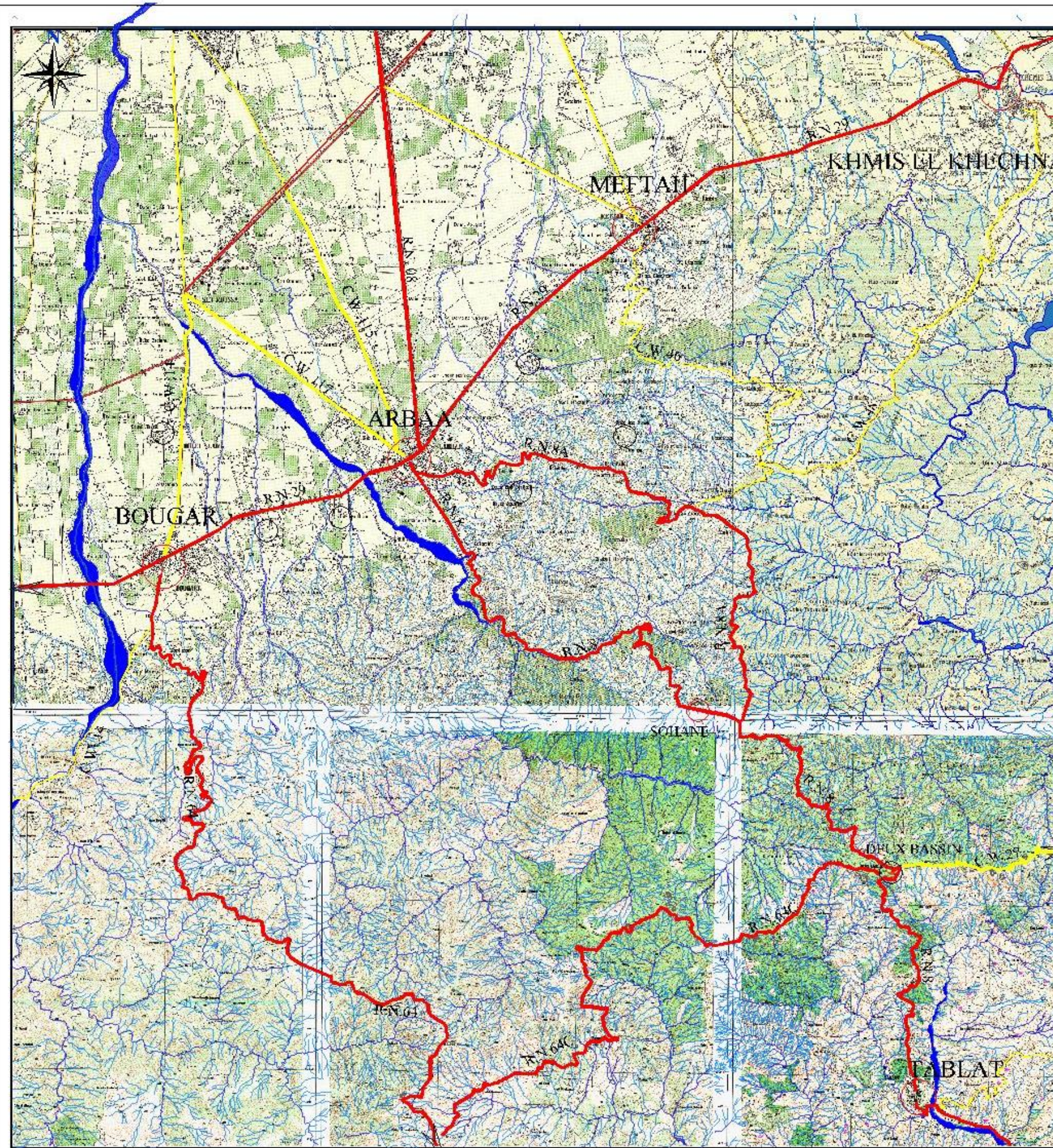
The rise 

-  Main ridge course
-  Secondary ridge course
-  Local counter crest course
-  High promontory establishment
-  Down promontory establishment
-  Proto urban cores (exchange places)
-  Continuous ridge course
-  Counter crest course synthetic

PHASE OF THE RISE TO THE MOUNTAIN

Source: 1983 staff maps treated by the authors.







04






Comments:

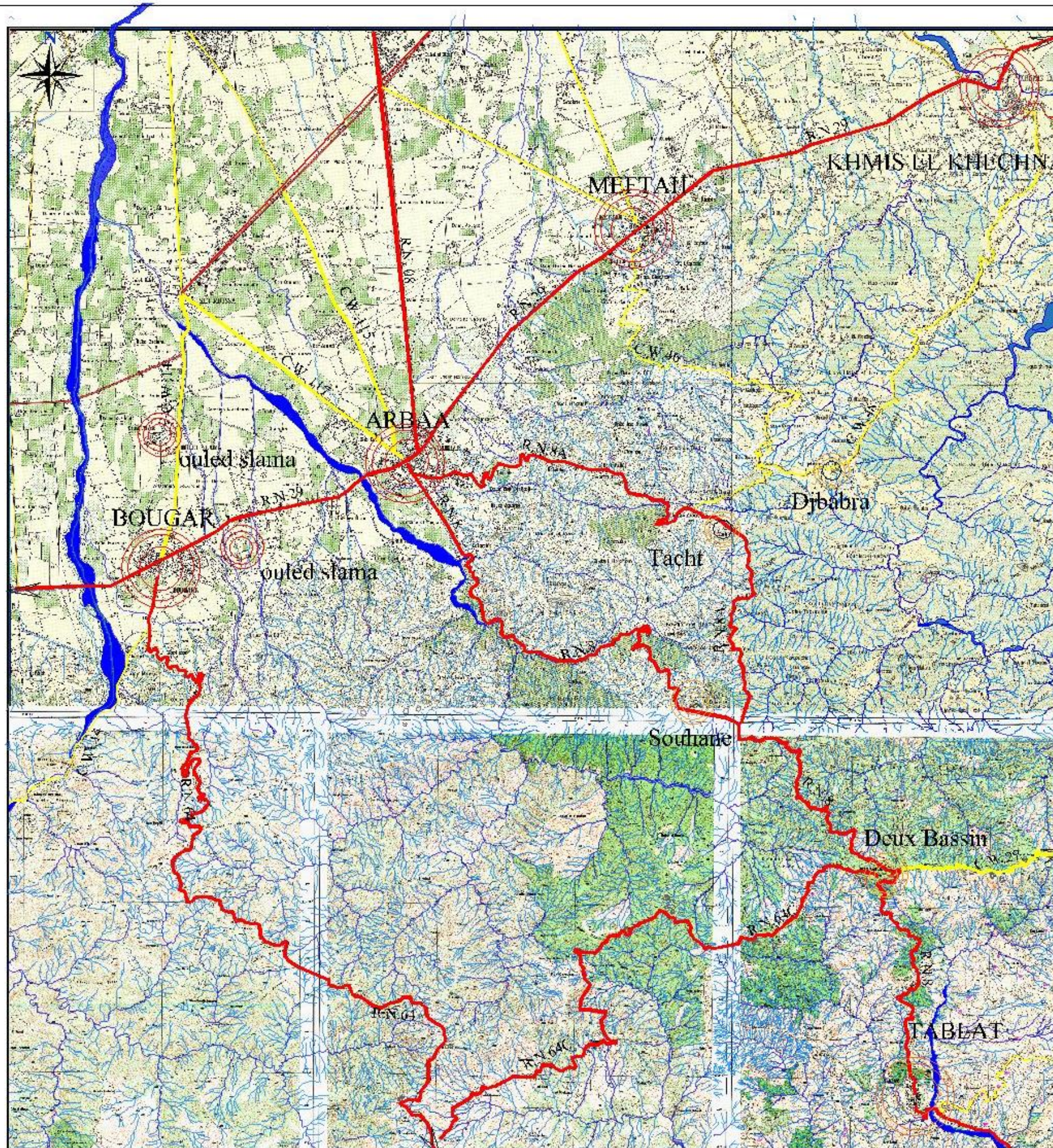
Thanks to the extension of the secondary routes derived from the main ridge line, the town of Ouled Slama acquires a special and strategic position on the down headlands. this route has become the structural route of the town

Legend

-  Big wadis
-  Wadis
-  Talweg
-  Sources
-  Mountain peak
-  Altitude

Synthesis

-  National road N.R
-  Wilaya Road W.R
-  Human settlement



Commentaires :
 After having studied the process of formation and humanization of our territory, we have concluded that the town of Ouled Slama is registered after the 4th cycle of consolidation of the establishments and the occupation of the plain so it was founded as an establishment at the bottom of the valley on the plain of Metidja

Legend

-  Big wadis
-  Wadis
-  Talweg
-  Sources
-  Mountain peak
-  1077 Altitude
-  National road N.R
-  Wilaya Road W.R
-  Human settlement
-  City of the plain
-  Mountain city
-  Village to consolidate to the elders structures

Synthesis

III.4. Diachronic reading of the town of Ouled Slama:

III.4.1 Historical development of the town of Ouled Slama:

When examining the historical development of the town of Ouled Slama, we notice three distinct periods, each of which has its well-defined characteristics.

III.4.1 .1.Before 1962: Ouled Slama was practically divided into three distinct parts:

- The northern part of **NR 29** was populated by scattered dwellings grouped into families within their small plots of land and which provided cheap labor for settler farmers who owned very large plots all around and in the midst of which were planted farms.
- The southern part of **NR 29** (which extended to the mountainous area) was occupied by dwellings very distant from each other which were populated by an indigenous population, which subsisted by cultivating the small plots they possessed. However, there is a slight grouping of dwellings in **the Remili** district, which formed a sort of hamlet in the south-east of the town .
- The eastern part of the town, south of the **NR.29**, called **El Hamoul** and **Merakchi**, was practically deserted and unexploited from the agricultural point of view, because being at the outlet of a natural pass, and surrounded by two wadis : **Hammouda** and **Guergour**, it then constituted a flood zone, which has seen in the course of history.

Several floods among which the most important, that of **1914**, which distorted the relief and even the pedological nature of the terrain of this area.

III.4.1 .2.1962-1978 period: after independence a new phenomenon intervened to change this state of affairs of the town , which is that of the migration of mountain people to the town and the plain.

In general, this is what has generated a process of densification of the already existing hamlets: **Ben Omar, Ouled Slama chief town, Ouled SlamaTahta.**

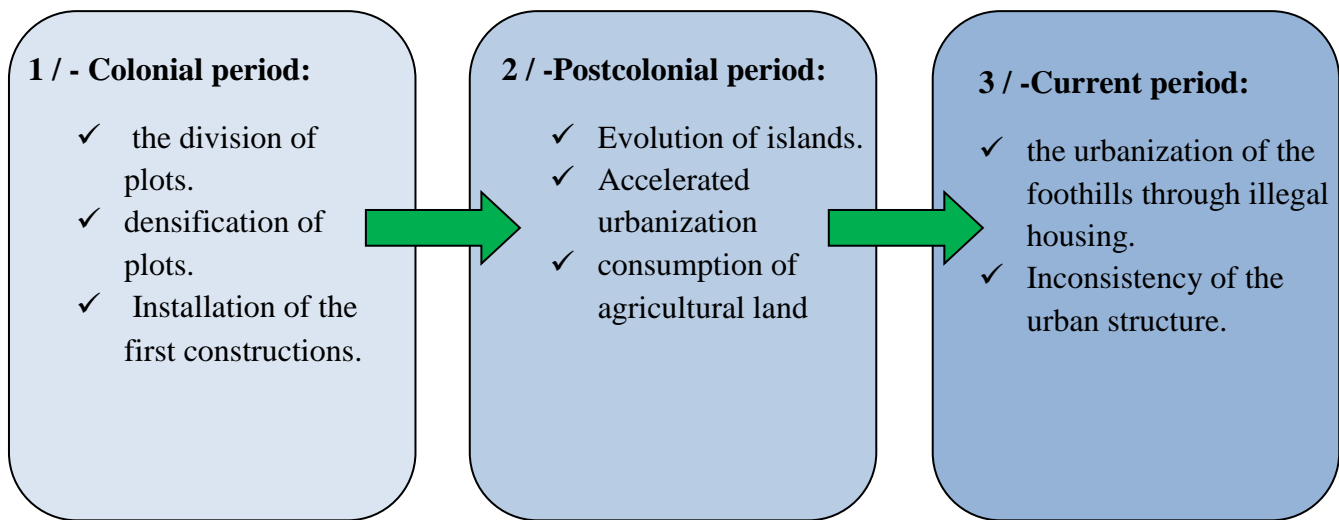
This process slowed down little by little until the **1980s**, when it accelerated again.

III.4.1 .3.1978-1991 period: at the beginning of this period, the town of **OuledSlama** knows an acceleration of the phenomenon of illegal construction, which was supported by another phenomenon which is that of land speculation, the latter was especially encouraged by a strong immigration of population to the town of **Ouled Slama**, coming from the wilaya of **Algiers.**

This population movement was felt across the city by the birth of new illicit agglomerations (**Hamoul1 - Hamoul2 –Hamoul3 –Merakchi –Elmostakbel**), in addition to the apparent densification of certain already existing secondary agglomerations like **OuledSlamaTahta.**

III.4.2. Synthesis of the evolution of the town of Ouled Slama:

The phenomenon of transformation of the city is synthesized in three periods which are:

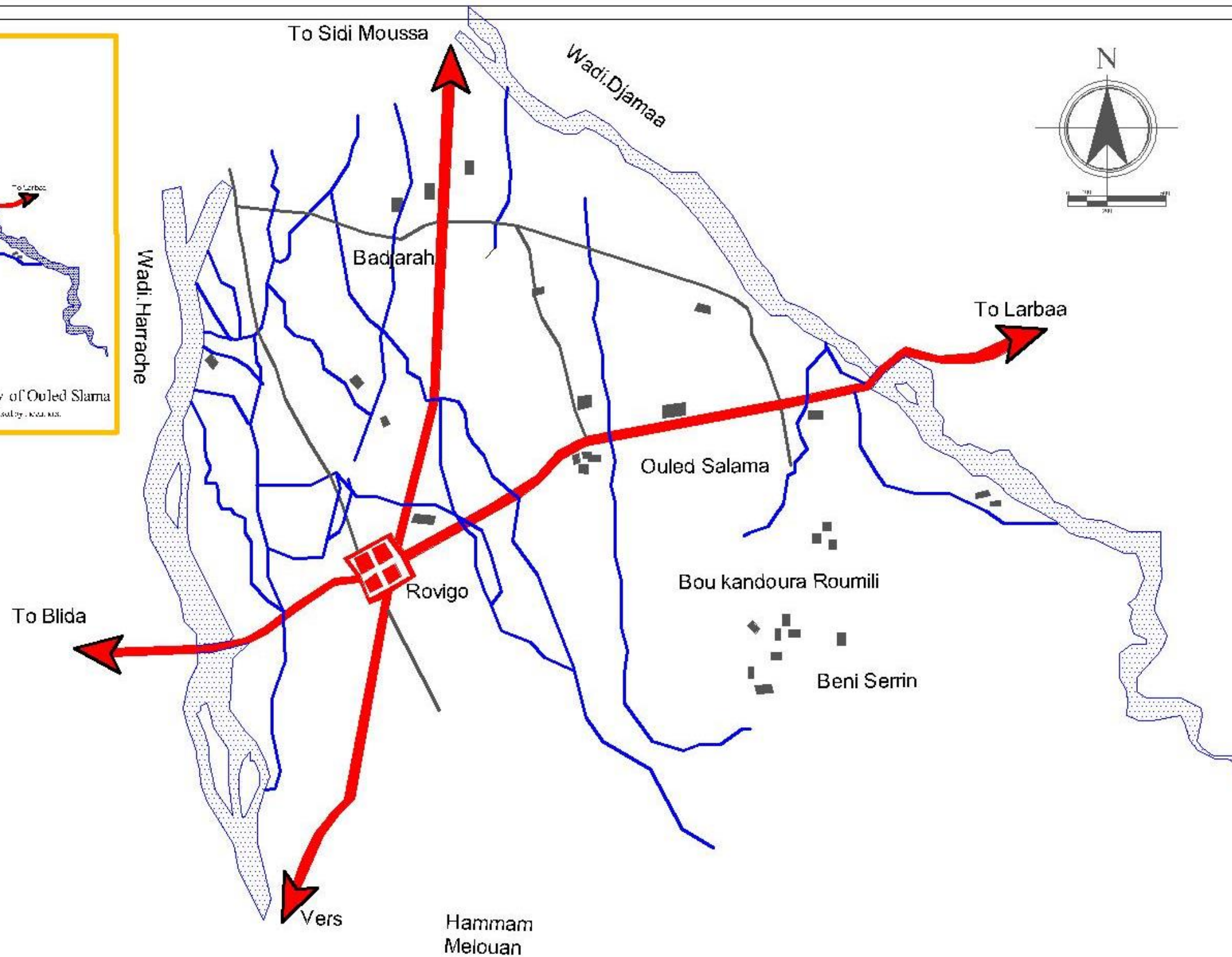
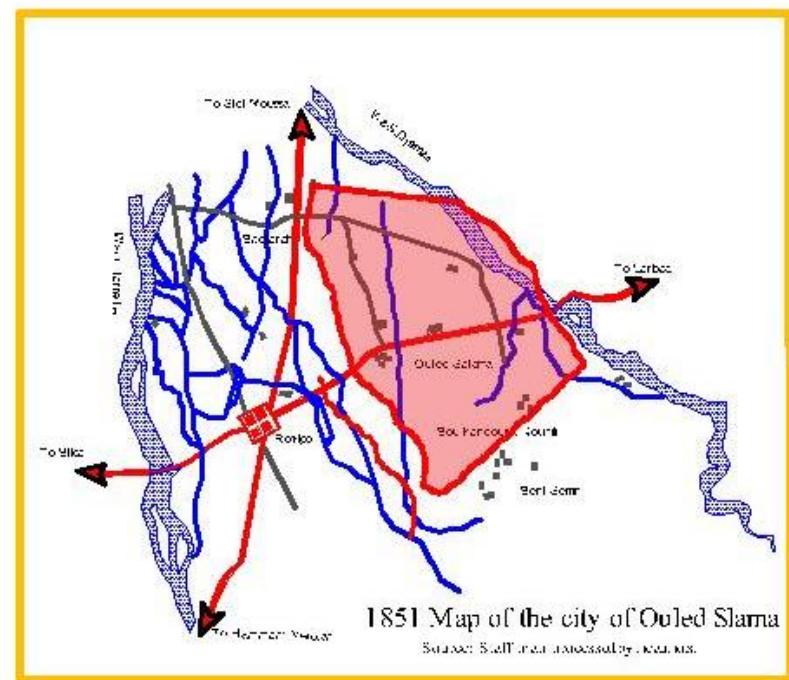


After reading the formation process of the town of Ouled Slama we can synthesize the phenomenon of evolution of the city following three periods:







- A. **the colonial period:** is characterized by the installation of the first settler farmers' construction north of **NR.n ° 29** and the appearance of the first urban area " **Ben Omar** " which is located at the intersection of Oued **Djamaa** and **NR.n ° 29**.
- B. **the postcolonial period:** is characterized by rapid urbanization in the northern part of **NR.n ° 29** at the intersection of the latter with Oued **Gergoure** from where this agglomeration became the chief town of the city after the administrative division of **1984**.
- C. **the current period:** is characterized by the urbanization of the foothills with spontaneous settlement in two agglomerations called " **I Hamoul** " and " **El Merakchi** " which is located at the intersection of wadi **Sidi Hamoude** and **NR.n ° 29**.

After these results we synthesize that :

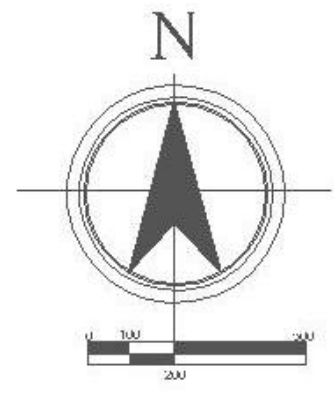
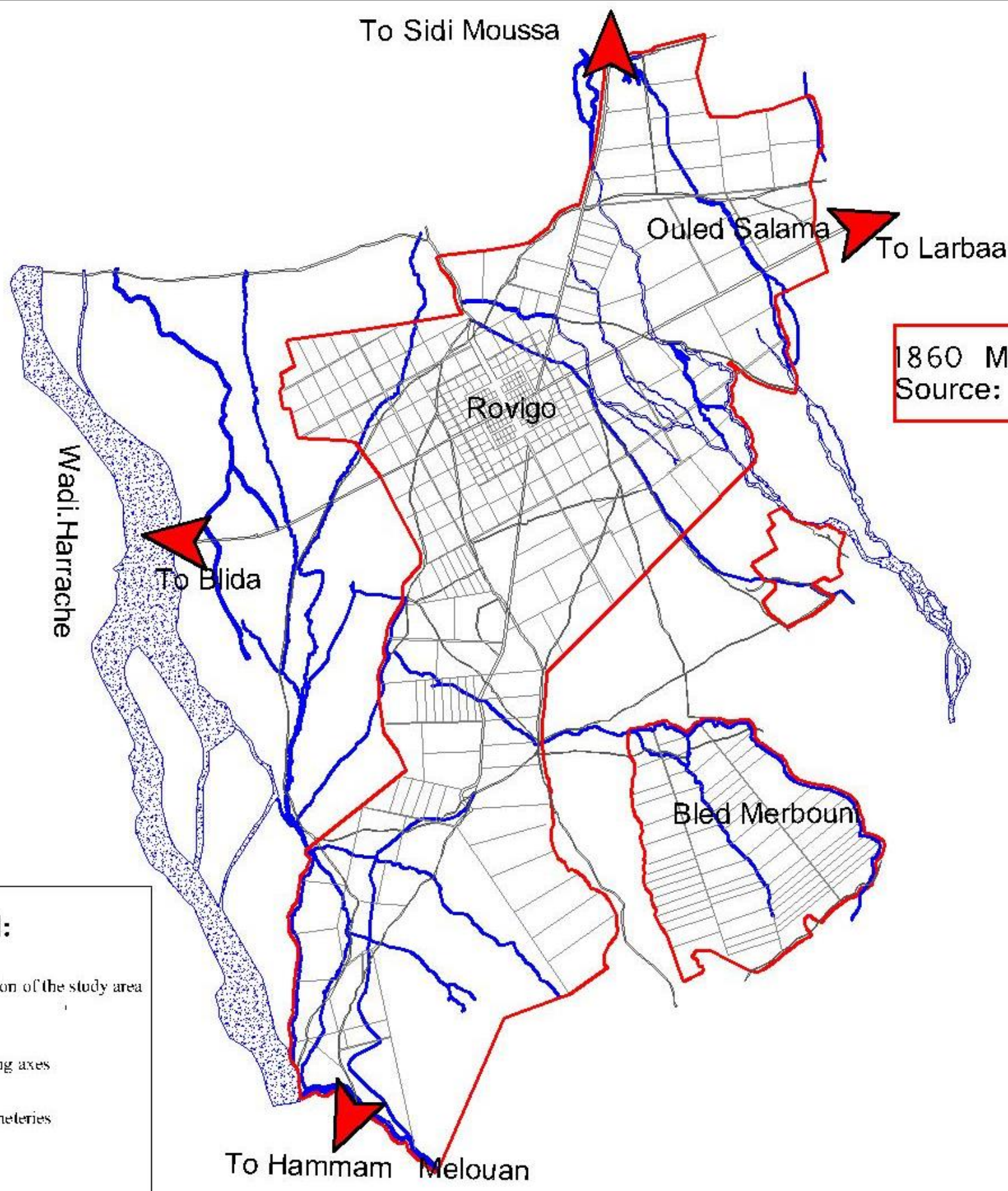
- The generating elements of development of the town of **Ouled Slama** are the three wadis (**Djamaa, Gergoure, Sidi Hamouda**) and **NR.n ° 29** .
- The direction of development of the town of **Ouled Slama** is towards the city of **Bougara** and the foothills, as well as the growth of the city of **Bougara** is towards the town of **Ouled Slama** and the foothills which has oriented us towards the consolidation of the Western outskirts of the town of **Ouled Slama** .









