AMERICAN UNIVERSITY OF BEIRUT

SUSTAINABLE URBAN REVITALIZATION OF POST-INDUSTRIAL LANDSCAPES: THE CASE-STUDY OF MINET EL BASSAL IN ALEXANDRIA, EGYPT

by
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SUSTAINABLE URBAN REVITALIZATION OF POST INDUSTRIAL LANDSCAPES: THE CASE STUDY OF MINET EL BASSAL IN ALEXANDRIA, EGYPT

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CONTENTS

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ABSTRACT

This thesis focuses on the topic of “Sustainable Urban Revitalization of Post-Industrial Landscapes”, taking the abandoned port district of Minet el Basal in Alexandria-Egypt as the main case study. The research begins with an urban design workshop based on site visits and a SWOT assessment, yet lacking a solid literary review. The research then provides an overview on the theoretical foundations in the existing urban design literature on sustainability, highlighting key factors and urban strategies for process and implementation. By sustainability, what is meant is creating a balance between upgrading the physical infrastructure, enhancing the environmental resources, creating economic incentives, all while ensuring social equity. As comparative references, the experiences of the urban revitalization of Barcelona, Marseille, Cairo are explored, as all three cases have been similarly struggling with their need for urban re-innovation following the end of the industrial era. Starting with an urban design workshop held in Alexandria, the thesis presents updated ideas for sustainable urban design solutions for Minet el Basal. Finally, the thesis concludes that in order for an intervention to be fully sustainable, multiple scales need to be carefully integrated and phased strategically.

LIST OF FIGURES

Chapter 5

LIST OF TABLES

I. INTRODUCTION

The topic of this thesis focuses on the sustainable urban revitalization of Minet el Basal as a deserted industrial landscape in Alexandria, Egypt. The research is an elaboration on an urban design studio, which was conducted in the fall semester of 2012. The following chapter will proceed by framing the existing condition of Minet el Bassal within the global framework of dynamics that led to the appearance of derelict landscapes near ports in cities throughout the world around the same period, will further describe the problematic context, elaborate on the issues, approach, goals and objectives, and finally conclude with the thesis question that will gear the direction of the research.

Franco Borsi defines the industrial landscape as "the landscape resultant from a thoughtful and systematic activity of man in the natural or agricultural landscape with the aim of developing industrial activities", enabling the recognition of an entire terrain and its group of buildings as a single element (Borsi, F., 1975). The classification of the landscape as industrial implies a qualitative perception of a territory with its industrial infrastructure, from a historic, programmatic and cultural perspective (Tandy, 1979).

The industrial revolution of Europe, which was taking place between the years 1760 and 1870, changed the nature and pace of production in European countries. Technological advances of automation and hydraulic power transformed port-cities in Africa and the Mediterranean into gateway districts for the colonizing countries the 19th century. For the first time in history, the mass production of goods created the need to find new markets of consumption beyond the European territories. North African port-

cities such as Alexandria, Tanjier, and Casablanca become gateways for European trade (Ashton, Thomas S. 1948).

Colonizing countries transferred their goods as well as their technology of production. Factories were set up in the colonized countries by the sea and industrial zones at the interface of sea and city centers emerged, which allowed the direct transfer of goods from the ships directly into the factories and warehouses. The physiognomy of Mediterranean cities were shaped from outside, by the dynamics of sea trade and colonial interests, and technological innovations in maritime transport. This created a typology of port cities that can be seen detected in most colonized port cities in the Mediterranean (sea, port, factories, warehouses, workers homes and finally city centers), creating a common spatial morphology of colonized industrial landscapes. (Saliba, R., 2004)

This thesis looks at the sustainable revitalization of the Minet el Bassal district in Alexandria from an urban design perspective. The five generic issues of urban design that are tackled are identity, infrastructure, ecology, civic space, and private development, which if addressed all together constitute an overall and holistic framework of intervention (Saliba, R. 2010).

A. Problematic Context

At the western edge of Alexandria, on the banks of the Mahmoudiah canal and near the industrial harbor lies the port-district of Minet el Bassal, one of the oldest stock exchange market places in the Middle East. The area had earned its name from the exportation of grains and vegetables, most notably onions. Established in 1883, only one year after Britain took control of the country until 1956, "Alexandria's Futures Market" was mostly created to trade in cotton, cottonseeds and cereal. The bourse building quickly became a city landmark, and was highly featured on postcards and praised in guidebooks (The Egyptian Exchange, 2014).

Conveniently located near-by, cotton factories were set-up and workers compressed cotton bales in order to transport and sell them at the Stock Exchange building. At the sight of dawn, brokers would take their places to start bidding on the cotton bales (Abed, S. 2012). Here, cotton forward contracts became legal in 1909 in order to aid Egypt's recovery from the financial crash of 1907. And until the 1950's, the majority of the trade was done with the Liverpool Cotton Exchange, fostering strong ties with Egypt's then British colonizer (The Egyptian Exchange, 2014).

In fact, Alexandria belonged to the network of Mediterranean port cities that had been organized in city-states or colonies under the hegemony of the Ottoman between the mid- 1800s and the early 1900s. The industrial revolution in Europe led to an expansion of the colonial trade, and Mediterranean port cities experienced rapid economic growth and change in their morphology. Alexandria among other colonized Mediterranean port-cities became an important gateway for the Western world with the help of its strategic location and incorporation into the global network of colonial mercantilism (Saliba, R., 2004).

However, due to the changing nature of industries worldwide, the restructuring of the global economy, the mechanization of the production process, and the major relocation of cotton-making from Egypt to China (Loures, L. …), and ever since the law # 39 was passed in Alexandria to terminate the work of the exchange markets, all industrial activities in Minet el Basal were halted (Abed, S. 2012). Slowly, the area declined from a thriving industrial zone into a derelict and unused ghost-like landscape, with no provision for any future improvements. The western harbor of Alexandria slowly lost its role as the key trading point for cotton and other goods in the Mediterranean, and Minet el Basal was no longer needed as the city's hub that caters for port-related activities. And today, the stock exchange building, factories and warehouses are abandoned, and stand vacant, under-used and unmaintained with no provision for any future changes (Abed, S. 2012).

Today, Minet el Basal is located near the city center and still supported by an important transportation network, 0.5 km south and in-land of the western port, on the man-made Mahmoudiah canal. Its urban structure is shaped by the canal that divides the area of intervention into two physically and programmatically distinct parts that have a contrasting urban morphology: a zone of large-scale factories and industrial structures on the eastern bank, and a zone of small-scale residential buildings on the western bank, which were once the houses of workers in the factories. This area will be referred to as the central core.

At the same time, Minet El Basal district maintains urban strengths, including unique archeological and cultural heritage assets that span different eras constituting a rich historical urban fabric. The proximity of the district to the harbor, to significant historical monuments such as the Pompey's Pillar and the Catacombs, as well as to a

rich transportation network such as the regional train, the local tram lines, bus and taxi stops, add to the urban opportunities of the area.

Figure 1.1: Location map of the city of Alexandria within neighbouring countries

Figure 1.2: Minet El Basal (highlighted in yellow) within the coastal city of Alexandria, Egypt