Legend:

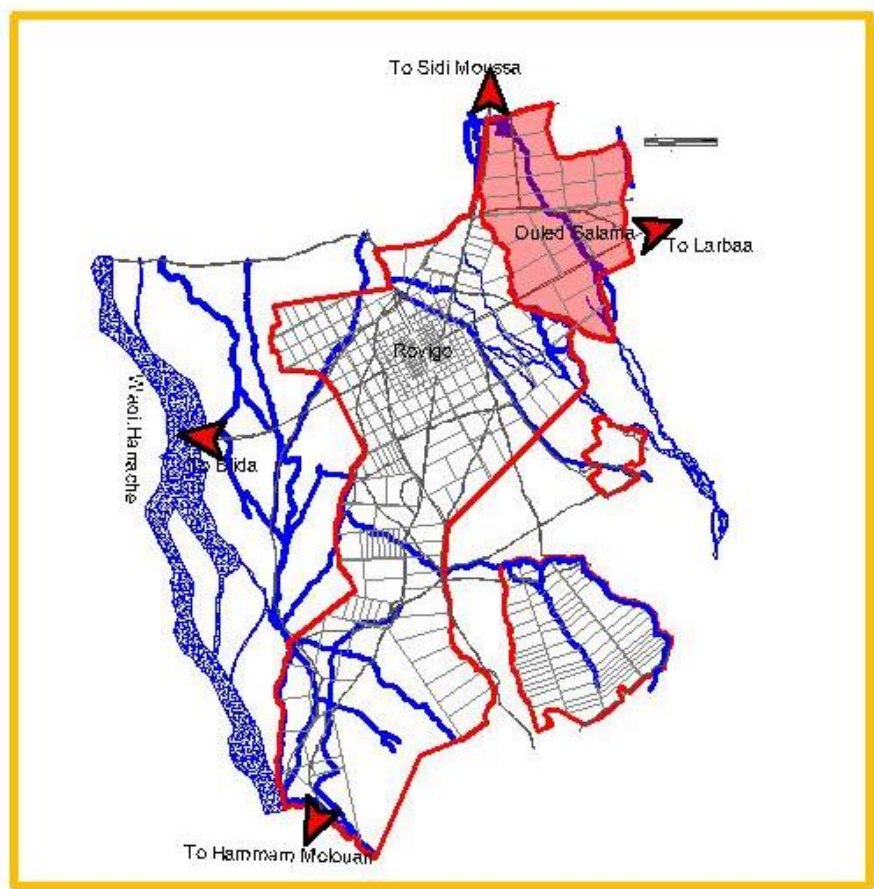
-  Delimitation of the study area
-  Wadis
-  Structuring axes
-  Arab cemeteries
-  Frames
-  Tracks

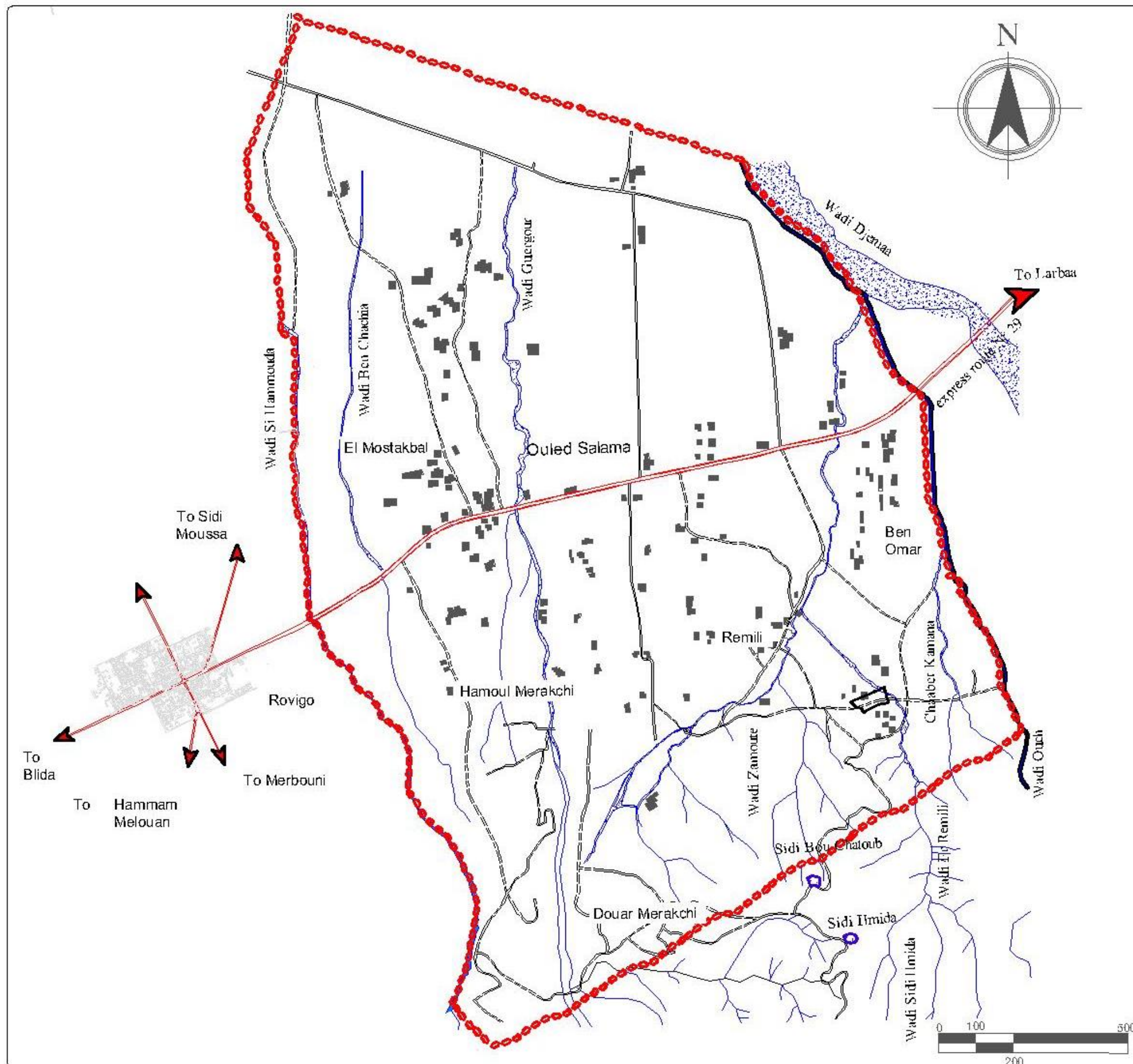
1860 Map of the town of Ouled Slama
Source: Staff map processed by the authors.



1860 Map of the town of Ouled Slama
Source: Staff map processed by the authors.

- Legend:**
-  Delimitation of the study area
 -  Wadis
 -  Structuring axes
 -  Arab cemeteries
 -  Frames
 -  Tracks



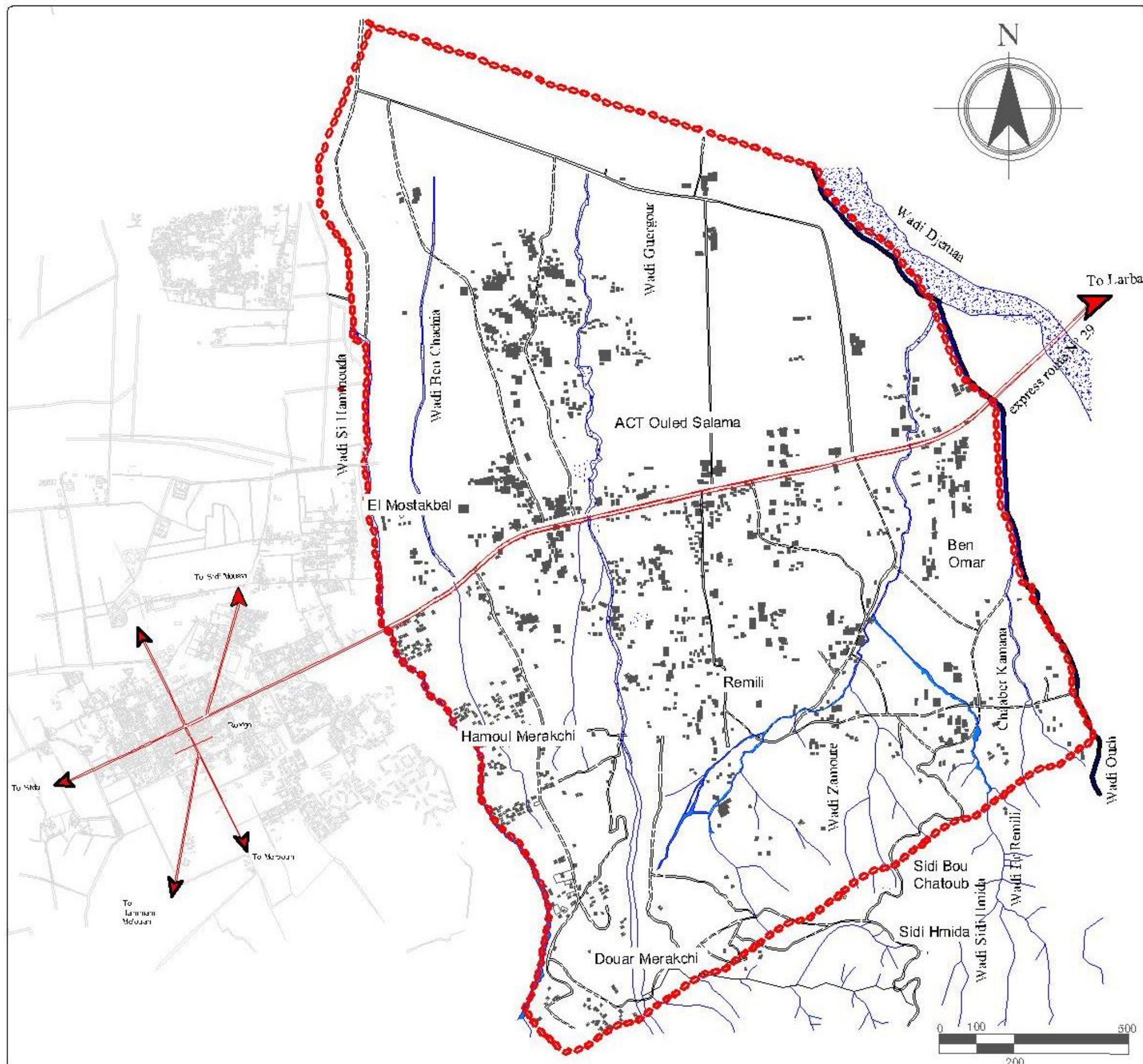


Comments :
 after independence a new phenomenon intervened to change this state of affairs of the city, which is that of the migration of mountain people to the city and the plain.
 In general, this is what has generated a process of densification of the already existing hamlets: Ben Omar, Ouled Slama chief town, Ouled Slama Tahta. This process slowed down little by little until the 1980s, when it accelerated again.

Legend:

- Delimitation of the study area
- Wadis
- Structuring axes
- Arab cemeteries
- Frames
- Tracks







Map (1962-1978) of the town of Ouled Slama
 Source: Staff map processed by the authors.



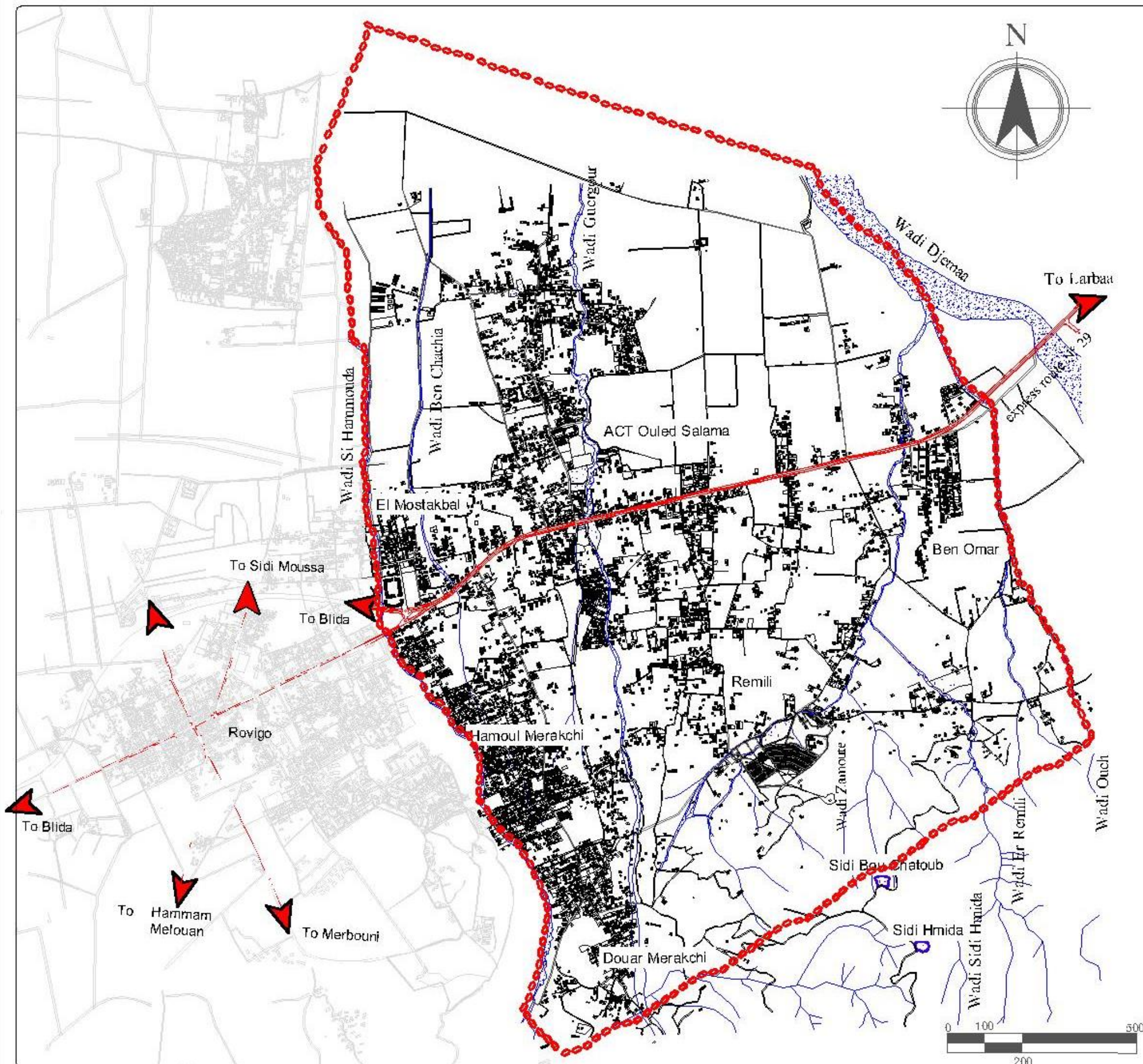
Comments :

at the beginning of this period, the town of Ouled Slama knows an acceleration of the phenomenon of illegal construction, which was supported by another phenomenon which is that of land speculation, the latter was especially encouraged by a strong immigration of population to the city of Ouled Slama, coming from the wilaya of Algiers.

Legend:

-  Delimitation of the study area
-  Wadis
-  Structuring axes
-  Arab cemeteries
-  Frames
-  Tracks







Map (1978-1991) of the town of Ouled Slama
 Source: Staff map processed by the authors.



Comments :

The development of the city continues until today mostly in the western outskirts of the town (HAMOULE MERAKCHI) but in an anarchic way and it is because of the sale of land in cheaper payments also we note that the town knows a new method of anarchic urbanization imply a rapid consumption of agricultural land while the center was abandoned which gives a break between the periphery and the town center

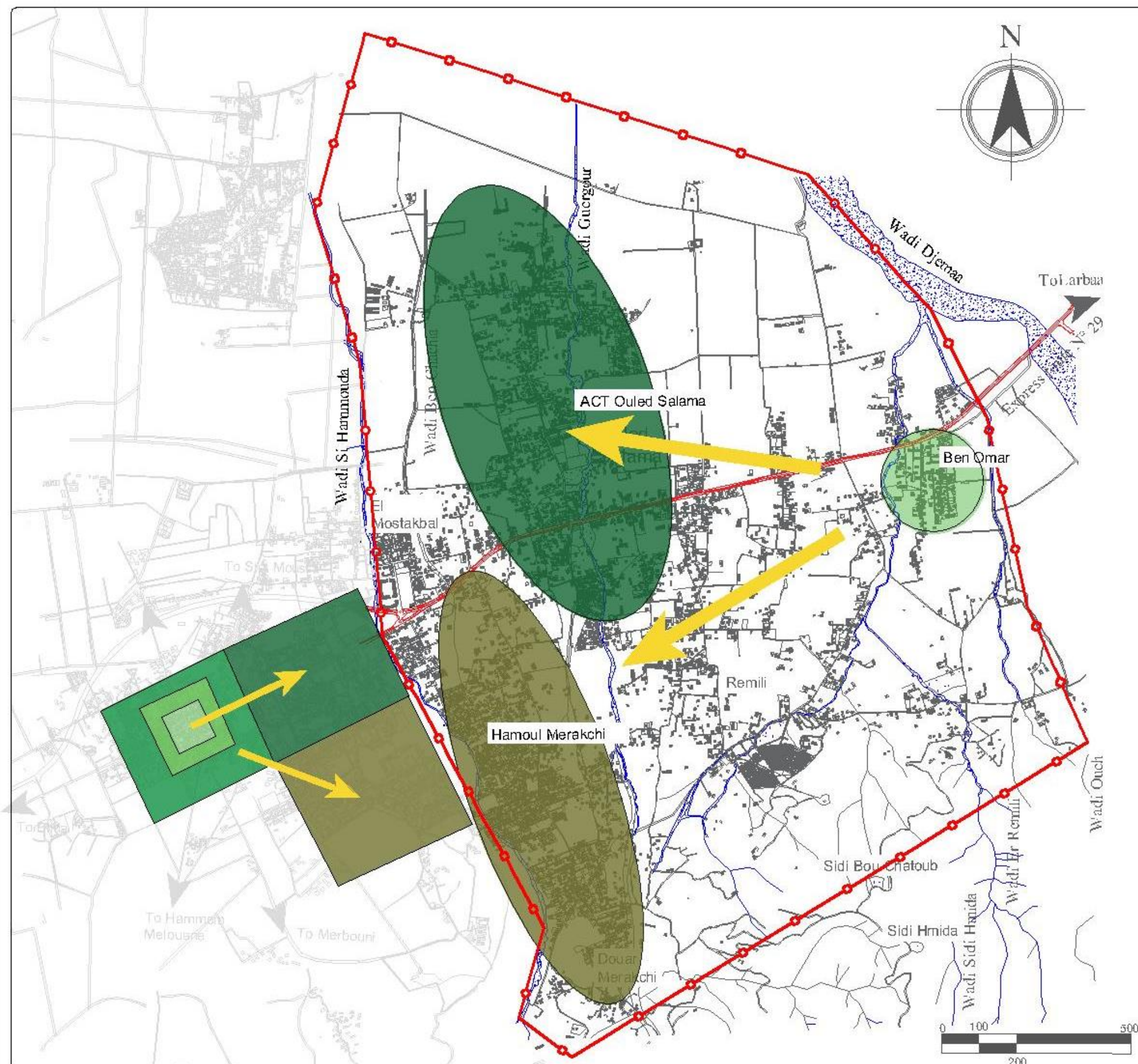
Legend:

-  Delimitation of the study area
-  Wadis
-  Structuring axes
-  Arab cemeteries
-  Frames
-  Tracks

Ouled Slama Current town Map

Source: Staff map processed by the authors.

05



Comments:

After reading the formation process of the town of Ouled Slama we can synthesize the phenomenon of evolution of the town following three periods:

1 / -the colonial period: is characterized by the installation of the first settler farmers' construction north of NR.n ° 29 and the appearance of the first urban area " Ben Omar " which is located at the intersection of Oued Djamaa and NR.n ° 29.