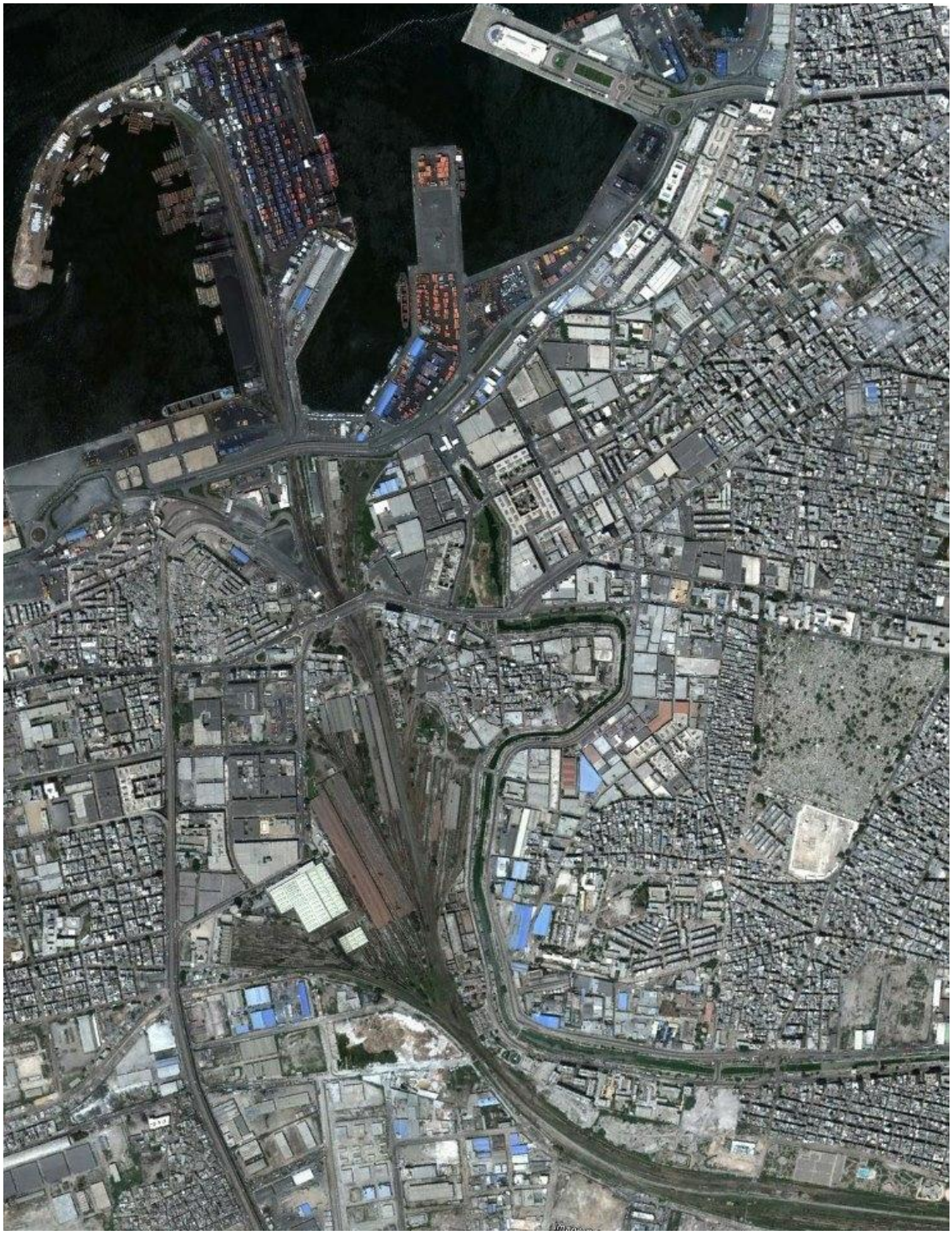


Figure 1.3: Minet El Basal area (highlighted in red) in Alexandria

Mina el Bassal suffers from complete abandonment

The typology of the factories is still very present on the outskirts of Mahmoudieh Canal

Several warehouses are still in use today as storage spaces

The Mahmoudieh canal is completely abandonned, serving only as a backdrop for waste collection & pollution

Figure 1.4. Photographic survey of Minet el Basal taken in November 2012

B. Issues and Approach

The process of industrialization significantly resulted in densifying and building in the natural environment, thus giving the city a new industrial face (Aguilar, 1990), with the concentration of factories defining a new type of terrain. Often, the scenario included a new working-class population that settled near-by for labour support. However, due to the rapidly-changing dynamics of globalization, market relocation, as well as economic re-conversion, many zones throughout the world were de-industrialized, giving way to a vast array of unused industrial sites (Loures and Panagopoulos, 2007a), and will be referred to in this thesis as post-industrial landscapes.

By industrial and post-industrial landscape, it is important to mention to the reader that Egypt did not go through an industrial revolution, so by industrial and post-industrial landscapes in the case of Minet el Basal, what is meant and referred to is simply a site characterized by past industrial activities and buildings.

In the case of Minet el Basal, the factories stand empty as a wasted space, the urban fabric of Minet el Basal displays extreme decay, the near-by canal as well as the surrounding area suffer from an alarming state of environmental pollution and an uncontrollable spread of waste, all of which turn the area into a haven for a high level of poverty. Squatters have taken up the area and currently reside in incrementally built and unsafe residential structures that defy all legal, urban and safety guidelines. They are self-constructed by the locals who are seeking survival ways for creating shelter.

There are endless approaches to dealing with a problematic urban context that is heavily suffering on different levels. Among others, Anne Vernez Moudon emphasised in her article *A Catholic Approach to Organizing What Urban Designers Should Know*

(1992) that urban design is an emerging discipline at the intersection of architecture, planning, landscape design, environmental and ecological studies, sociology and anthropology, proving that no single approach can cover all grounds. While she defines nine concentrations of inquiries through which a site can be explored (urban history, picturesque, image, environment-behaviour, place, material culture, typology-morphology, space-morphology, and nature-ecology), the author stresses the need to use a holistic approach when dealing with an urban problematic (Moudon, 1992). As will be later on concluded in this thesis, a holistic approach, at multiple scales and in different phases, is crucial in order to sustainably revitalize an abandoned industrial district.

RESEARCH FRAMEWORK

FOCUS	**Sustainable Urban Revitalization** **of Post-Industrial Revitalization**
CASE STUDY	Abandoned post-industrial landscape of Minet el Bassal in Alexandria, Egypt
THESIS APPROACH	Critical assessment of methodology used in approaching design: Inductive or Deductive? From Studio-to-Thesis Approach
THEORY PERSPECTIVE	Urban Sustainability Theory: Economic, Social & Environmental Pillars Framed by the five generic issues of urban design
COMPARATIVE CASE STUDIES	Barcelona, Marseille, Cairo

Table 1.1. Research framework of the thesis

C. Objectives and Goals

The objective of this thesis is to explore urban design solutions and actions geared towards sustainably revitalizing the abandoned port-side landscape of Minet el Basal, by taking into consideration economic, social and environmental incentives.

The thesis starts by describing the urban design intervention for Minet el Basal, which is based on an extensive site visit and SWOT analysis conducted in November 2012. The thesis then critically questions the feasibility of this design proposal within the larger theoretical framework of sustainable post-industrial reclamation strategies. This thesis then researches and analyses comparative post-industrial landscape reclamation projects, in order to extract an assessment framework for the revitalization of post-industrial landscapes, principles which could be transferred to other urban contexts. What is extracted from the literature are urban design and planning guidelines and principles that can be tested in other post-industrial landscape reclamation. The review concludes with a comparative matrix.

D. Conclusion and Thesis Question

The introduction chapter presents the thesis topic, “Sustainable Urban Revitalization of Post-Industrial Landscapes”, and briefly introduces the abandoned port district of Minet el Basal in Alexandria-Egypt as the main case study. It carries on framing its existing conditions within the global frame of abandoned landscapes in the western world, while investigating the dynamics that changed their nature from thriving into unused industrial zones.

The following conclusive thesis question will drive the following literary research: How can urban design be applied in order to sustainably revitalize the abandoned post-industrial landscape of Minet el Bassal? By sustainability, what is meant is creating a balance between upgrading the physical infrastructure, enhancing the environmental resources, creating economic incentives, all while ensuring social equity.

As will be demonstrated throughout this research, this thesis argues that the sustainable revitalization of the post-industrial landscape of Minet el Bassal is only and fully achieved by carefully integrating phasing interventions at multiple scales.

II. METHODOLOGY: FROM STUDIO TO THESIS

This research is divided into three parts. The first part begins with an urban design studio in Minet el Bassal in Alexandria in November 2012 and culminated in a responsive urban design proposal directly addressed to a SWOT analysis resulting from the fieldwork. The process that was adopted during the design studio will be retraced, showing that the approach of this first part is a problem-based, inductive one.