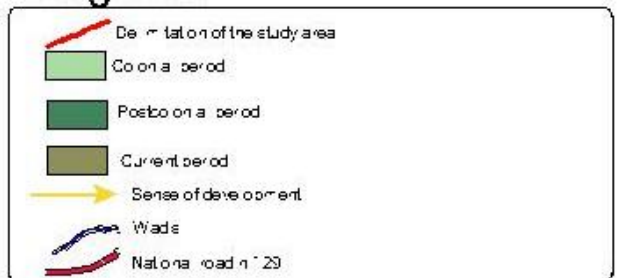
2 / -the postcolonial period: is characterized by rapid urbanization in the northern part of NR.n ° 29 at the intersection of the latter with Oued Gergour from where this agglomeration became the chief town of the town after the administrative division of 1984.

3 / -the current period: is characterized by the urbanization of the foothills with spontaneous settlement in two agglomerations called " El Hamoul " and " El Merakchi " which is located at the intersection of wadi Sidi Hamoude and NR.n ° 29.

- After these results we synthesize that :

- The generating elements of development of the town of Ouled Slama are the three wadis (Djamaa, Gergour, Sidi Hamouda) and NR.n ° 29
- The direction of development of the town of Ouled Slama is towards the town of Bougara and the foothills, as well as the growth of the town of Bougara is towards the town of Ouled Slama and the foothills which has oriented us towards the consolidation of the Eastern outskirts of the town of Ouled Slama

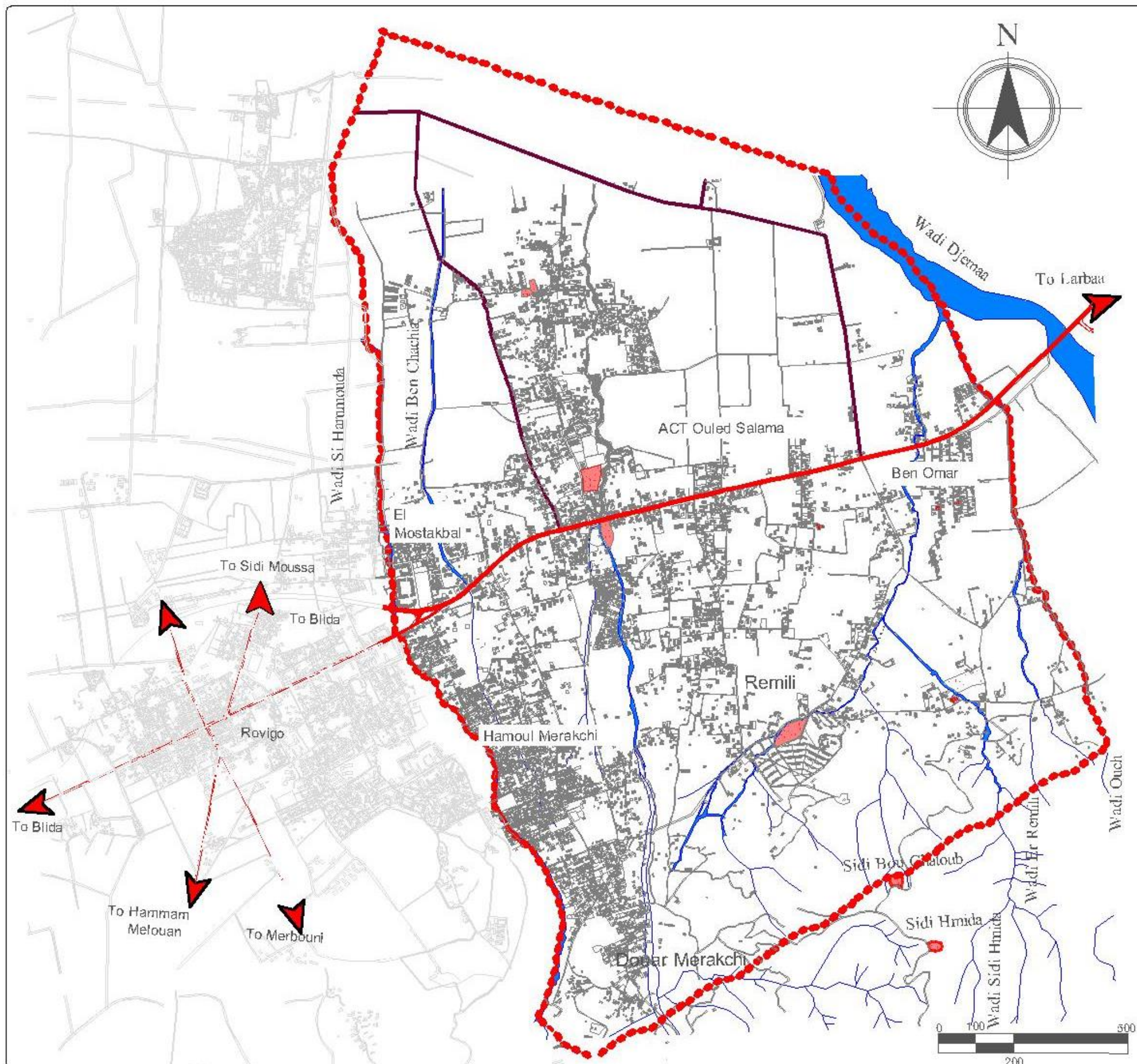
Legend:



Synthesis map of the town of OULED SLAMA

Source: PDAU 2016 processed by the authors.

06









Comments :

The city of Ouled Slama preserved structures of natural permanence; urban and colonial which materializes by:

- The structuring axis of the national road n° 29 (EAST-WEST)
- Arab cemeteries
- Wadi Sidi Hamouda
- Wadi Djamaa

Legend:

-  Delimitation of the study area
-  Wadis
-  Structuring axes
-  Arab cemeteries
-  Frames
-  Tracks

Structure of the permanence map of the town of Ouled Slama
 Source : PDAU 2016 traité par les auteurs

07

III .5.Synchronous reading of the town Ouled Slama :

III .5.1.Introduction:

For Muratori, the existence of the city is not seen as a given fact once and for all, at every opportunity to build, it is necessary to give news to the city. the city is, thus, updated at every moment in the multiplicity of acts of its countless users. The city is, therefore, an urban phenomenon which is constantly changing over time and in space, it gradually forms continuously, always ready to receive new morphological, functional and structural data.

The assimilation of the city to an organism is based on the assumption that the city and the territory can be understood in analogy with the organic world but also that the constructive practice of society is highly structured, it does not emerge and does not change not at random, because it is guided by a unitary system of laws of formation and mutation. The organic metaphor is thus used because it suggests the idea of unity, of integration of all of the elements, structures and systems.

III .5.2.Road structure :

III .5.2.1.Roads :

The town of **Ouled Slama** is crossed mainly by:

- ✓ an important road axis which is **national road n ° 29**, it provides a link between the town of **Ouled Slama** and the two major economic and administrative centers which are **Blida** and **Algiers**.
- ✓ Another connecting road which is the **National Road n ° 64** to the South of the town of **Ouled Slama** which leads to the mountain
- ✓ The **Vicinal Road n ° 01** to the North of the town which connects the **National Road n ° 29** and the **Wilaya Road n ° 14** which leads to **Beraki**.
- ✓ It is characterized by the presence of an irregular road trace which represents the old farm track on the trace of the agrarian weft.

✓ A planned railroad.

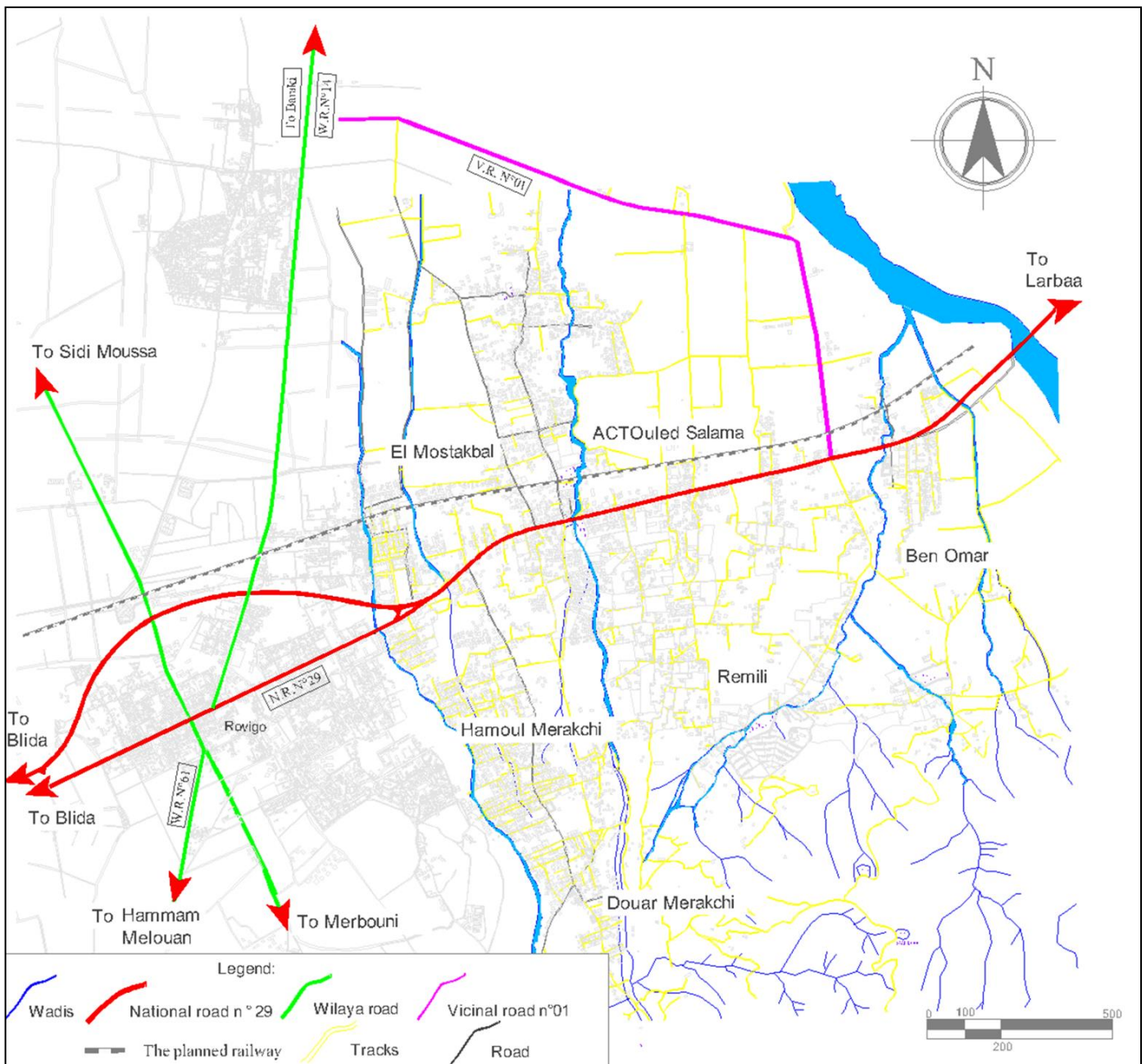


Figure III.11: Map of the road structure of the town of Ouled Slama .
Source: Master plan for development and town planning 2016 of the town of Ouled Slama.

III .5.2.3. courses and nodes:

A. Courses:

a. **The primary course :** represented by the **National road n ° 29** and the **National road n ° 64** constitute the main mesh ensuring the service between districts in terms of road distributions and their outbuildings.

✓ - the gauge of the primary track is **08 m** of roadway and a sidewalk of **3 m**.⁷⁵

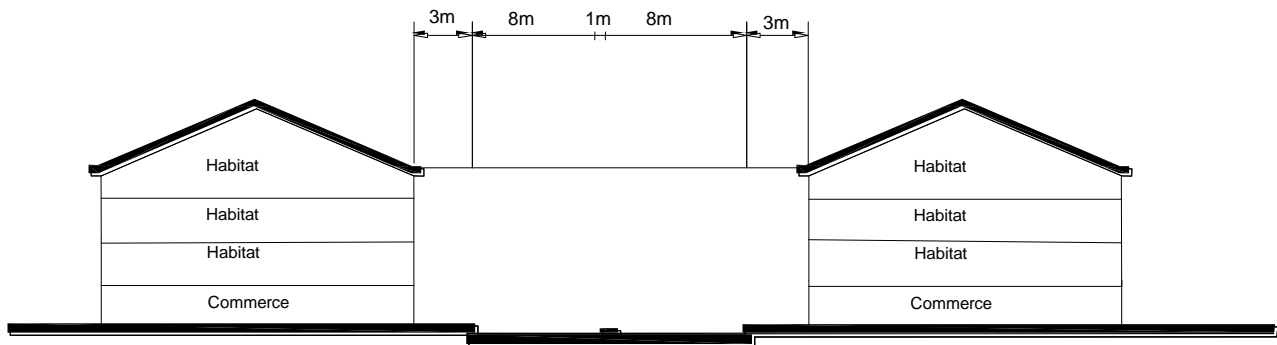


Figure III.12: Section on the national road n°29

Source: Authors

b.Secondary course : constitute the connection to the primary roads for the service of the neighborhood units and prepare the connection of the tertiary roads

✓ - the gauge of the secondary road is **06 m** of roadway and a sidewalk of **1.50 m**.⁷⁶

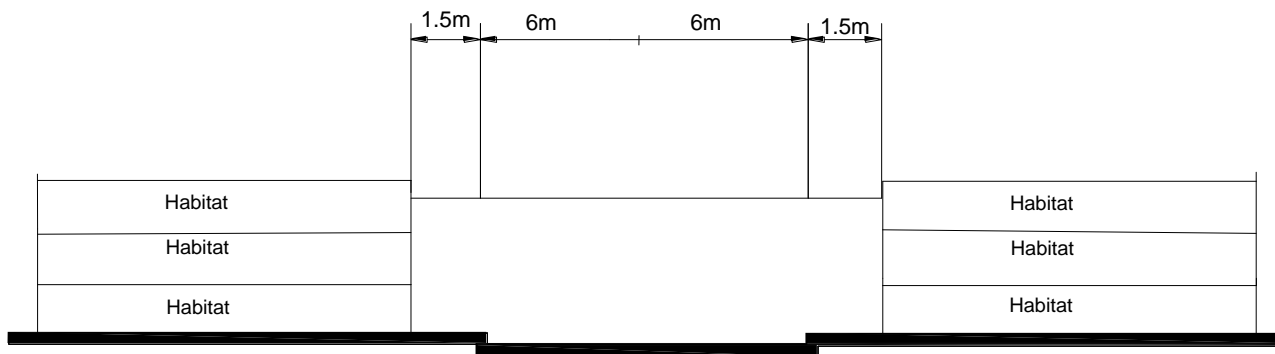


Figure III.13: Section on a secondary road

Source: Authors

c.The tertiary course : are made up of any structure ensuring the service of the basic units in terms of traffic lanes and access to buildings and parking lots, pedestrian routes and green spaces.

✓ - the gauge of the tertiary track is **04 m** of roadway and a sidewalk of **1.20 m**.⁷⁷

⁷⁵ Master plan for development and town planning 2016 of the town of Ouled Slama

⁷⁶ Master plan for development and town planning 2016 of the town of Ouled Slama

B. Nodes :

a.First degree node: There is only one, this being the point of intersection of the structuring axis which is **N.R. 29** and Wadi **Gerrgoure** at the origin of the creation of the city center.

b.Second degree node: This is the points of intersection of the peripheral routes between them with the structuring axis which is **N.R. 29**.

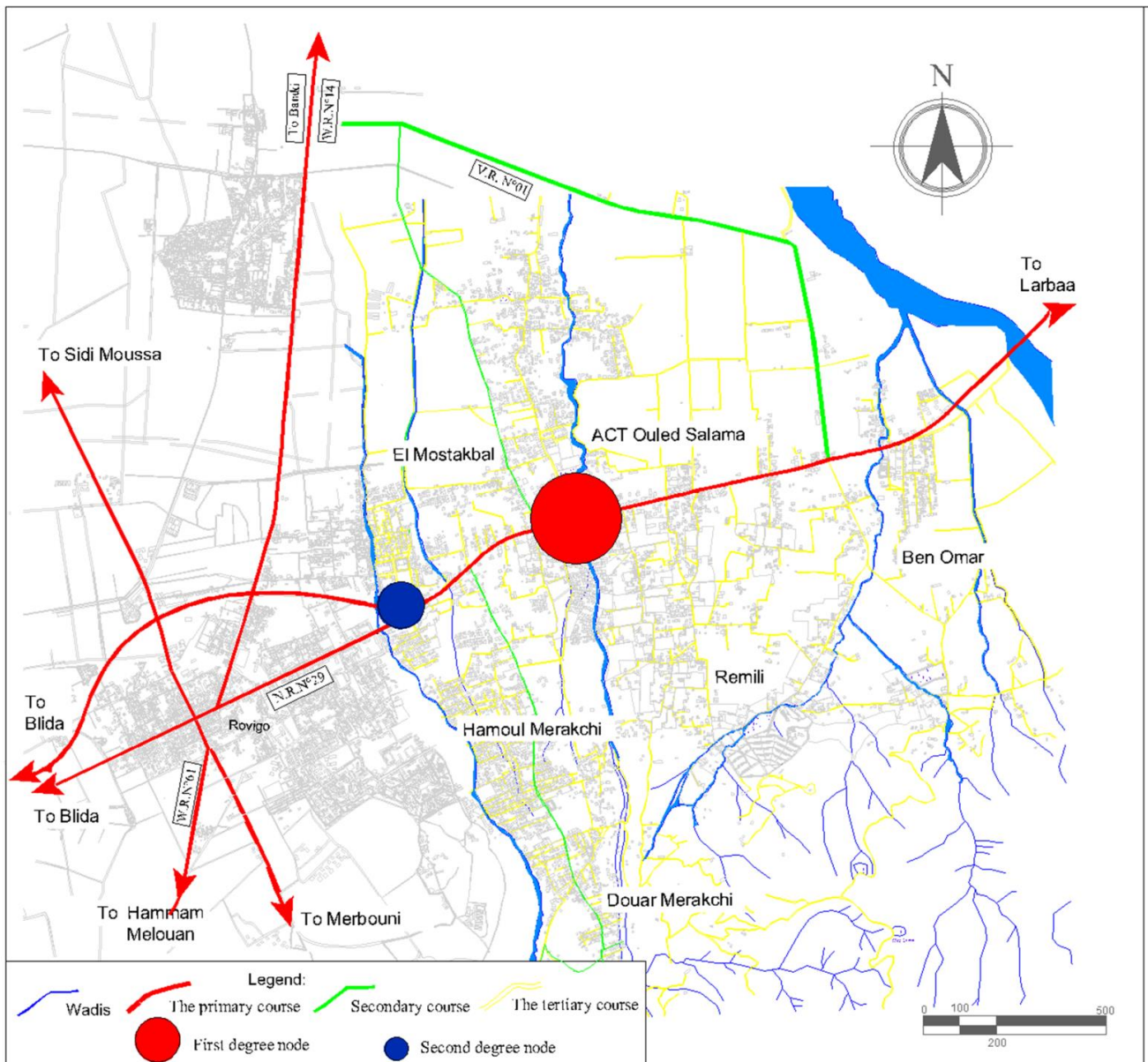


Figure III.14: Schema of courses and nodes of the town of Ouled Slama.

Source: Master plan for development and town planning 2016 of the town of Ouled Slama processed by the author.

⁷⁷ Master plan for development and town planning 2016 of the town of Ouled Slama

III .5.3.Plot structure of the town of Ouled Slama :

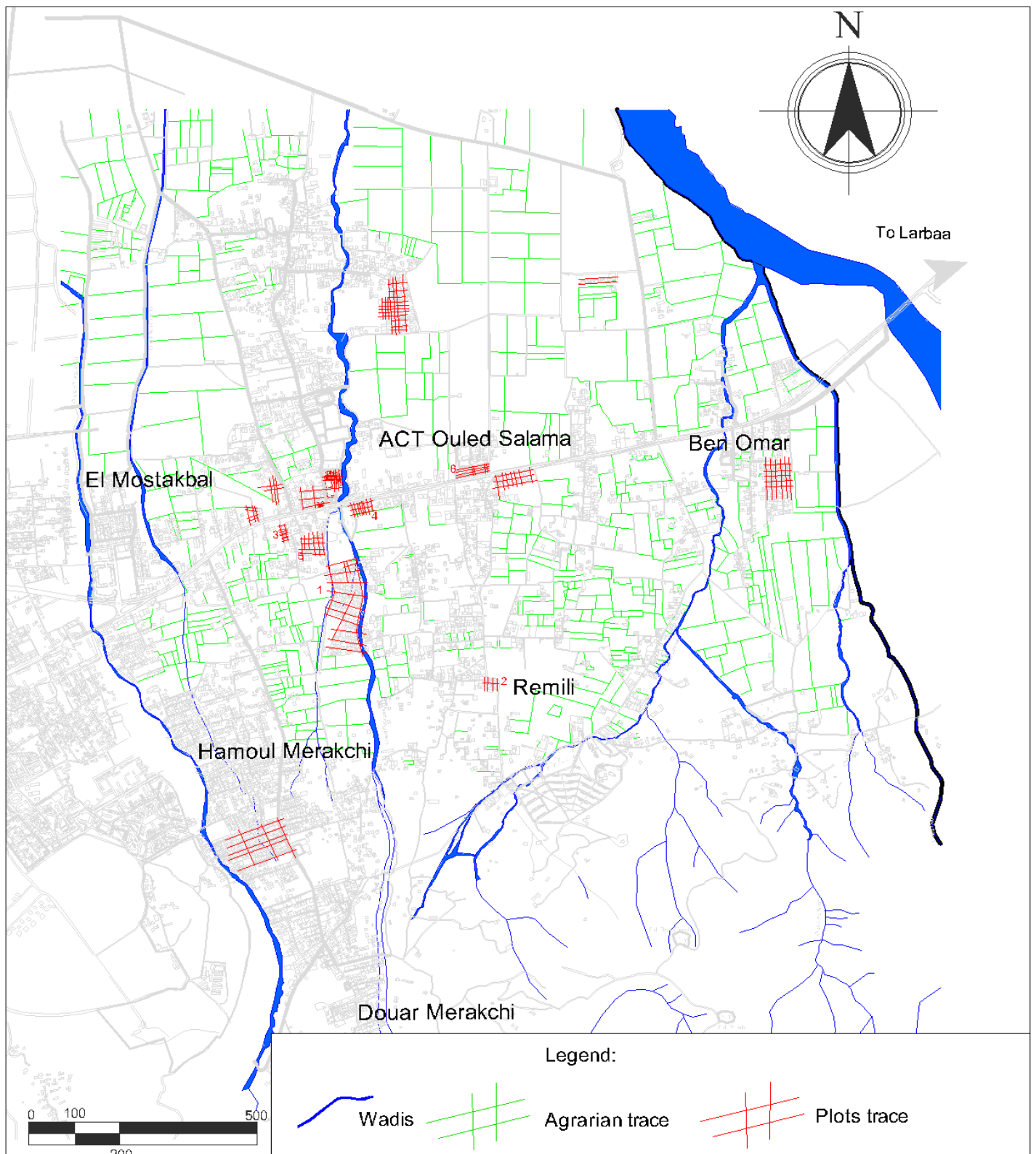


Figure III.15: Plot structure map of the town of Ouled Slama.