The second part of the research will take a critical distance from the workshop proposal and explore the theoretical framework of post-industrial landscapes, and explores the reasons and consequences of the emergence of such urban sites, as well as the strategies behind their long-term reclamation and recovery.

The review will carry on investigating three relevant case studies, and extract| from them a set of common urban design principles and recommendations for sustainable urban design revitalization. In contrast to the first part, the approach of the second part is deductive. As the majority of theoretical and practical urban design solutions that were investigated advocate for a sustainable approach, this was inspiring in choosing the concept of sustainability applied to post-industrial landscapes.

Based on the findings of the literature review as well as a comparative assessment of the case studies (see table in Literature Review p 45.), an alarming conclusion is reached: The initial proposal for Minet el Bassal could actually not be entirely sustainable, the biggest risk being gentrification and displacement of the existing social layer.

The synthesis of both approaches is situated in a comparative matrix, at the intersection of the five generic urban design issues. The matrix brings together

strategies from the workshop, the different theoretical disciplines, as well as from the case studies, and subtracts from them an assessment framework of guidelines that can be transferred from one context to the other. The result is an adjusted urban design proposal for Minet el Bassal.

A. Studio Approach

This is a step-by-step narrative of how the data was gathered. The information was collected in order to 1) analyze the site and better understand its past and existing condition, and 2) to build a solid base for future urban design intervention. The studio began with a three-week workshop in Alexandria, Egypt, and consisted of using two types of research methods. The first was the library research method and focused on finding and analyzing historical maps and records of the site, drawings and sketches, books and official documents pertaining to the urban development of Alexandria throughout past centuries in relation to the coast, the harbor, the Mahmoudiah Canal and Minet el Basal, most of which were found archived at the Bibliotheca Alexandrina in Egypt.

Library records also included ancient photographs of the canal and the neighborhoods that surround it, revealing a predominantly green lush and rural landscape, usually further inland along the canal. In addition, historic maps allowed the tracking of the city's urban growth and expansion *vis-à-vis* the gradual digging of the Mahmoudiah Canal, which was commissioned by Ottoman ruler Mehmet Ali Pasha in 1819 in order to link the Nile Delta to the Mediterranean Sea.

Additional material was also directly handed down by professors and professionals in the architecture and planning field, most of whom are faculty members

at the University of Alexandria. Many of the references attained were studies published by the Alexandria Development Agency (ADA), the Alexandria Governorate, the World Bank on Alexandria in 2007, as well as expert historians, writers, architects and planners on the area.

Finally, other literary information was exchanged in the form of lectures and open discussion forums held at the University of Alexandria and at the Bibliotheca Alexandrina, as well as a guided tour at the Alexandria National Museum. Finally, online investigation served to answer final questions pertaining to the situation of the site. All documents, whether historic or contemporary, provided an insight into where the city development strategy is heading towards, with a future vision inspired from the past, one that is trying to respond to current local economic, environmental, social, cultural and urban challenges.

The second type focused on the field research method. This included several on-site visits to Minet el Basal. At first, a non-participant observation technique was adopted, whereby students simply monitored social behaviors in the urban context, forming an overall impression. Then, using a more involved technique, students actively participated and documented the site through photographic surveys and note taking. Each and every building, street and perspective were shot at various angles, and categorized into charts that documented their height, material, landuse and assessed their conditions on the spot: excellent, good, poor, and unusable. Then, students approached the local residents, and few workers and passers-by for group interviews as they strolled throughout the site. Questions such as “what does Minet El Basal represent to you and your family”, “how do you imagine this district in the future”, and “what new opportunities can benefit you and the area” were raised?

For three months, the material found in libraries and collected in the field in Egypt was analyzed, and a SWOT analysis was produced, supported by a series of diagrams that explain the site and strategizes for future approaches. Produced diagrams illustrated the analysis of urban-historic evolution, open-closed spaces, public-private domains, land use, building conditions, street networks, transportation systems and landscape framework. The brainstorming sessions of the workshop, as well as the field visits, library research and diagram analysis allowed the definition of the pre-design goals and objectives, as well as a set of urban design guidelines that later on informed and supported a strategic urban design proposal.

B. Thesis Methodology

The second part of the research takes a critical distance from the workshop proposal and explores the theoretical framework of post-industrial landscape reclamation, the reasons and consequences of the emergence of such urban sites, as well as the strategies behind their long-term reclamation and recovery.

The review will carry on investigating three relevant case studies: in Barcelona, Marseille and Cairo, and extract| from them a set of common urban design recommendations for sustainable urban design revitalization. In contrast to the first part, the approach of the second part is deductive. As the majority of theoretical and practical urban design solutions that were investigated advocate for a sustainable approach, this was inspiring in choosing the concept of sustainability applied to post-industrial landscapes.

First, as demonstrated in the literature review of this thesis, library research focused on understanding the meaning of the concept of post-industrial landscapes in

port districts in order to comprehend where they first emerged, the reasons and dynamics behind their emergence, as well as the challenges they face today.

In addition, a series of interviews with urban designers and planners was conducted in order to get their views on lessons learnt and best practices regarding the sustainable revitalization of post-industrial landscapes. Among the interviewees were:

- Hiba Abouelfadl, Associate Professor at Faculty of Fine Arts, Alexandria University, who completed her PhD dissertation in 2002 on Developing the Urban Surroundings of the Mahmoudiah Canal;
- Omar Abdulaziz Hallaj, American University of Beirut;
- Tarek Osseiran, UN HABITAT, Lebanon.

C. Synthesis

As previously mentioned, both types of investigations intersect at the level of the matrix, which creates a solid base for a critical assessment, revisited recommendations and practical strategies for the urban revitalization of the Minet el Basal. The result is an adjusted design proposal for Minet el Basal.

III. LITERATURE REVIEW

The literature review chapter situates the initial design proposal for Minet el Bassal within existing and relevant theories, research and projects on the topic of "sustainable revitalization of abandoned industrial landscapes". The first part of this chapter will highlight the historical, economic, social and political dynamics that gave rise to post-industrial landscapes throughout the world. The second part will carry on exploring the different theoretical components of urban revitalization of abandoned landscapes. From the theoretical research, the notion of sustainability emerges as a focal idea in all revitalization strategies as it intersects the five generic issues of urban design: identity, ecology, infrastructure, civic space, and private development. The third part of the review will further investigate how the concept of sustainability has been applied and tested in the three case studies of Barcelona, Marseille and Cairo, and how morphological preservation and adaptive re-use are used as tools for sustainable reclamation. In short, this chapter aims to 1) assess the problem-solving approach conducted in the studio (inductive) as opposed to an approach extracted from a relevant theoretical framework (deductive), 2) extract from the literary framework and relevant best practice examples the common, yet non-site specific, urban design principles for sustainable reclamation of unused industrial areas, 3) situate in a matrix the different approaches of each case study, and their outcomes, vis-à-vis the five generic dimensions of urban design. The latter point concludes with a set of recommendations in order to adjust the initial proposal of Minet el Bassal in line with the extracted principles.

A. Industrial and Post-Industrial Landscapes

Contemporary cities are the result of the accumulation of different visions that produced various urban models across history, influenced by changes in consumption and production patterns throughout time. The restructuring of the global economy, the relocation of industries to areas of lower production costs, and the automation of production processes caused many industrialized countries to face a break in their industrial sectors. This so-called globalization of industry accelerated the obsolescence of industrial zones, contributing to the appearance of numerous neglected and underused post-industrial landscapes. These economically disadvantaged, environmentally hazardous and socially distressed areas reduce the development potential as well as the overall quality of life (Loures, 2009). The first part of this chapter will highlight the historical and economic dynamics that gave rise to post-industrial landscapes throughout the world.

1. *From the Industrial Revolution to the Industrial Landscape*

Historically, the emergence of industrial landscapes is rooted in the industrial revolution. The revolution led to a transition from hand production methods to automated manufacturing processes between 1760 and 1830, and included going from manual labor to the development of machine tools, improved production processes for iron and chemicals, and an enhanced efficiency of water and steam power. Up until the 18th century, people in Western Europe were still living off the land as they had done so for many generations, defined by an agricultural existence. In the few decades that followed, there was an unprecedented explosion of new technological inventions and ideas which increasingly industrialized landscapes (Ashton, T.S., 1948).