Source: Master plan for development and town planning 2016 of the town of Ouled Slama.

The plan of the town of Ouled Slama is characterized by an irregular layout, poorly structured, unlike the colonial cities as an example the town of " Bougara " it is not organized around a historic core.

	BASIC MODULE	THE POSITION	THE FORM	DIMENSION
1		forms a rake, located between a structuring road and two consolidation roads	irregular	
2		labyrinthine shape, near the road	regular	
3		linear and parallel to the road	regular	
4		checkerboard with only one side towards the road	regular	
5		checkerboard with a lateral and other road in the middle	regular	
6		stretched shape and locate on the periphery of the plot	regular	
7		small plots in an anarchic position, which is located in the upper part of NR.29	irregular	
8		large plot in regular position, which is located in the lower part of NR.29	regular	

Table III.1: Plot structure of the town of Ouled Slama.

Source: Author

III III III.5.4.Functional structure of the town Ouled Slama :

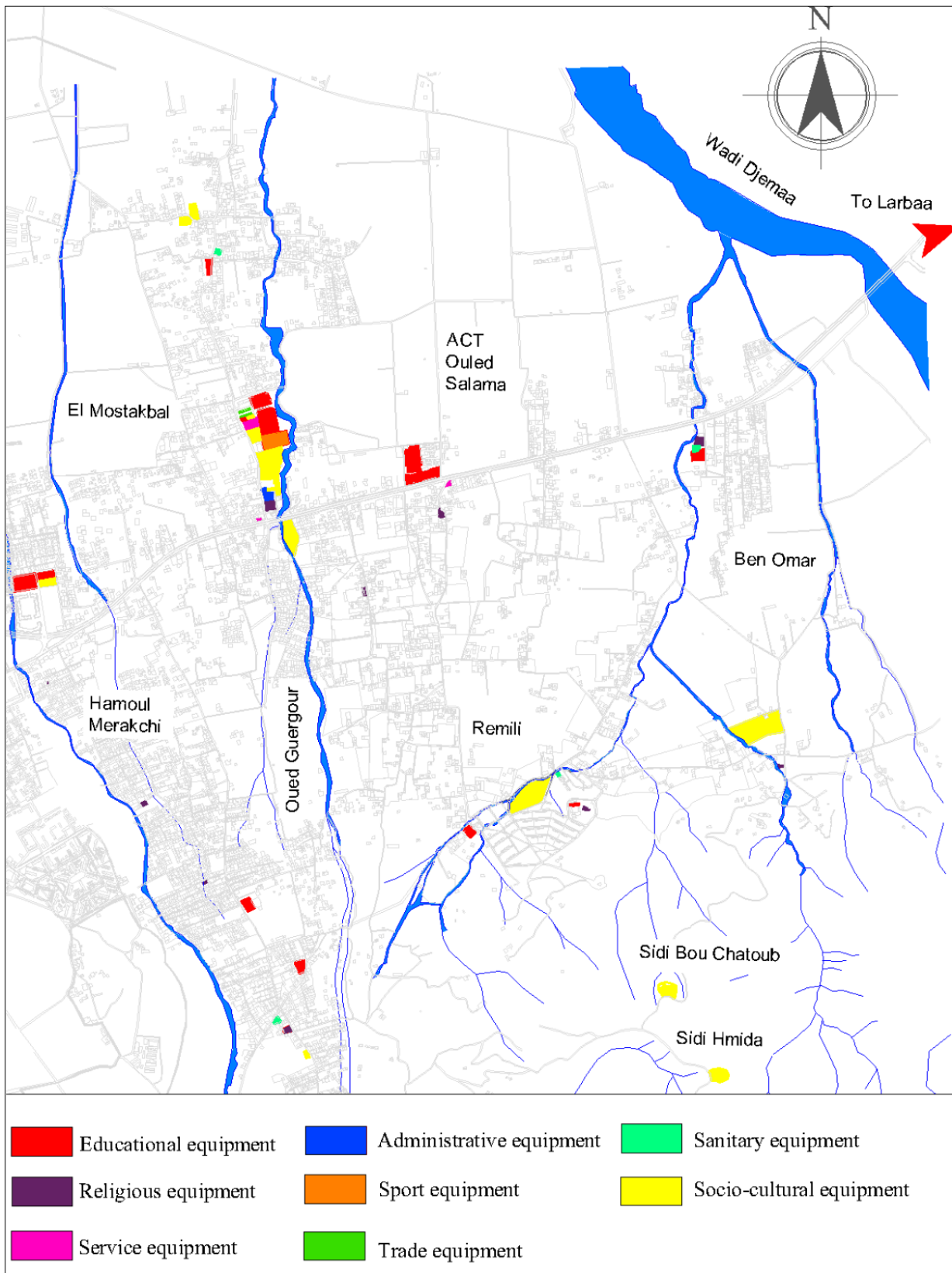


Figure III.16: Functional structure map of the town Ouled Slama.

Source: Master plan for development and town planning 2016 of the town of Ouled Slama processed by the author.

There is an imbalance in the distribution of equipment in the town of Ouled Slama; from where the majority of equipment are located in the central part of the town, while in its peripheral part there is a lack of socio-cultural, sports, administrative, commercial and service equipment.

It is recommended by the Master plan for development and town planning 2016 of the town of Ouled Slama to create an urban pole of the town which will be equipped with types of equipment: (school, sports, health, administrative, socio-cultural, Transport and communication, Shops) and this to revitalize the urban fabric which is essential for the fixation and development of the population.⁷⁸

III.5.5. Built Structure:

III.5.5.1. Template:

According to the **Master plan for development and town planning 2016 of the town of Ouled Slama**, the height of the constructions is defined according to the location of the track adjacent to the plot. For collective housing:

The buildings located along **NR n ° 29** it can reach up to **R + 10** with shops and services on the ground floor⁷⁹ :

- ✓ For collective buildings located along primary roads, the height is fixed at **R + 8**.
- ✓ For collective buildings located along secondary roads, the height is fixed at **R + 6**.
- ✓ For collective buildings located along tertiary roads, the height is fixed at **R + 4**.

For collective equipment, the height is defined according to the layout of the track adjacent to the plot⁸⁰ :

- ✓ Collective equipment located along **NR n ° 29** it can reach up to **R + 10** with shops and services on the ground floor.
- ✓ For collective equipment located along the primary roads, the height is fixed at **R + 8**.
- ✓ For collective equipment located along secondary roads, the height is fixed at **R + 6**.
- ✓ For collective equipment located along tertiary roads, the height is fixed at **R + 4**.

III.5.5.2. State of the built:

The state of built of the town of **Ouled slama** in its majority is in good state because it is an almost new town in growth.

There were old farms at **Ben Omar** which dates from colonial times but the majority have been demolished because of its bad state, and a new housing was rebuilt in their place.

⁷⁸ Master plan for development and town planning 2016 of the town of Ouled Slama.

⁷⁹ Master plan for development and town planning 2016 of the town of Ouled Slama.

⁸⁰ Master plan for development and town planning 2016 of the town of Ouled Slama.

There is some house in poor state in the southern part of the town of **Ouled Slama** which represents precarious housing.

III.5.5.3. Type of building:

The built environment is characterized by a higher density of housing than that of equipment, but also by a dominance of individual housing compared to collectives.

The typology of the habitat observed, presents **03** distinct types which are:

A. Individual housing:

- ✓ **Traditional** type (**20%**) with a ground floor height.
- ✓ **Semi-traditional** type (**10%**) with a height of R + 1.
- ✓ **Modern** type (**70%**) with varying height.

B. Collective housing:

LPP type located on the western outskirts of the town and social type located in the southern part of the town .

C. **Precarious housing:** The existence of 47 **Gourbis**.



Figure III.17: template and built structure of the study area

Source : author

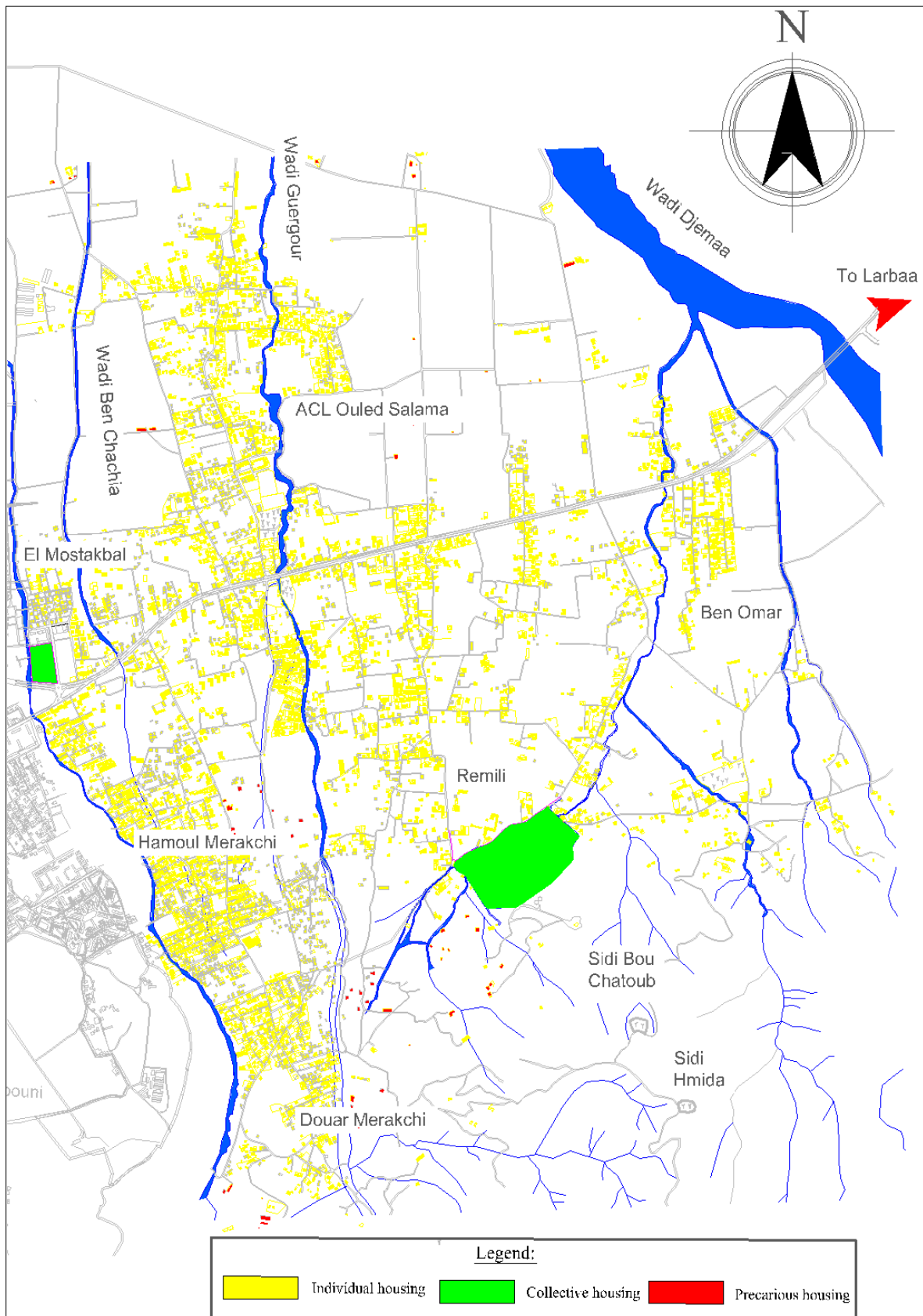


Figure III.18: Type of building map of the town of Ouled Slama.

Source: Master plan for development and town planning 2016 of the town of Ouled Slama. processed by the author.

III.5.6. Criticism of urban planning instruments:

III.5.6.1. The directions of the Regional land use plan:

- ✓ Slowing down the urban growth of all agglomerations surrounded by agricultural land.
- ✓ Provide opportunities for densification of the existing urban tissue.
- ✓ Master the space and its organization.
- ✓ Direct urban growth limited to natural growth only to agglomerations located on land with poor agricultural potential on the foothills.
- ✓ valorize and intensify agricultural activity.
- ✓ offers coordination between the cities **Larbaa, Ouled Slama, Bougara.**
- ✓ The organization of the inter-urban and inter-municipal road network in an efficient manner.
- ✓ The development of inter-municipal transport to facilitate communication between them, so that the inhabitants of these three municipalities share a certain number of important equipments.

III. 5.6.2. The guidelines of the Wilaya development plan:

- ✓ Prohibit any “unforeseen urbanization on the plain”.
- ✓ Rigorously apply the urban planning instruments corresponding to (Master plan for development and town planning and Land use plan).
- ✓ Identify these spaces likely to be urbanized in order to densify the existing urban tissue.

III. 5.6.3. The guidelines of Master plan for urban planning:

The population growth and the development of urban activities involving an increasing consumption of urban land, special attention must be paid to this problem.
The fundamental directions of town planning proposed according to our analysis will be:

A. Forest area:

The plant cover must be protected and priority is given to forests in good condition and to reforestation through actions which consist of:

- ✓ A maintenance and reforestation operation.
- ✓ The opening of the tracks and massifs
- ✓ Layout of surveillance posts.
- ✓ The establishment of forest houses.
- ✓ Provide fire breaks.
- ✓ Development of a leisure, relaxation and recreation park.
- ✓ Preserve the environment by protecting green areas by installing fire protection services.

B. Agriculture:

- ✓ Preserve and protect high-yielding agricultural lands, especially those occupied by arboriculture.
- ✓ Irrigate agricultural land in the city .

C.Activity:

- ✓ The creation of employment by authorizing non-harmful activities in the housing area such as sheet metal work, mechanics, carpentry, washing, lubrication ...

D.Environment:

- ✓ The layout of the site occupied by an incontrolled landfill by a controlled public landfill for the protection of the town and the inhabitants against pollution.
- ✓ Creation of green spaces of all kinds.
- ✓ Improvement and maintenance of existing urban green spaces.

E.Road network:

- ✓ Enlargement of the **vicinal road N ° 01**.
- ✓ Redevelopment of certain existing roads.
- ✓ Development of certain routes inside the town .
- ✓ Create a lane which bypasses the new urban limit on the south side of the agglomeration chief town, this peripheral lane will be a siding of the town of **Ouled Slama** .
- ✓ Treatment of crossroads.
- ✓ Provide a bus station at the **ACT of Ouled Slama**.

F.Land use plan 02 (A.C.L Ouled Selama):

a.Directions:

- Restructuring and densification of the district.
- Densification of the existing tissue.
- Assignment of an individual and collective housing program.
- Injection of accompanying equipment.
- Alignment is compulsory along the planned railway track.
- Development of tracks, drinking water supply and sanitation networks.
- Relocation or burial of all 30kv overhead medium voltage electrical lines crossing the urban perimeter and connection with existing substations using underground cables.

b.Program :

- Individual housing R+03 .
- Collective housing R + 08.
- Equipment.

III.5.6.4.The failure of urban planning instruments:

After the analytical reading of the written documents of the Master plan for development and town planning and that of the Land use plan 02 of the town of Ouled Slama we found the following :

The territory covered by the Master plan for development and town planning is divided into three distinct sectors: urbanized sector, future urbanization sector, non-urbanizable sector, in the territory of the latter, the right to build is very limited, this sector aims to preserve forests and agricultural land where there are several articles concerning the type of occupation and the extent of the ground, type of construction, access and roads, deserts by various networks.

- The rules of the land use plan are much more interesting on the formal side of the new constructions Coefficient of land use, template ..
- In case of saturation of the urban perimeter the new Land use plan are projected on the lands that have been preserved and the agricultural lands are the most favorable for the urbanization operation.

In reality the rules are always exceeded for one reason or another

- social housing policies, hence the need for emergency construction of sites which are chosen by non-specialized residents and to the detriment of agricultural land .
- lack of control and penalty .
- The legal nature: predominance of properties, individual housing, small sizes ... which makes horizontal expansion very fast.

III.5.6.5. The indices of urban sprawl in the town of Ouled Slama:

- Remarkable increase in the number of inhabitants and housing units, especially in agricultural land .
- Presence of several empty lots at urban perimeters .
- Lack of urban planning at the periphery which is represented in the absence of road structure and parcel system .
- decrease in agricultural land.

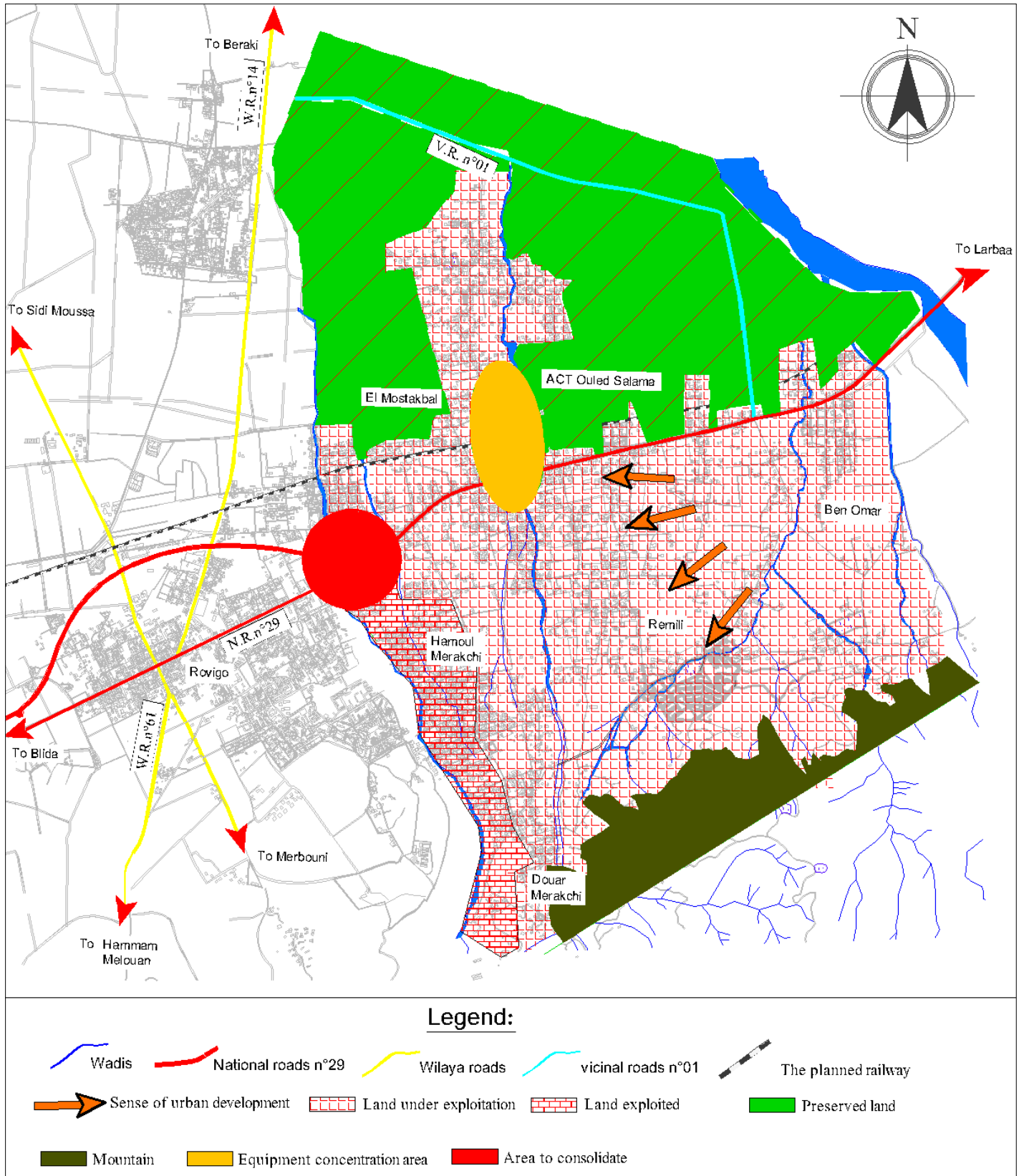


Figure III.19: Synthesis map of Synchronous reading of the town of Ouled Slama .

Source: Master plan for development and town planning 2016 of the town of Ouled Slama. processed by the author

in the light of the elements brought during the synchronic reading of the town **Ouled Slama** we can raise some important points which will indicate the direction of our intervention namely :

- ✓ an under exploitation land mainly in the town center and in the southern part of the town.
- ✓ a land potential has been preserved in the northern part of the town .
- ✓ a high concentration of equipment in the center of the town .
- ✓ the presence of natural barriers such as the mountain and the wadis which limits the town's expenses outside these barriers.

according to this analysis we managed to bring out the following result:

the town of Ouled Slama suffers enormously from problems such as " urban sprawl and pollution, saturation and congestion, lack of equipment and public spaces, the break between the town's center and its outskirts.."