The Industrial Revolution marked a major turning point in the history of civil society as a whole, influencing almost every aspect of daily life. And for the first time in history, the average income of the masses of ordinary people began to undergo unprecedented sustained growth, an economic behavior never previously mentioned by the classical economists, not even as a theoretical possibility. Economic historians agree that this was the most important event in the history of humanity since the domestication of plants and animals. Other means of transportation were also necessary, giving way to thousands of kilometers of railways, roads and canals, and giving rise to rapidly growing cities that appeared and a large number of factories and mills that sprang up. (Ashton, T.S., 1948).

2. ***Towards the Emergence of the Post-Industrial Landscape***

Prior to the term industrial landscapes, terms such as "industrial estates" first originated in the U.K., with the earliest term coined in 1960 by William Bredo "as a tract of land which is subdivided and developed according to a comprehensive plan for the use of a community of industrial enterprises." Bredo's definition is inspired by the "industrial district", which was first formulated at the conference of Industrial Parks at the Dartmouth College, New Hampshire, US (Sarma, B.K., 1993).

"Industrial district" was a term first introduced to refer to an area where workers of heavy industries such as shipbuilding, coal-mining, ceramic making, etc. live within walking-distance from their place of work. In England, where the term was then refined into "industrial estate", such districts were areas characterized by residential block streets often overshadowed by monolithic industrial structures that loom over the workers houses.

The United Nations then extracted a more precise meaning of Industrial Estate "as a planned culturing of industrial enterprises offering standard factory buildings erected in advance of demand, and a variety of services and facilities to the occupants." A further development of the definition by the U.N. Center for Industrial Development states that such sites are "a planned clustering of industrial enterprises with built-up factory accommodation and services."

Industrial Estate is a generic term that has morphed differently from country to country. In Finland, an "Industrial Estate, Park or Village, is a group of industrial buildings located at the same site, which have been established on the basis of a careful techno-economic survey and optimization." In Kenya, it "is a well-planned cluster of factory premises with all infrastructural facilities (power, water, sewage, roads), in most cases also including a technical service center."

However, the general features and conditions are common across geographical boundaries. The following general terms that refer to Industrial Estates are found to be used freely and interchangeably in the literature and practice. (Sarma, B.K., 1993).

Term(s) used	Name of country/countries
Trading Estates	U.K.
Industrial Parks/Districts/Tracts	U.S.
Industrial Zones/Nuclei	Italy
Industrial Plaza/regions	Former U.S.S.R.
Industrial city	Mexico
Industrial Sub-Divisions	Puerto Rico
Industrial Estates	Algeria, Afghanistan, Brazil, Burma, Belgium, Ceylon, Denmark, France, Germany, Finland, Hong Kong, Iceland, India, Ireland, Indonesia, Japan, Jamaica, Nepal, Netherlands, Nigeria, Pakistan, Singapore, Spain, Switzerland, Sweden, Taiwam, Thailand.

Table 3.1: Different word naming referring to industrial landscapes across countries

Across academic sources beyond the early 1960s definition, further terminologies have been constructed, as site characteristics and concerns evolve. For example, the term "industrial landscape" as first coined by American geographer Donald Meinig is "the landscape resultant from a thoughtful and systematic activity of man in the natural or agricultural landscape with the aim of developing industrial activities". The definition recognized an entire site as a single element, as opposed to a building, or a group of buildings, within an industrial area. This allowed the expansion of the concept of industrial preservation to accommodate "recognized patterns of activity in time and place" (Meinig, 1979).

Several countries are now faced with abandoned modern-period landscapes, sites that were built and had boomed during the industrial revolution but that suffer from complete physical and functional decadence at present. There is a dual perception attached to these areas, on one hand they project a negative image that alienates people and development, and on the other, there is a growing public awareness of a general need to protect the environment, and a more specific need to catalyze the redevelopment and revival of these landscapes. Often in advantageous locations near city centers, situated along waterways, supported by existing infrastructure, and adjacent to residential communities, these landscapes are environmentally impaired assets that need to be returned to productive uses, and reintegrated into the surrounding community (Loures, 2009).