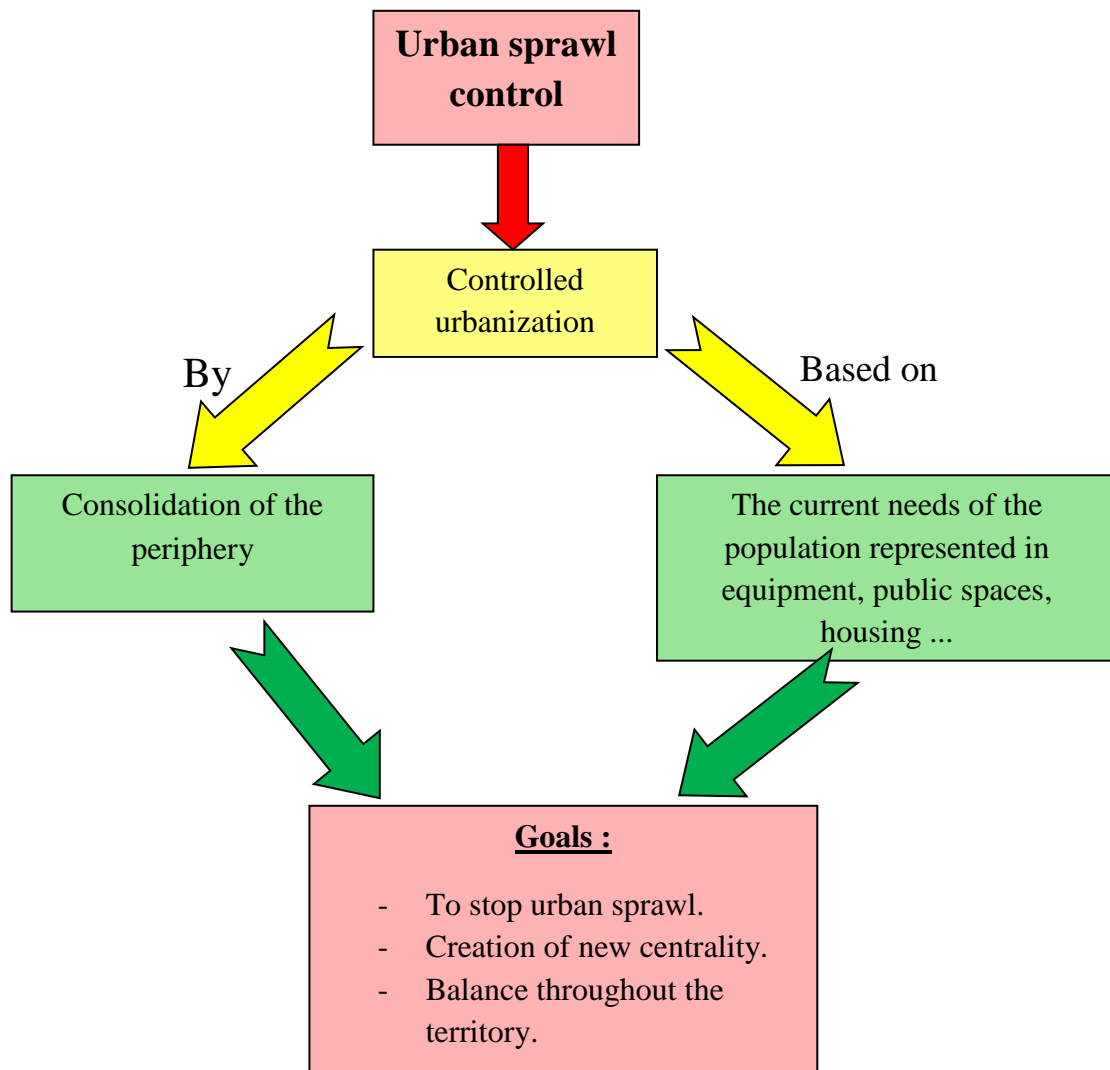


Figure III.20: Synthesis of Synchronous reading of the town of Ouled Slama .

Source: Authors .

III.6. Reading of the study area:

III.6.1. Presentation of the study area:

III.6.1.1. Location and accessibility of the study area:

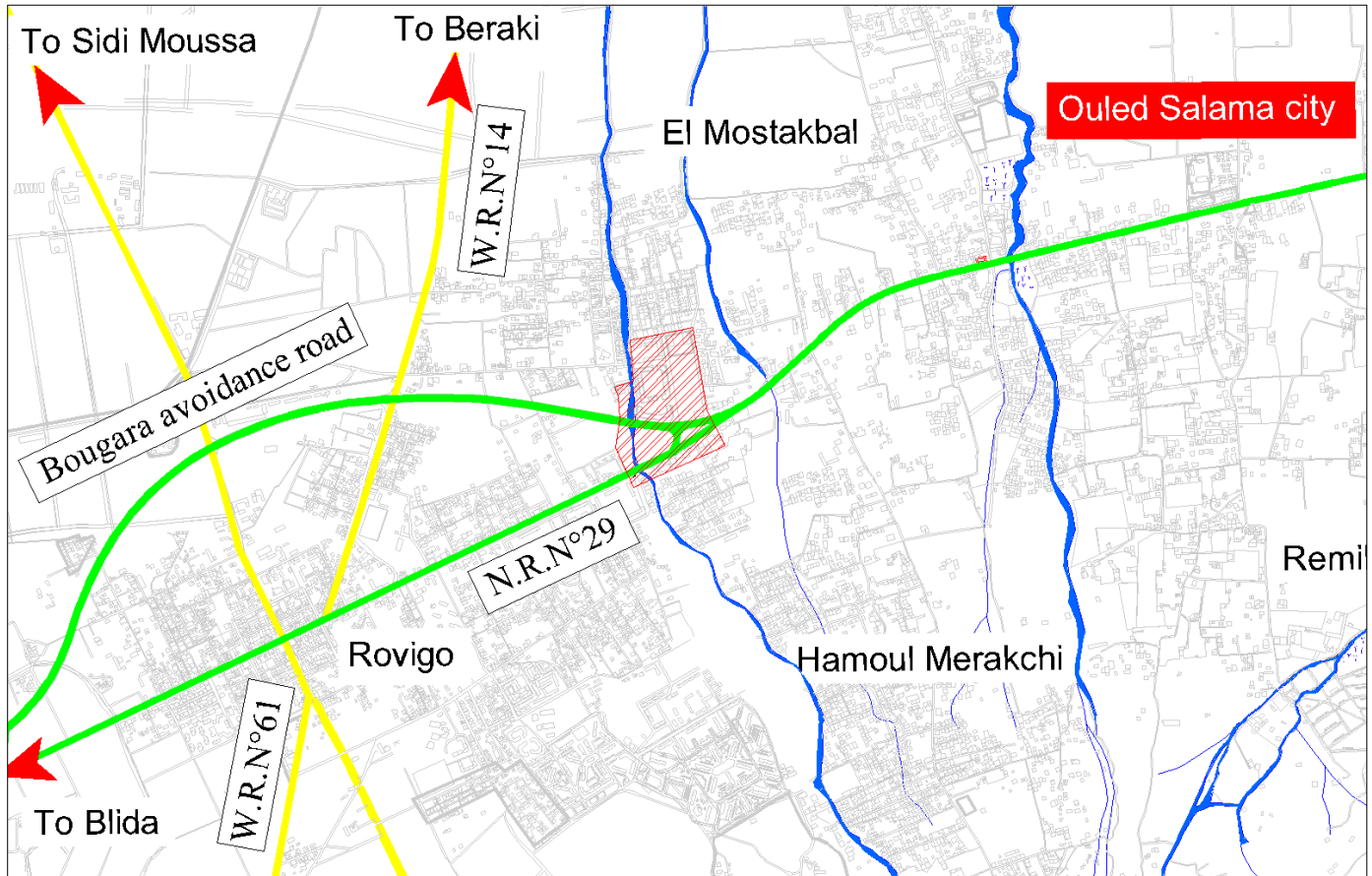


Figure III.21: Situation map and accessibility of the intervention area.

Source: Master plan for development and town planning 2016 of the town of Ouled Slama. processed by the author

Our intervention area is part of **Land Use Map n ° 02** which is located in the north-eastern outskirts of the town of **Ouled Slama**. it is accessible by:

- The national road n ° 29
- The avoidance road of **Bougara**
- A secondary road to the North which leads from **Bougara** market to our intervention area

III.6.1.2. Selection criteria:

- Strategic location:
- place of articulation between **Ouled Slama** and **Bougara**.

- it is located at the entrance of **Ouled Slama** .
- intersection between the town’s development road which is **N.R. 29** and the natural element Wadi Si **Hamouda**.
 - ✓ According to the diachronic analysis we have synthesized that the direction of development of **Ouled Slama** is towards **Bougara**, as well as the direction of growth of **Bougara** is towards **Ouled Slama** which has guided us to consolidate this part of the town.
 - ✓ Preserve and protect agricultural land from urban sprawl.
 - ✓ Integration of natural elements (Wadi) in the urban environment.
 - ✓ Reinforcement and consolidation of the landscape weft.

III.6.2. Legal status and state of buildings :

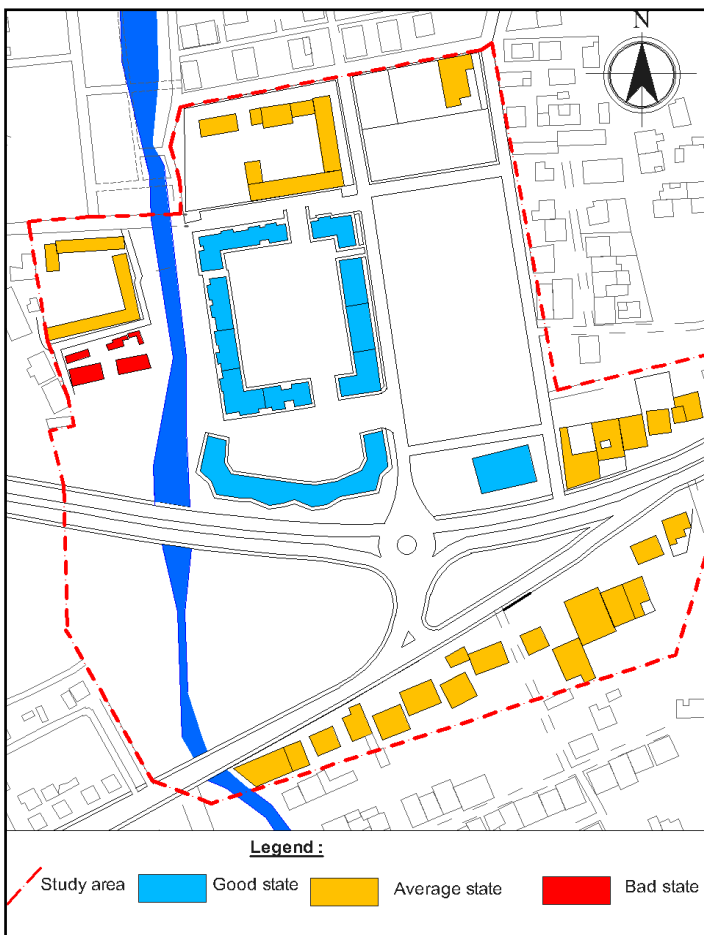


Figure III.22: State of buildings map of the intervention area

Source: Master plan for development and town planning 2016 of the town of Ouled Slama. processed by the author

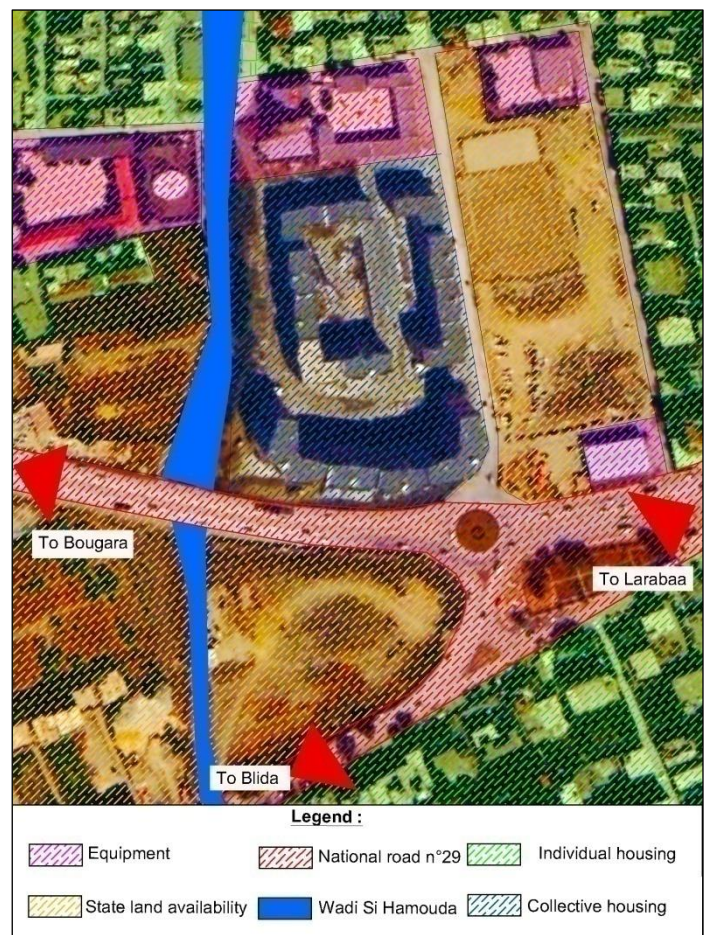


Figure III.23: The legal status map of the intervention area

Source: Google earth treated by the author.

III.6.3.The morphology of the ground :



Figure III.24: Section A-A in the field



Figure III.25 : Section B-B sur in the field

Source : Google earth .

III.6.4.Synthesis reading of the study area:

III 6.4.1.Urban problem:

- Typological break between the capital and this part of the town .
- Lack of the concept of an urban facade.
- Insufficient link structure and nodes.
- The neglect of the banks of Oued Sidi Hammouda.
- Absence of public spaces.

III.6.4.2.Functional problem:

- lack of service equipment and poly functionality in general.
- lack of sports and leisure and relaxation activities.
- Lack of cultural and commercial equipment.
- Lack of landscape equipment and green space to ventilate the city.

III.7.Intervention steps :

To improve the living context of the inhabitants and reply to them needs, a whole process of work and intervention is necessary, but first in the existing structure then on virgin land and this to improve the way of living and provide the needs that do not exist .

III.7.1. Program proposed by the master plan for development and town planning :

before starting the intervention it is interesting to know if there are proposals in our study area for town planning instruments (re-survey).

Land improvements proposed by:

- ✓ The injection of accompanying equipment (Library, Sport center , hostel)
- ✓ The allocation of a collective housing program. (LSP 500 housings)
- ✓ Creation of a secondary and tertiary road network.
- ✓ Creation of public places such as gardens and squares.
- ✓ Strengthen the attractiveness of the city by strengthening the structuring axis of animation which is the national road.
- ✓ Arrangement of a stopping area, it must include the coach parking area.
- ✓ Alignment is compulsory along the national road n ° 29.
- ✓ Development of roads, drinking water supply and sanitation networks.
- ✓ Take into consideration the gas easement area.

III.7.2.Development actions :

III.7.2.1.Intervention to existing structure:

- strengthening of the covered market.
- Redevelopment of the small garden.
- development of the banks of Wadi Si Hamouda.
- Reinforcement trade on the ground floor.

III.7.2.2. Intervention action on virgin land :

A. Improved quality of life by:

- Revaluation of public space and creation of new public spaces.
- Creation of job opportunities by the diversification of trade activities.
- Revaluation of the covered market.

B. Boosting population growth :

- ✓ By creating new collective housing with commercial activities.

C. Reply to the needs of the population:

- ✓ By the creation of new equipment such as: library sports complex, parking space....

III.7.3. Area of relevance:

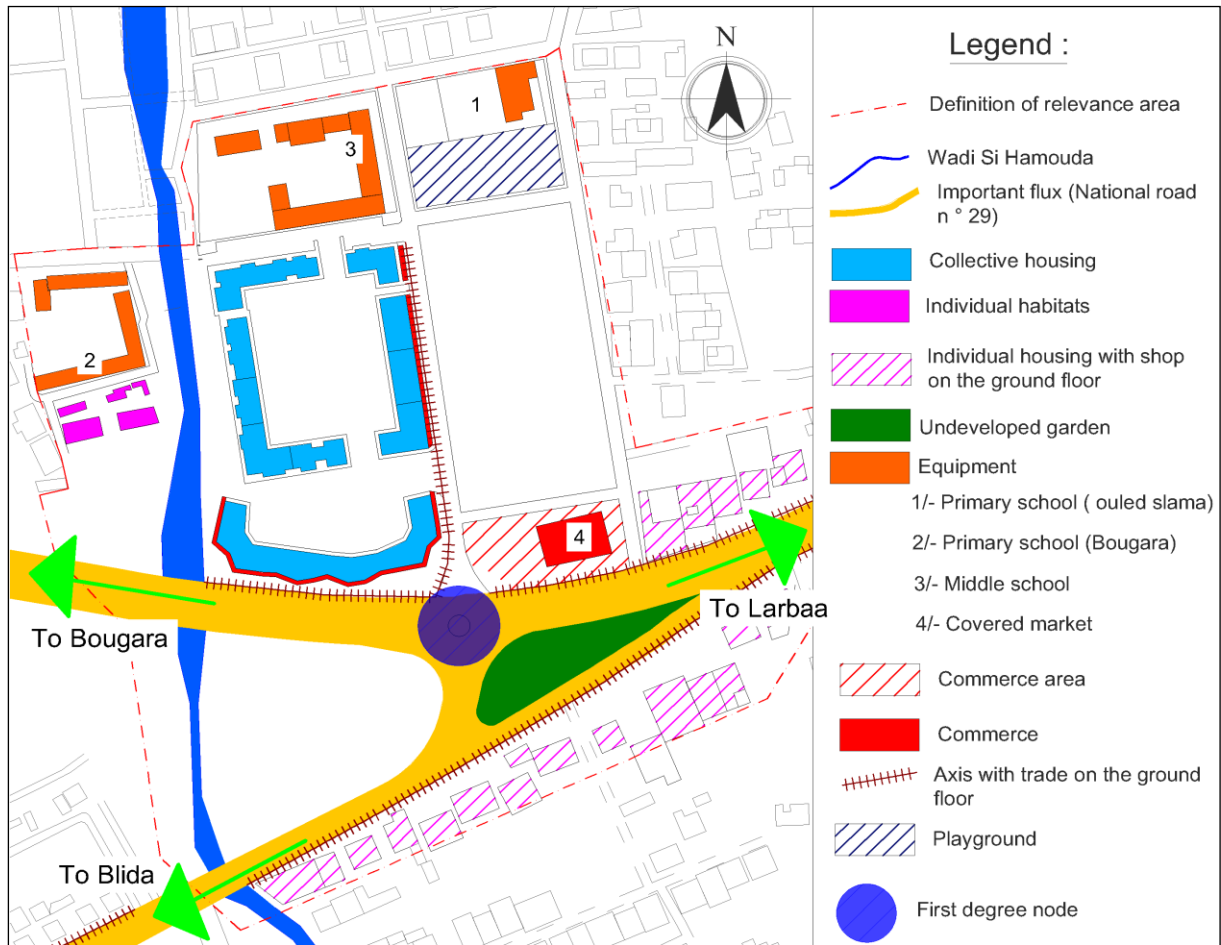


Figure III.26: Area of relevance

Source: Master plan for development and town planning 2016 of the town of Ouled Slama, processed by the author



Figure III.27: Immediate environment of the intervention area

Source : author

III.7.4. Structure schema:

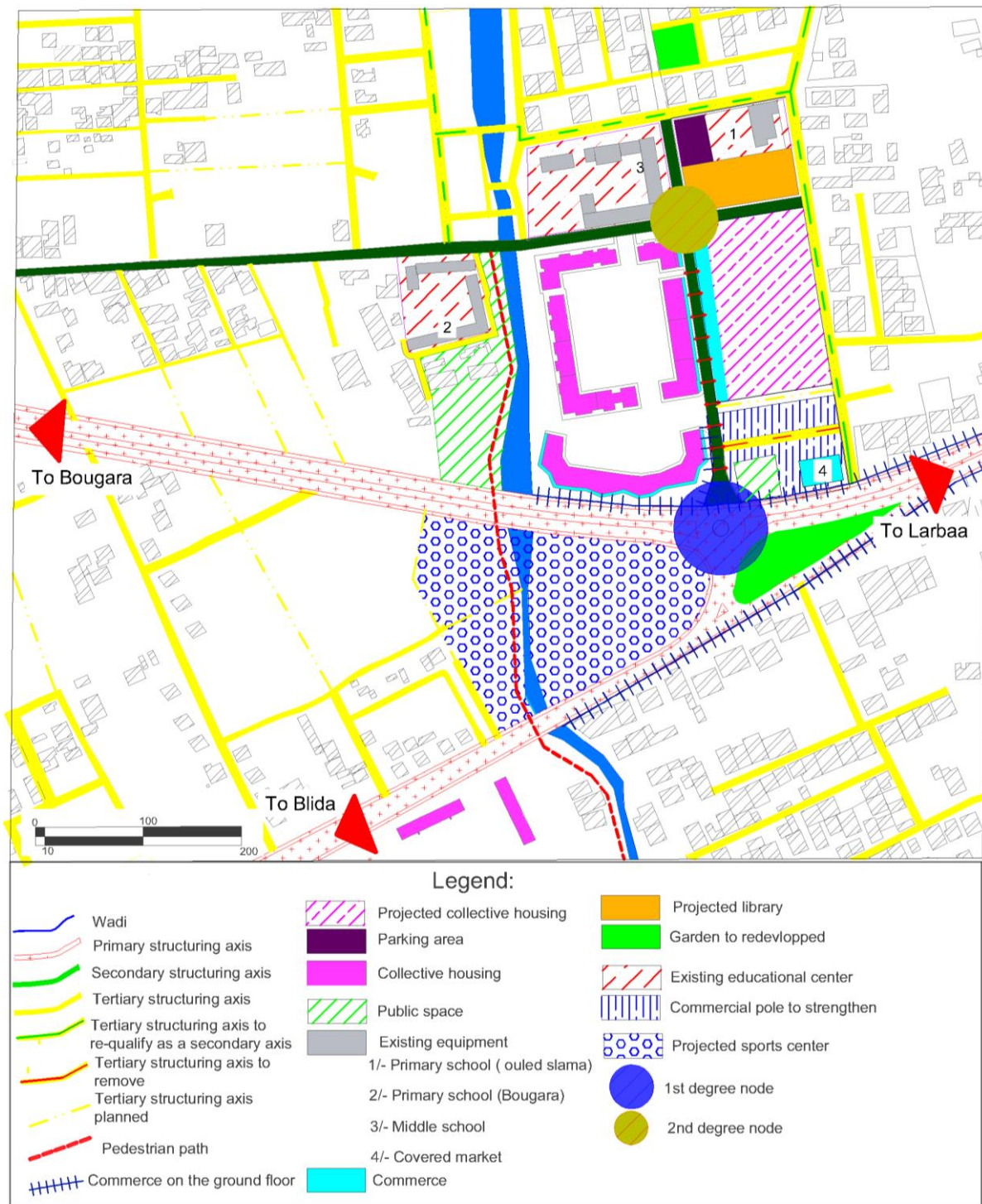


Figure III.28: Structure schema.

Source: Master plan for development and town planning 2016 of the town of Ouled Slama, processed by the author

III.7.5. Intervention steps:

III.7.5.1. Affection of roads :

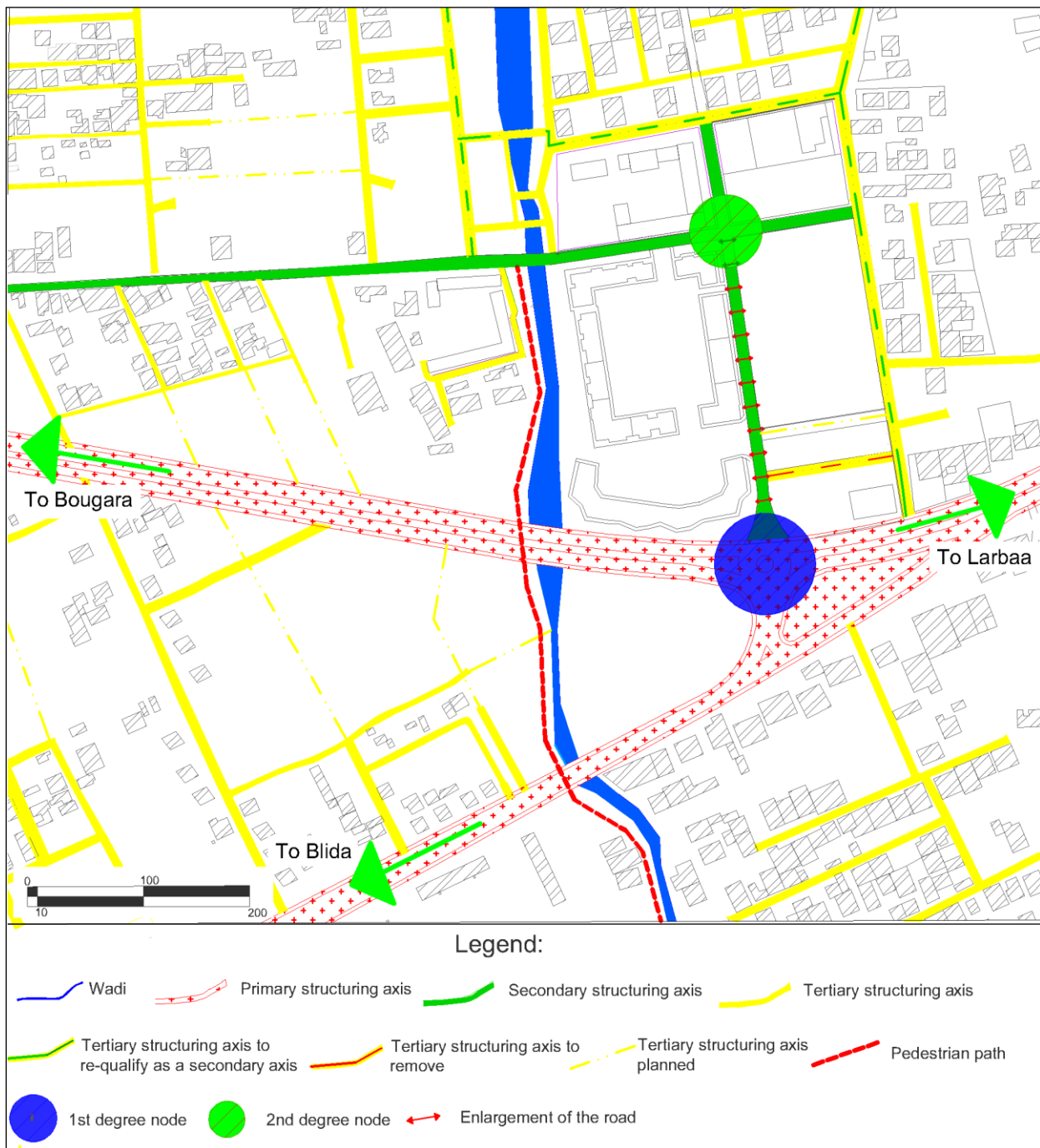


Figure III.29: Affection of roads.

Source: Master plan for development and town planning 2016 of the town of Ouled Slama, processed by the author

The structuring course " The National road n°29 " surrounds the intervention site which gives it a good accessibility .

Creation of link courses to connect the various entities of the intervention site to each other.

Creation of a pedestrian path along the banks of Wadi Si Hamouda to connect the intervention site with the mountain .

Enlargement of roads , and creation of a second degree for traffic organization .

III.7.5.2.Plot plan:

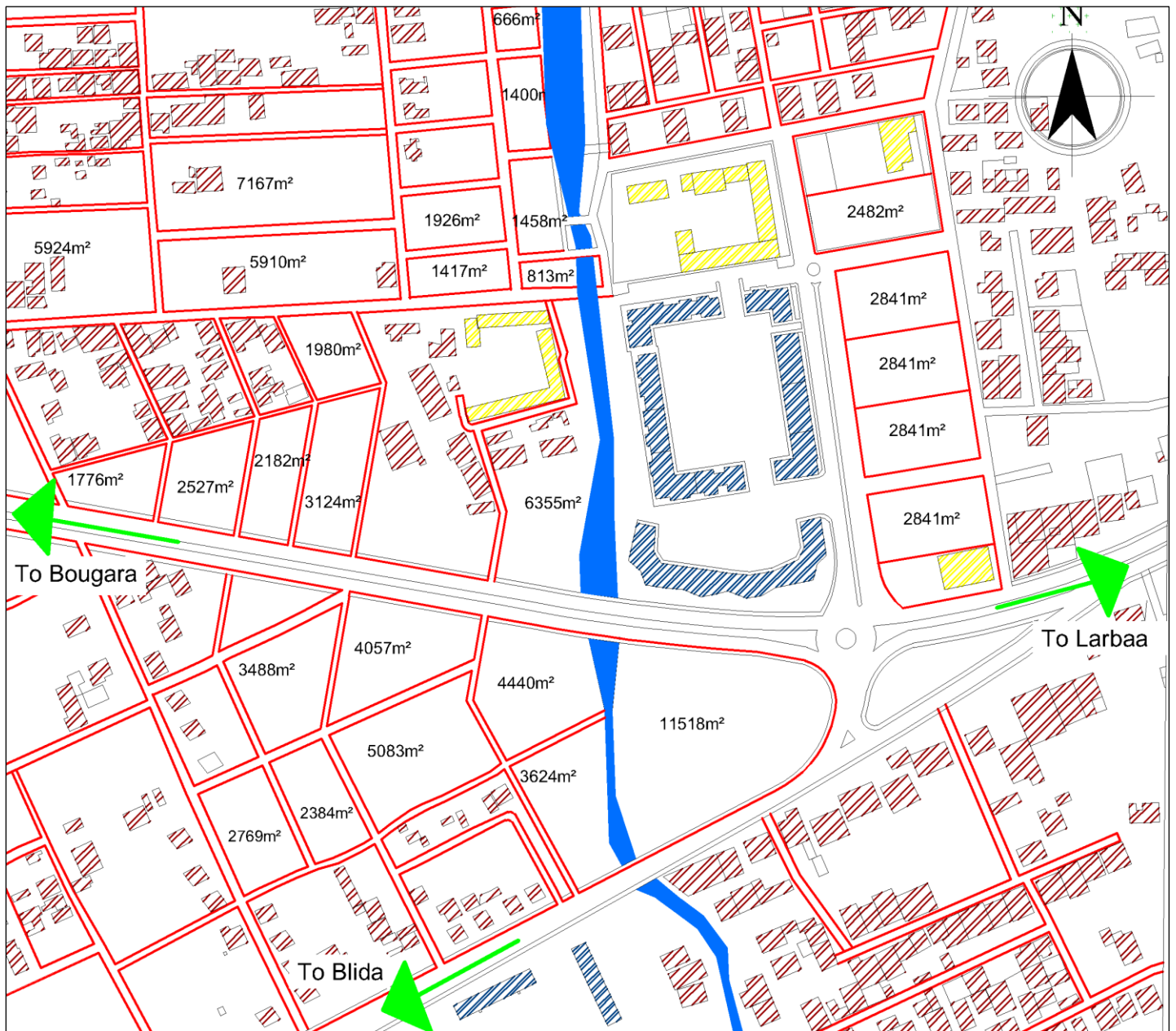


Figure III.30: Plot plan.

Source: Master plan for development and town planning 2016 of the town of Ouled Slama. processed by the author

The project highlights the adaptation of three wefts , **urban weft** represented by the trace of roads , **green weft** represented by a network of ecological continuity (agricultural land). We also have the **blue weft** which ensures an aquatic continuity represented by Wadi Si Hamouda.

III.7.5.3.Subdivision plan:

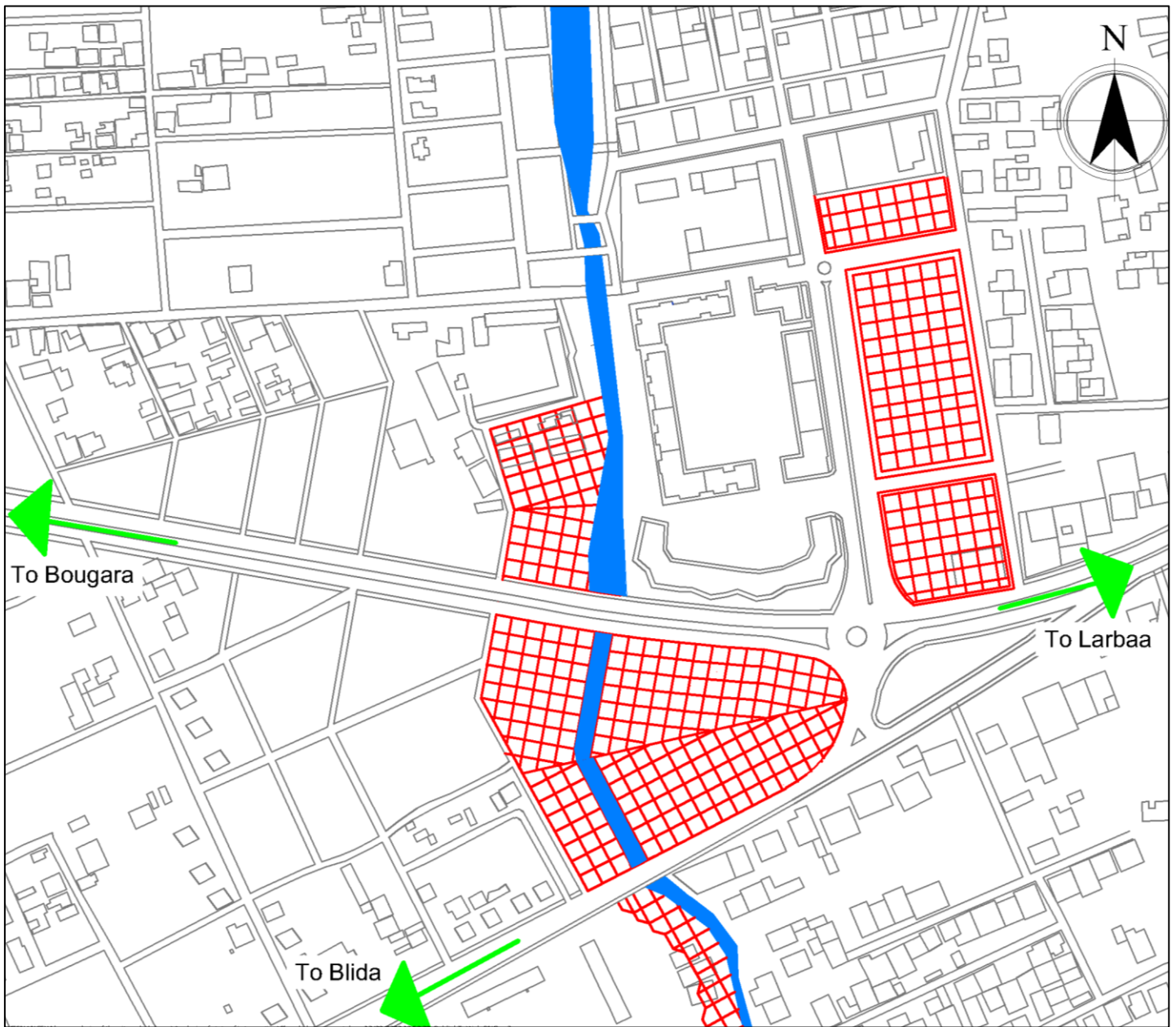


Figure III.31 : Subdivision plan.

Source: Master plan for development and town planning 2016 of the town of Ouled Slama. processed by the author.

This procedure gave us a regular division of islands, and in each island occupies a function between residential, sports, commerce and leisure, to have a social and functional mix while respecting the landscape.

III.7.5.4.Quantitative / qualitative program of the urban project:

Project	Space
Library	2759m ²
Integrated habitat	8777m ²
Mall	3012m ²
Public space	984m ²
Relaxation and leisure area	3209m ²
Sports complex	21961.2m

Table III.2 : Quantitative / qualitative program of the urban project

Source: Authors

III.7.5.5.Criteria for choosing the urban projects :

- ✓ This urban project comes as a solution to the main problematic of the town of which this project will meet the needs of the inhabitants of **Ouled Slama** so it will also solve its specific problems. Allow the problems that this letter suffers from the total lack of public spaces so we decided to make a rich program with public spaces as well as the relaxation and leisure area.
- ✓ Also we chose to make a shopping center to strengthen trade in the site where there is an abandoned market , and this is the case of the integrated habitat which has the ground floor reserved for the trade and this also to create a boulevard of 20 meters to develop the relevance and at the same time to densify the area with the population .
- ✓ for the library we have seen that there is an educational pole which contains two primary and a middle school so why not strengthen this educational pole by a library and this for a functional and cultural diversity , especially in the case where there is a great lack of cultural equipment in the town .

III.7.5.6.Urban Landscaping plan :

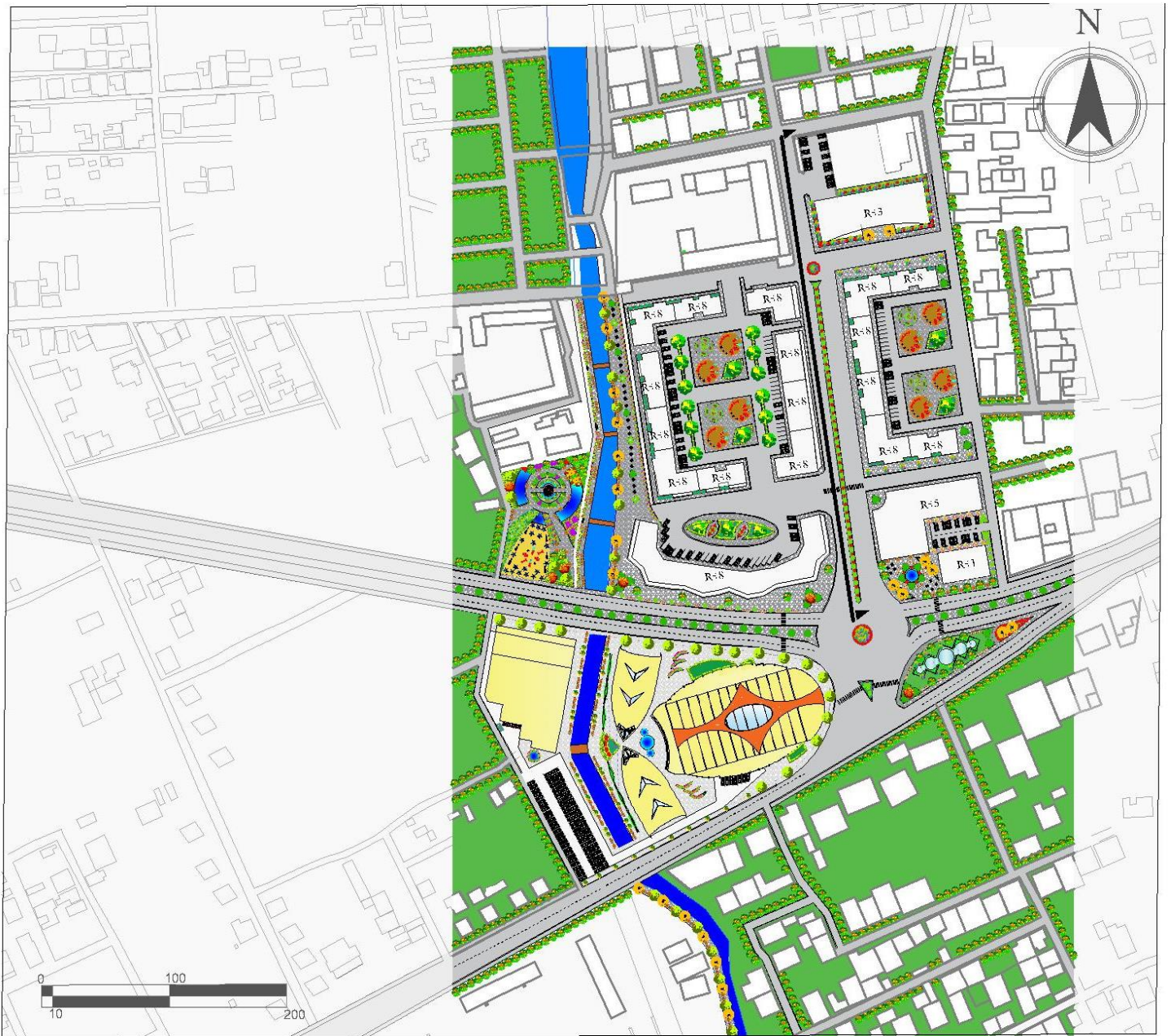


Figure III.32 : Urban Landscaping plan.

Source: Master plan for development and town planning 2016 of the town of Ouled Slama. processed by the author

III.8. Architectural project:

III.8.1. Site analysis:

A. The flux delimiting the site:

The site is delimited by strong mechanical flux on the north side and east side, average mechanical flux on the south side, weak mechanical flux on the west side

-The strong pedestrian flux on the north side and east side, the average pedestrian flux on the south side, the weak pedestrian flux on the west side

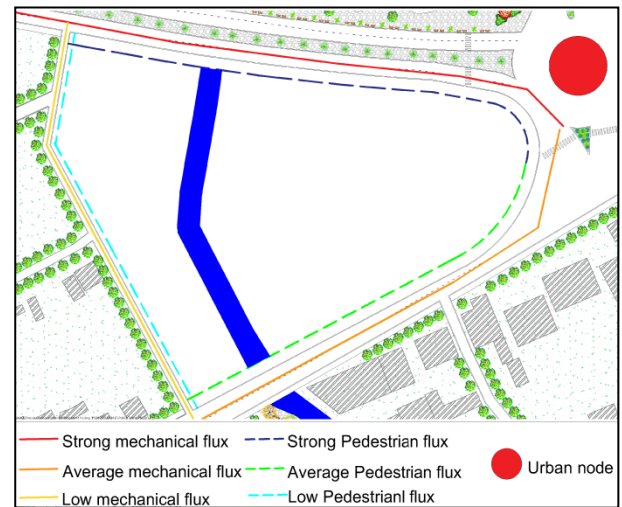


Figure III.33: The flux delimiting the site

Source: Authors

B. Shape and size of the land:

-The land have an irregular shape with an area of 21961.2m² divided into two parts by the wadi of Si Hamouda



Figure III.34: size of the site

Source: Authors .

C. Sunshine and prevailing winds:

a. The climate :

-A Mediterranean climate marked by summer drought and soft winters.

b. Prevailing winds:

-The prevailing winds at Ouled Slama are : northeast.

-The land is exposed to the sun of all sides.

-The land is exposed to winds since there are no obstacles

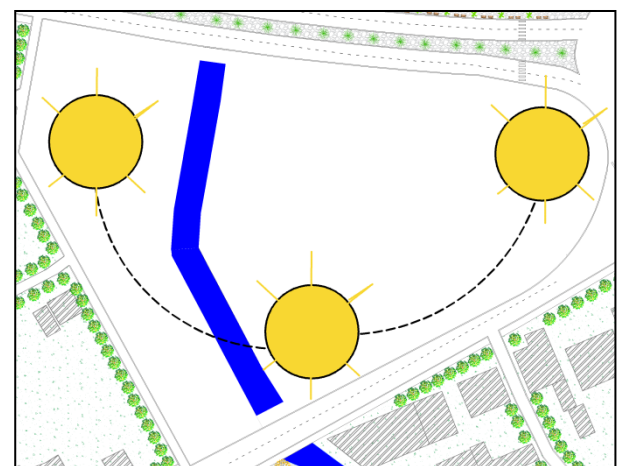


Figure III.35 : Sunshine of the site

Source: Authors .

III.8.2.Criteria for choosing the architectural project:

- ✓ The lack of sports facilities in the town led us to make a sports complex for the town at a time
- ✓ the presence of a stadium in the previous time which removed by the authorities .
- ✓ According to the analysis of urban planning instruments , the master plan for development and town planning proposes a sports complex on this site .



Figure III.36 : the site state before

Source: Bing Maps .

III.8.3.Importance and role of architectural project in urbane context :

- ✓ The Ouled Slama Sports Complex will be the city's flagship project, offering its services to visitors as well as residents.
- ✓ The location of the project is strategic, it is both in contact with the natural environment and the urban environment, it plays the role of articulation between the town of Ouled slama and the Bougara .
- ✓ A door project because it locate in the entrance of the town of Ouled Slama .

III.8.4.Constraints:

In this site we have several constrained among them :

- ✓ Wadi **Sidi Hamouda** which crosses the site and which deviates it in two parts .
- ✓ The national road which is located in the north of the site which obliges us to do a recoil at least 10 meters which reduces the surface of the intervention.
- ✓ The morphology of the site almost triangular which leaves no choice to us to make a good form of project .
- ✓ The choice of entry to the project is really limited because the site of the intervention is delimited by two important roads .
- ✓ The private land which delimits the site of the intervention represents the biggest constraint.

III.8.5.Spatial and functional organization chart:

III.8.5.1.Quantitative / qualitative program of the architectural project:

Entity	Space	Under space
The Administration 515 m ²	Reception	67 m ²
	Director's office	40m ²
	Secretary's office	18m ²
	Meeting room	20m ²
	Archive room	24m ²
	Office 01	12m ²
	Office 02	12m ²
	Office 03	14m ²
	Office 04	23m ²
	Office 05	23m ²
	Office 06	12m ²
	Office 07	12m ²
	Office 08	14m ²
	Office 09	14m ²
	Office 10	12m ²
Sanitary	12m ²	
Restoration 354m ²	Reception	30m ²
	Restoration	270m ²
	kitchen	30m ²
	Sanitary	12m ²
Fitness center 800m ²	Entrance hall	50m ²
	Dance room	86m ²
	Medical office	23m ²
	bodybuilding room	173m ²
	Fitness room	140m ²
	Hall	110m ²
	Cloakroom01	36m ²
	Cloakroom02	65m ²
	Cloakroom03	65m ²

Table III.3: Quantitative / qualitative program of the project

Source: Authors

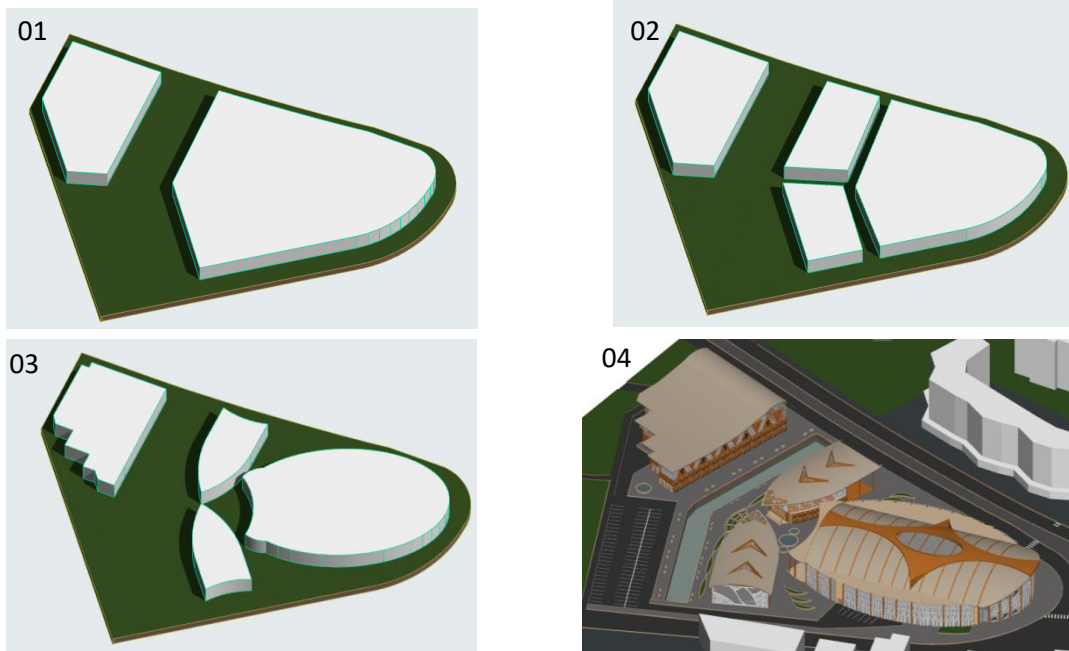
Entity	Space	Under space
Multisport room 2239m ²	Entrance hall	185m ²
	Multisport room	1572m ²
	Technical room	37m ²
	Storage space 01	24m ²
	Cloakroom01	90m ²
	Cloakroom02	90m ²
	Office 01	12m ²
	Office 02	12m ²
	Office 03	12m ²
	Office 04	12m ²
	Storage space 02	24m ²
	Emergency exit 01	40m ²
	Emergency exit 02	40m ²
Semi Olympic swimming pool 5145m ²	Entrance hall	360m ²
	Heating pool	165m ²
	Jumping pool	511m ²
	Semi Olympic swimming pool	667m ²
	Cauldron machine room	110m ²
	Sports equipment deposit 01	40m ²
	Protocol room	22m ²
	Control Table	34m ²
	Sound and lighting room	24m ²

Semi Olympic swimming pool 5145m ²		
	Special entry for athlete 01	54m ²
	Special entry for athlete 02	54m ²
	Cloakroom01	67m ²
	Cloakroom02	56m ²
	Cloakroom03	56m ²
	Emergency exit 01	50m ²
	Emergency exit 02	50m ²
	Emergency exit 03	60m ²
	Emergency exit 04	50m ²
	First aid room	40m ²
	Public bath for women	35m ²
	Public bath for men	35m ²
	Wind sports equipment	536m ²
	Sports equipment deposit 02	40m ²
	Storage space	60m ²
Athletes' concert hall	75m ²	

Table III.4 : Quantitative / qualitative program of the project

Source: Authors

III.8.6.Genesis of the form of the project:

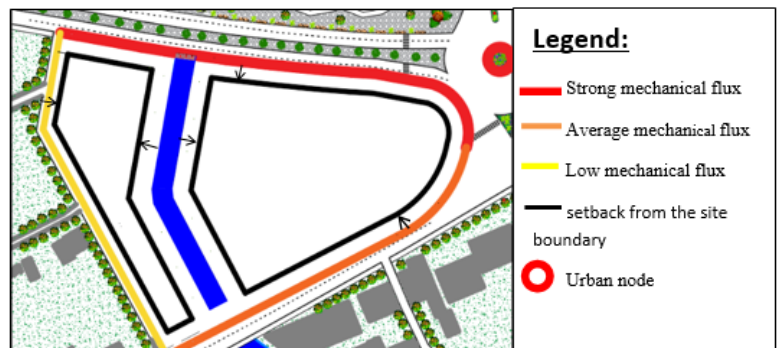


FigureIII.37 : Genesis of the form of the project

Source: authors

Step 1:Creating a setback

- We have established the necessary distance from the site boundary
- 10m from the northern part <RN 29>
- 10m from the south and east part
- 5m from the western part



FigureIII.38 : Diagram of step 1

Source: authors

Step 2: accessibility of the project

-Mechanical access: is from a secondary street.

-pedestrian access: is from the two <main and secondary> lanes.

-Main access to the project: is opposite the length of the Wadi.

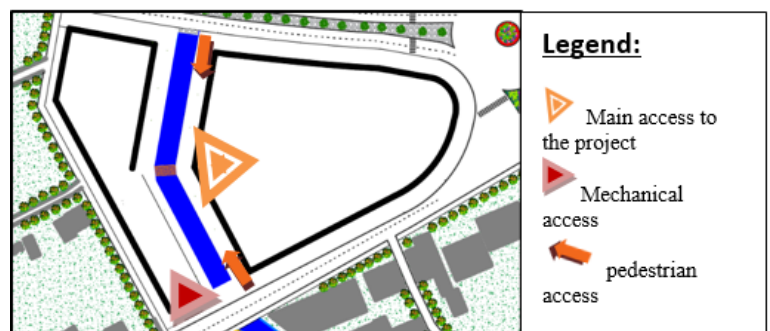


Figure III.39Diagram of step 2

Source: authors

Step 3: prioritization of spaces

-**The project:** is positioned so that the main access to the project: is opposite the length of the Wadi.

-**The car park:** its location is chosen so that it is close to secondary road

-**Development of the banks of the Wadi:** Create a relaxation area

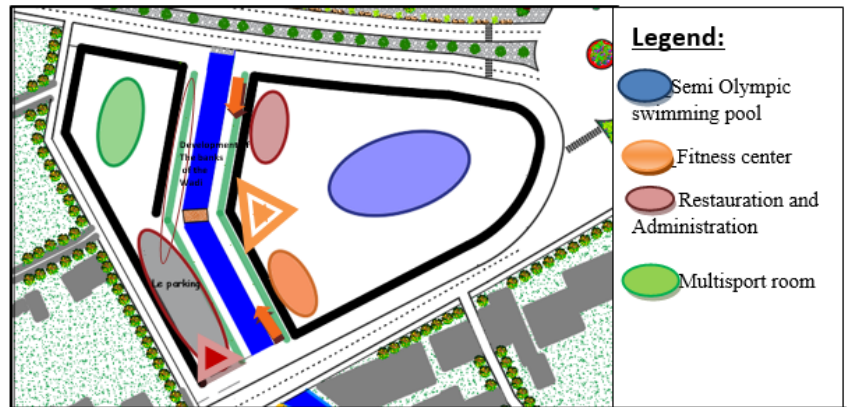


Figure III.40 Diagram of step 3

Source: authors

Step 4: Spatial organization

- Creation of 4 poles according to the main functions



Figure III.41 : Diagram of step 4

Source: authors

Zoning of the ground plane:



Figure III.42 :Zoning of the ground plan

Source: author

III.8.7. Functional organization chart of entities

The functional principle:

we are based on the diversity of sports practices. Sport is no longer reduced to a purely competitive practice, moreover the diversification of needs added to the concern for the development of practitioners.

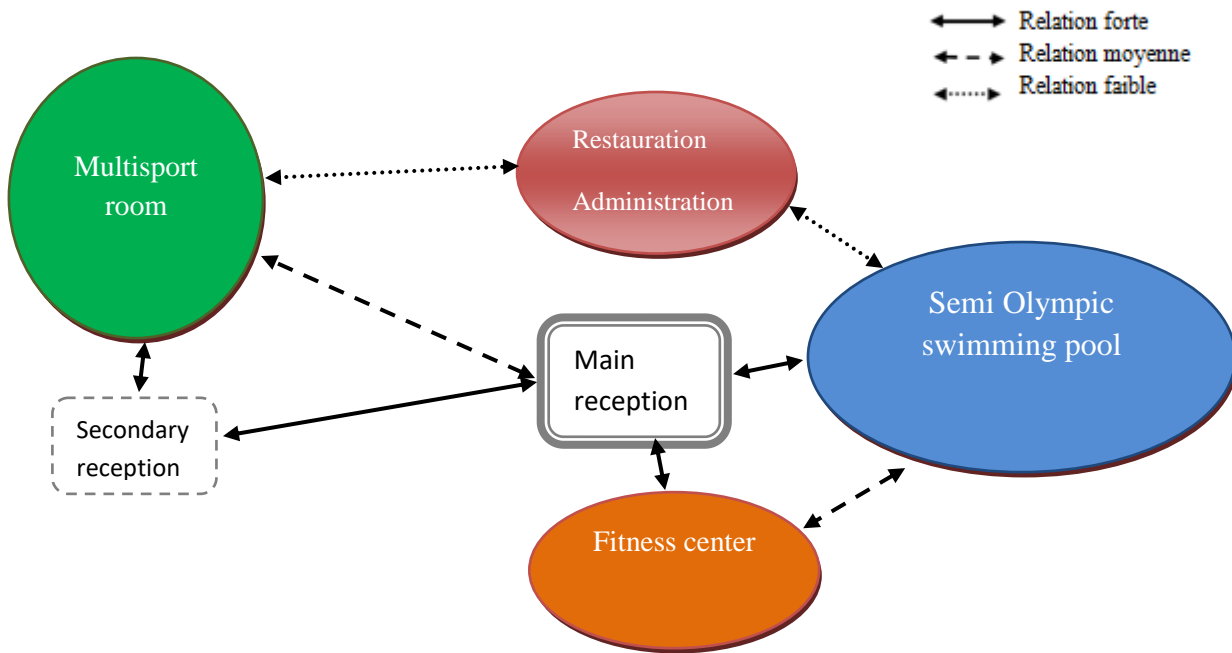


Figure III.43: General functional flowchart

Source: Authors.

-In order to ensure better functionality for each activity we have put the functions in separate entities

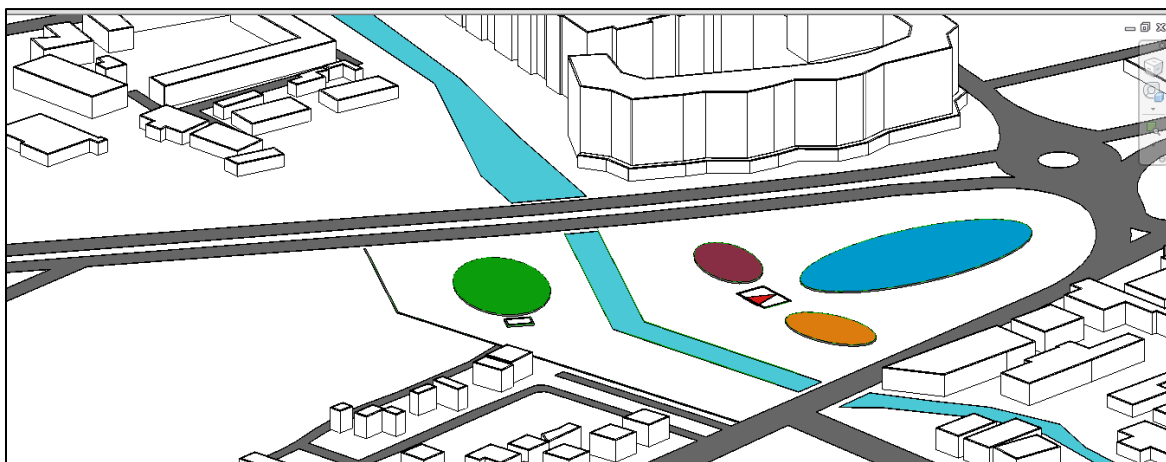
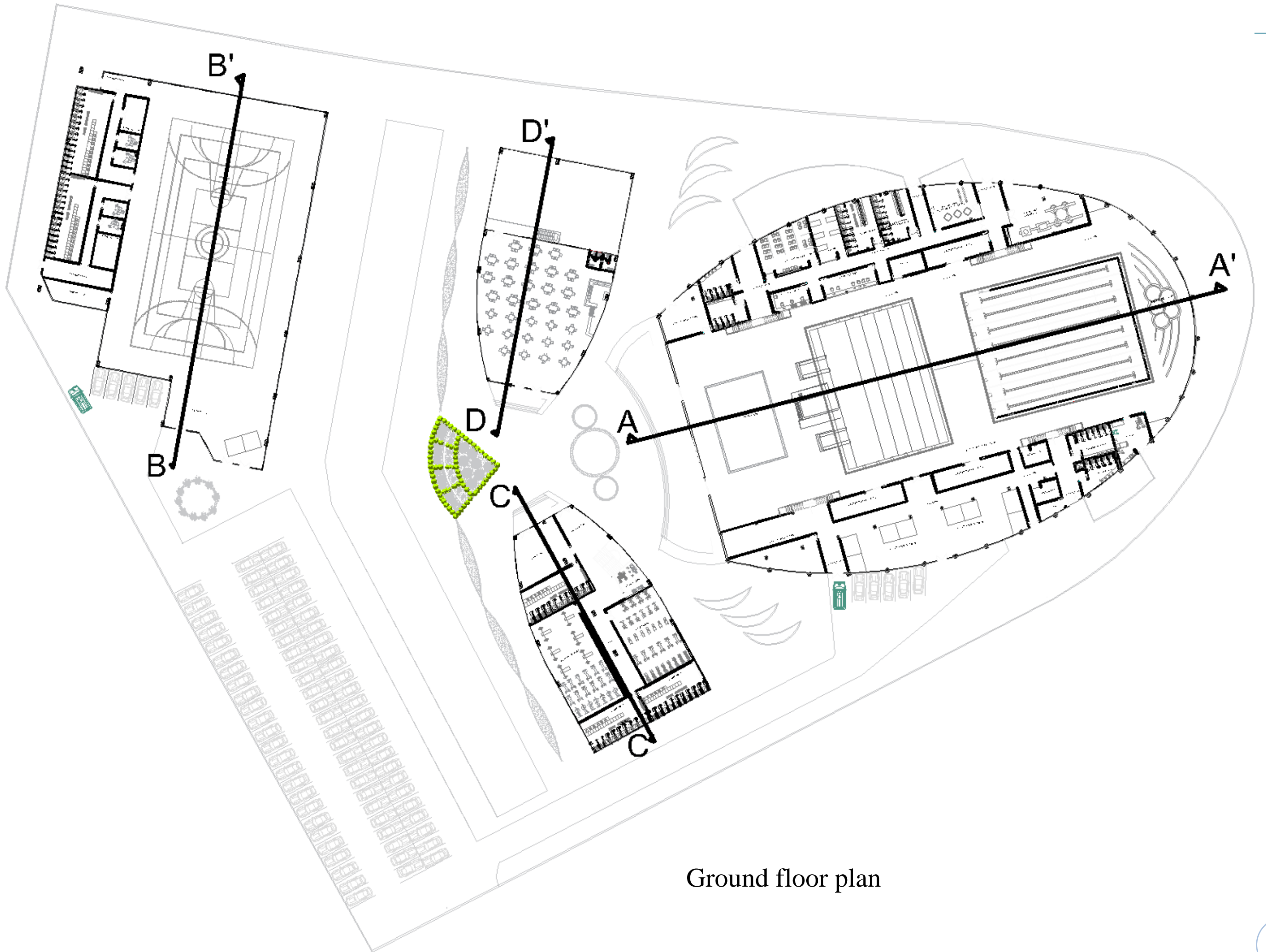
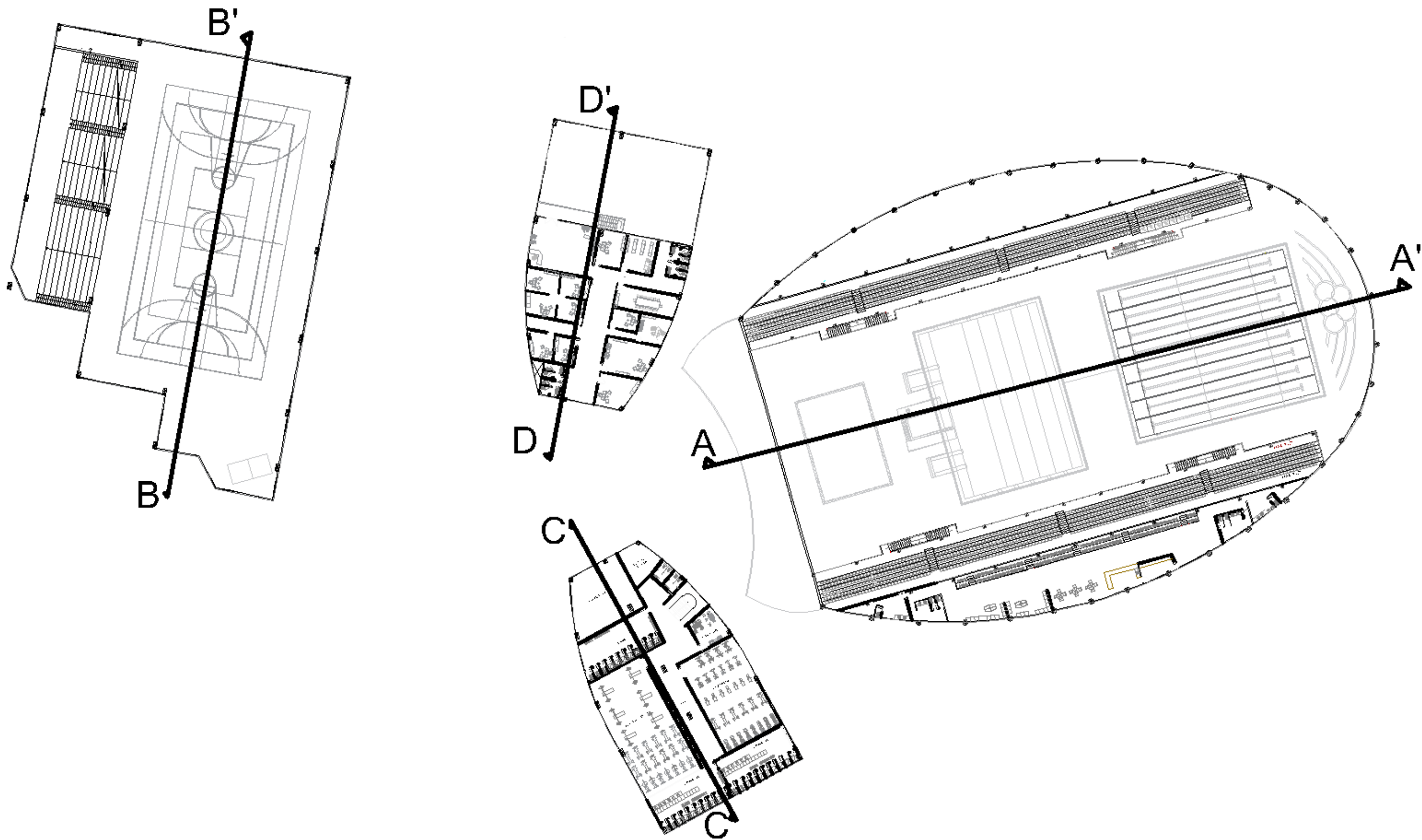


Figure III.44 : Illustration of assignment of functions

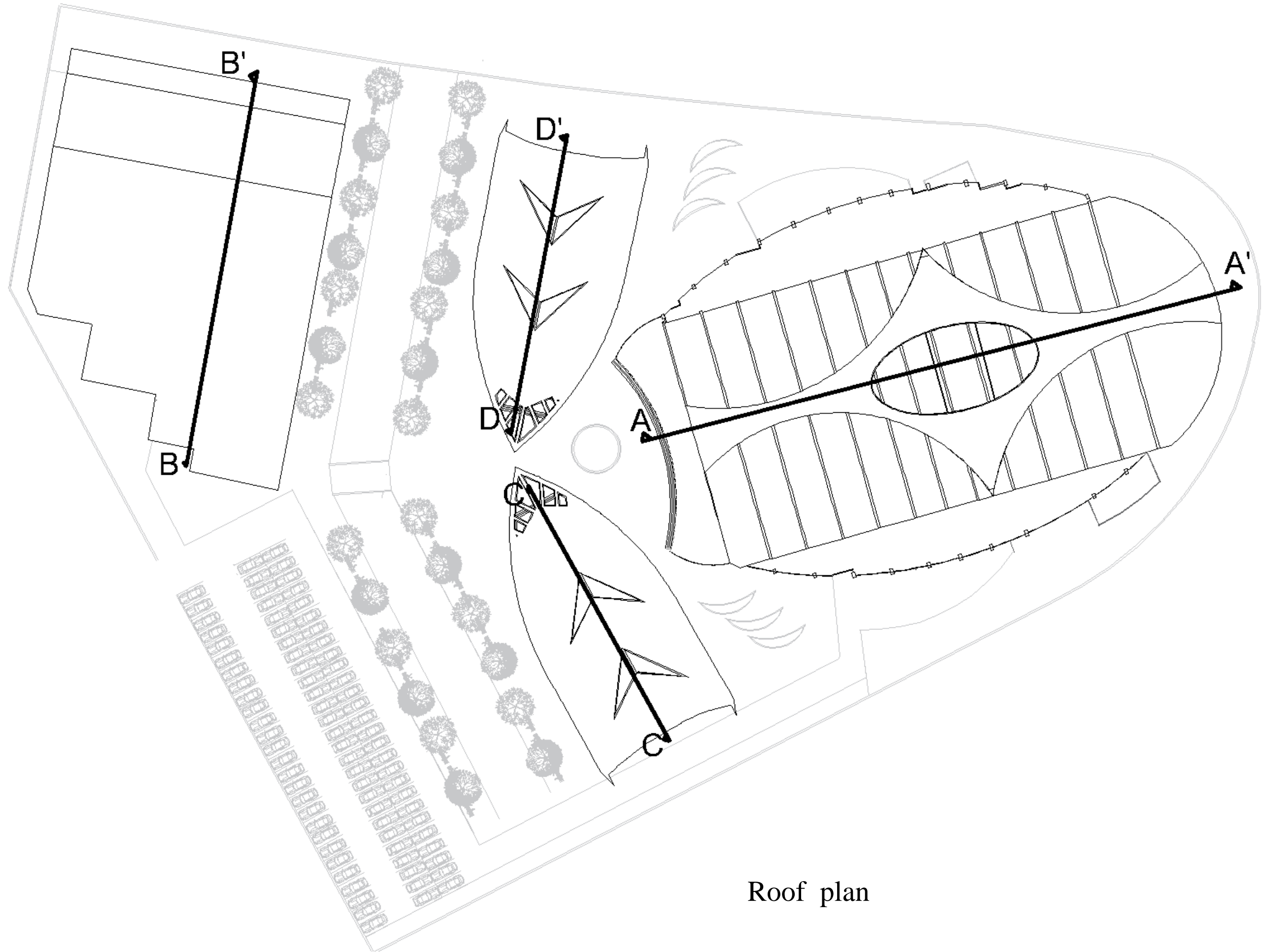
Source: Authors



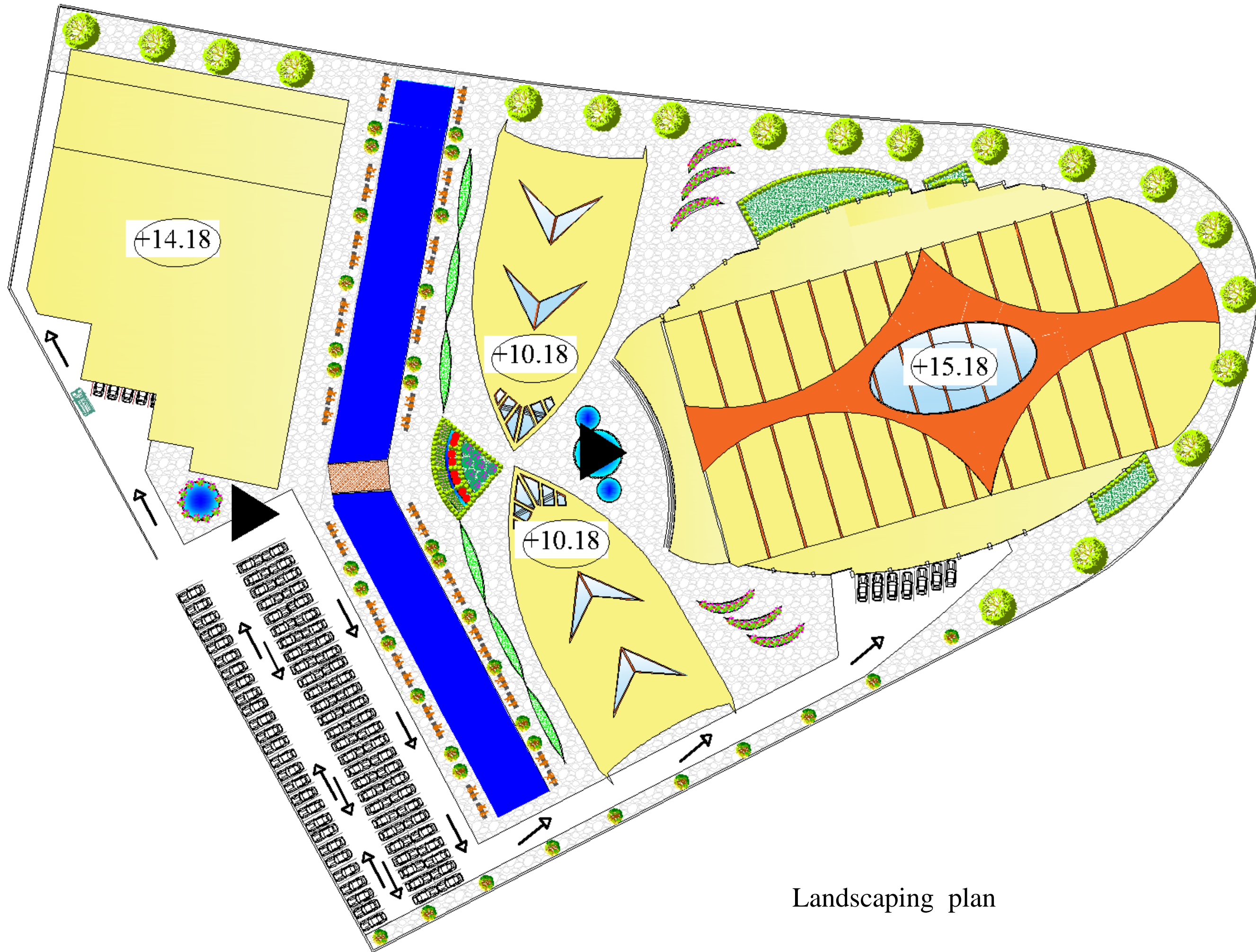
Ground floor plan



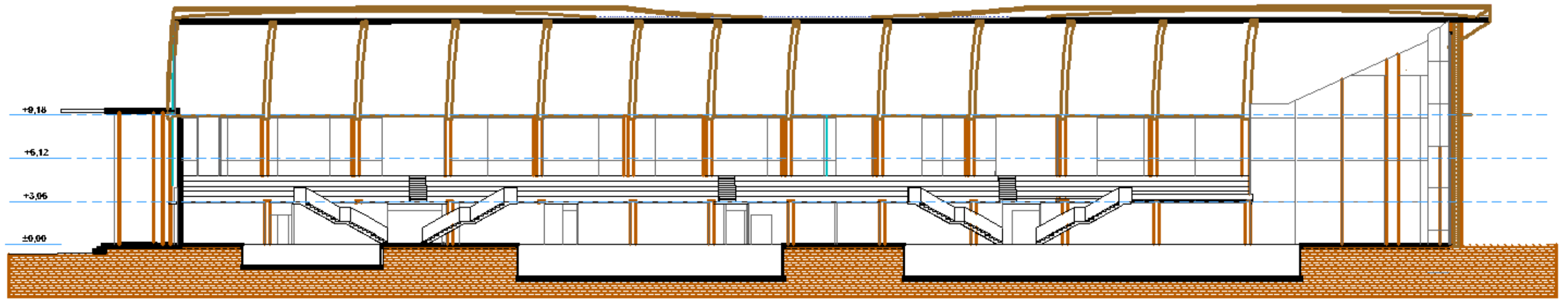
First floor plan



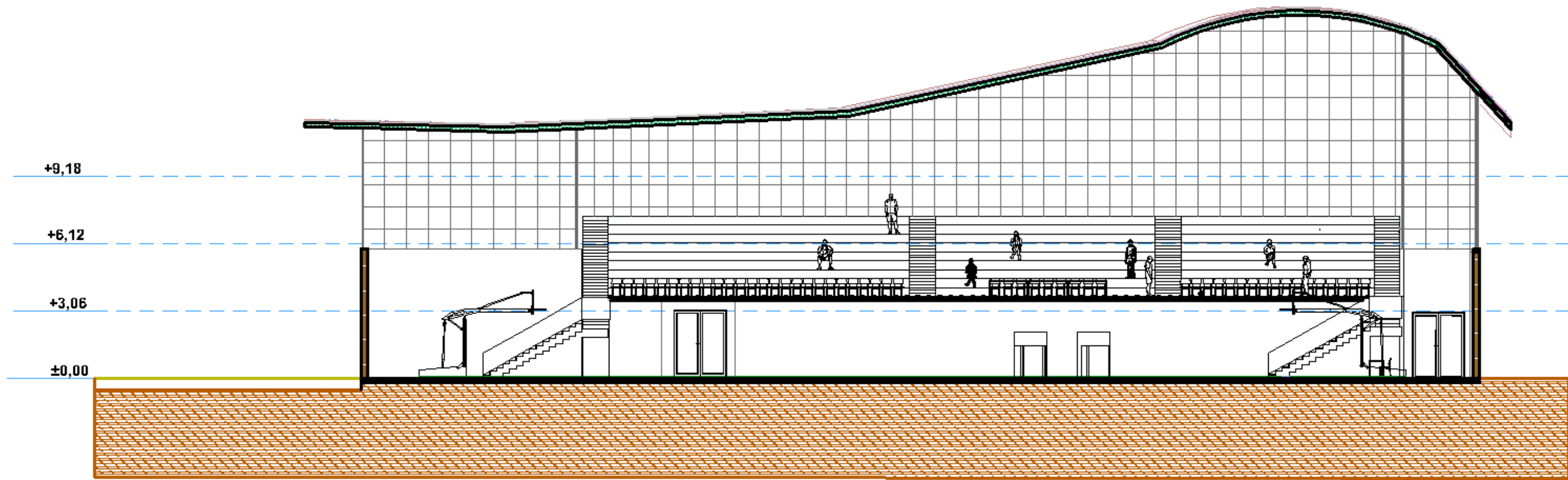
Roof plan



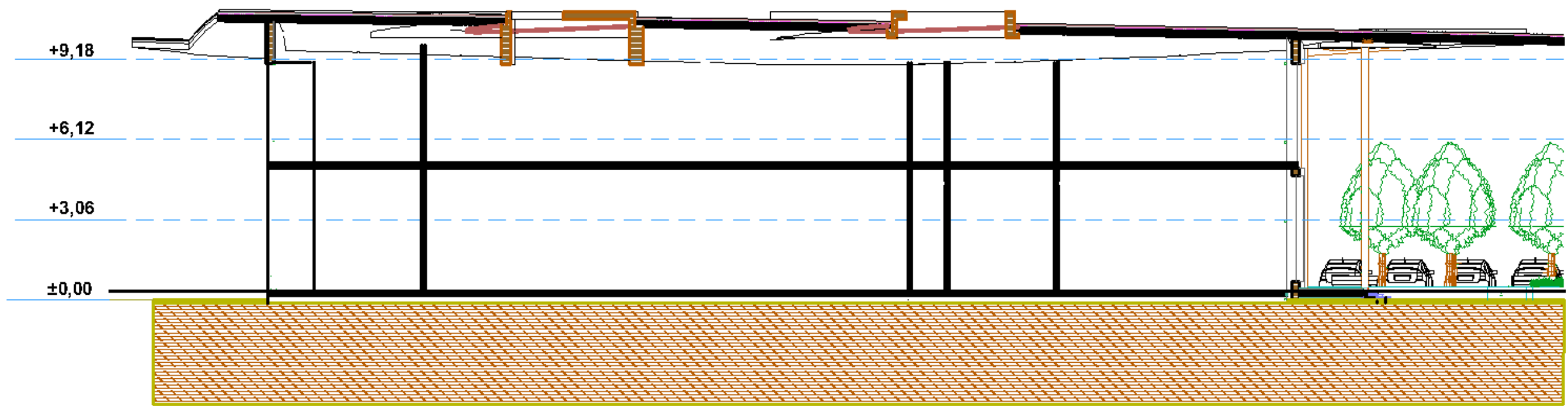
Landscaping plan



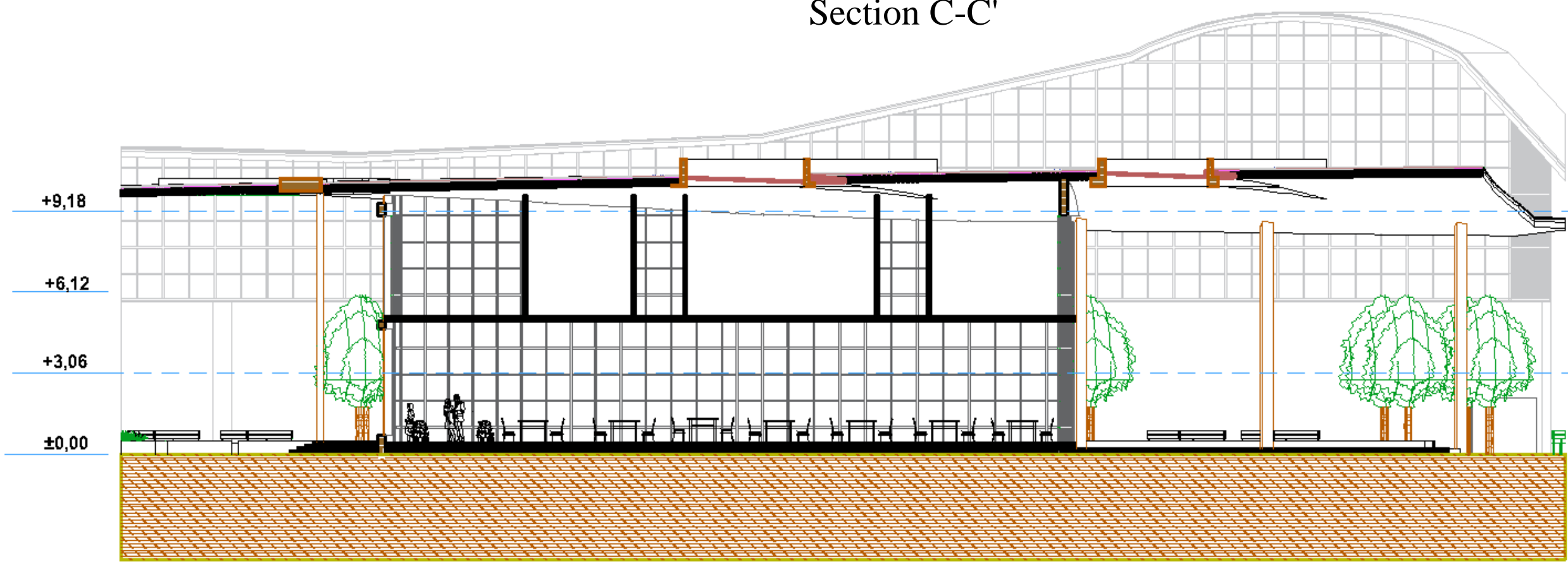
Section A-A'



Section B-B'



Section C-C'



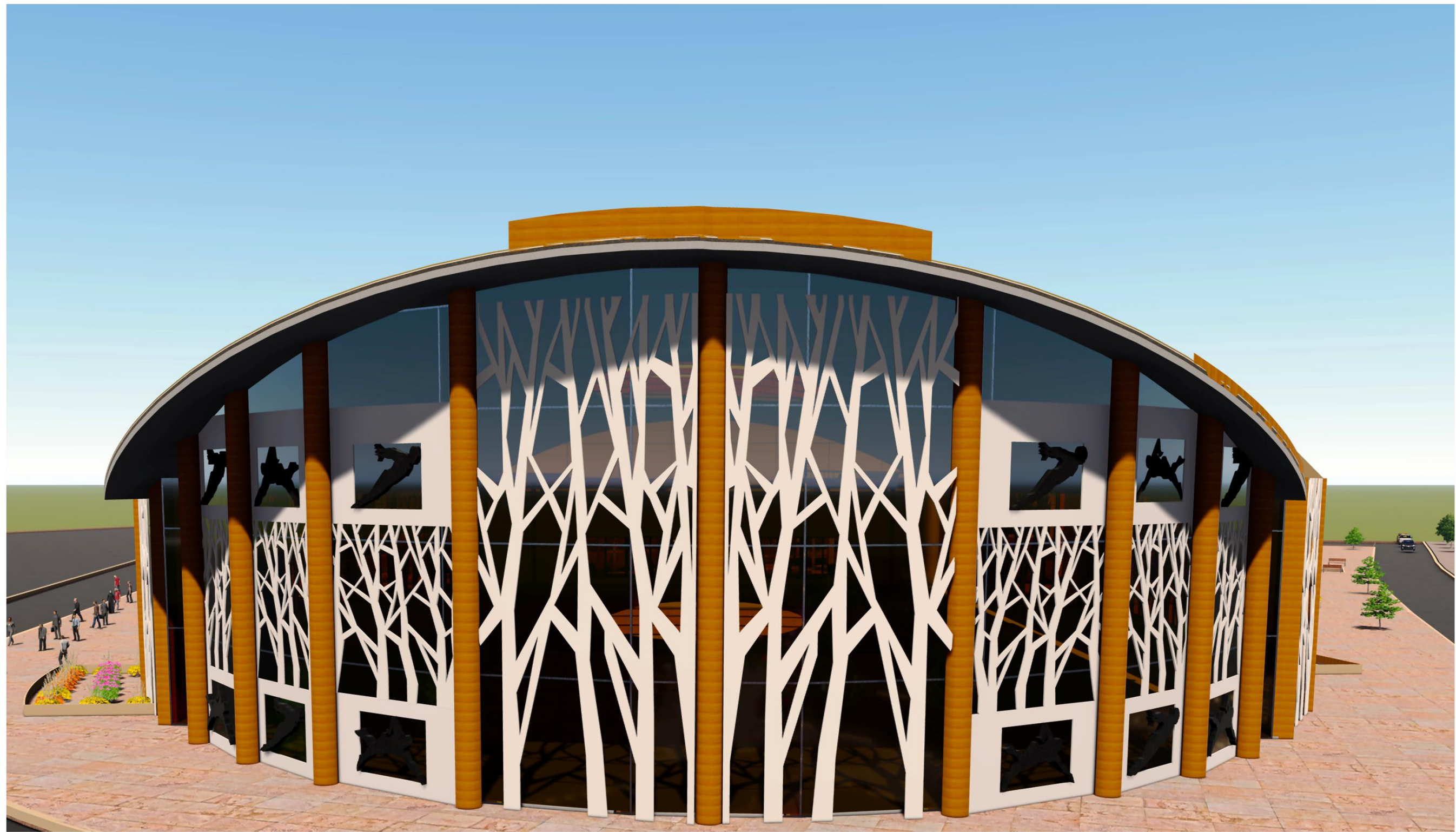
Section D-D'



Facade North



Facade South



Facade West

GENERAL CONCLUSION

The present work is the result of a long research which lasted during one year of the urban architecture master in several aspects (historical research, bibliographic research ...) of which this work methodology developed by the managers of the master was very effective concerning the work flow and which gave good results at the scale of the study, analysis, design and intervention.

In this thesis of 140 pages organized in 3 chapters, we mentioned all the research developed in the workshop and in the other modules of the master, of which the town of Ouled Slama was our research town by its urban and environmental potential as well as its strategic location.

The urban project approach is based on different scales in order to obtain a better adaptation of the project to their environment. Made to anchor the city in its territory and ensures continuity between these scales.

At the territorial level, we have used the typo-morphological approach to understand the urban phenomenon, so urban sprawl is today a topical issue that affects all cities, large and small. It is a notion that stems more from a diachronic assessment of sprawl, that is, of the rate and intensity of sprawl over time. In relation to our objective, it is to preserve cultivated spaces from urban sprawl. In this sense we have made a project by projecting a green mesh with these ecological continuities, -Agricultural and forestry links, green leaves, plants, in all their forms, are now becoming an essential component of urban projects designed from a sustainability perspective.

Compared to the city scale, we have consolidated the outskirts of the town of Ouled Slama by integrating the concept of sustainable development and Agri-urbanism with actions aimed at improving living conditions in socially disadvantaged sectors., economic and cultural. through our analysis we responded to the problem of the town by consolidating another well-defined center on the outskirts of the town in order to improve the quality of life of the inhabitants while meeting their needs .

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- Master thesis in Architecture and Urban Project: Revitalization of a mountain village Case study: LARBAA Intervention: SOUHANE , Project: CULTURAL CENTER.
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