These derelict sites are a wasted potential and successful reclamation projects should redefine these landscapes through community-based, interdisciplinary action that integrates multifunctional and longer-term solutions based on economic, social, cultural, and environmental objectives. Loures and Panagopoulos argue that "these landscapes,

when reintegrated into urban context, represent a valuable resource to society" (Loures and Panagopoulos, 2007b).

Subsequently, authors were questioning the future potential of these derelict industrial landscapes. Urban designers argued that these leftover sites are in fact a complex resource which offers a sustainable opportunity in their re-use, redevelopment and reintegration into the surrounding community as a "multifunctional landscape", as opposed to the new consumption of undeveloped land. It is stressed that post-industrial landscapes are a resource, and that their reclamation is a proficient tool to contribute to sustainable development (Loures & Heuer, 2008).

Considering industrial landscapes as a resource that can be re-used and reintegrated accommodates the theory of sustainability, which refers to actions that seek to balance long-term objectives of economic viability, social equity, and environmental integrity as first introduced in 1987 by The World Commission on Environment and Development. If implemented sensibly, the urban revitalizing of abandoned industrial districts have a better chance at striking a balance between these principles than other forms of urban development (Loures & Heuer, 2008).

3. *Industrial Heritage & Importance of Post-Industrial Reclamation*

When "important evidences from the industrial architecture were demolished" (Kuhl, 2004) by the mid-20th century, the concept of industrial heritage and interest in its preservation emerged in England. According to Choay, it was then that "patrimony" crossed over to the industrial society for the first time, moving to a past closer to the present (Choay, 1992). The concept of patrimony has several meanings. Empirically, patrimony is defined as the group of elements that personify the past in the present and has a sense of continuity inherent to its characteristics.

Since then, efforts have been dedicated to define the meaning and determine the scope of industrial heritage, as well as to identify what to preserve and why by establishing relevant parameters. Identifying heritage today is no longer pending on whether the monument was built before the 18th century or not, with 'recent' heritage no longer considered of less value, as the history of the city did not end in the 18th century (Custódio, 1991), and the industrial revolution constituted a vital turning point for mankind. Although claims of why and how to protect industrial heritage differs in place and time, it is commonly accepted that reclaiming such sites is applicable to all types of industrial activities as well as material or immaterial element created by an industrial society (Andrieux, 1992; Green, 1985; Berliet, 1985 and White, 1990). Industrial elements are a testimony to the development of certain communities, complemented by a particular ideological and architectural language and urban morphology.

B. Sustainable Urban Revitalization

The following part of this chapter focuses on the aspect of sustainability in urban revitalization, which integrates urban renewal with the goals of economic prosperity, social justice and the achievement of healthy ecosystems. It will carry on exploring the different theoretical components of the concept of sustainable urban revitalization as they intersect the five generic issues of urban design: identity, ecology, infrastructure, civic space, and private development.

1. *Concept and Criteria of Sustainability*

In an attempt to define the relatively new paradigm of sustainable development, the World Commission on Environment and Development addressed the problem of conflicts between development and environment goals in 1987 by formulating the following definition: "Sustainable development is development which meets the needs of the present without compromising the ability of future generations to meet their own needs". (World Commission on Environment and Development, 1987). Thus, the concept of sustainability implies that the pursuit of growth alone should not dominate development policy.

Addressing the challenges of sustainability based on today's complexities is proving to be an increasingly difficult task. The problems overwhelming the developing countries are too great, with continued environmental deterioration and economic and social marginalization. However, the growing popularity of the term 'sustainable' indicates an increasing awareness that short-term goals and achievements in development can be self-destructive. The contribution of the concept of sustainability is that it introduces the issue of time, indicating that shortsighted activities will collapse

upon themselves. In the extensive use of the concept of sustainability and discussions ever since, there has been a growing recognition of three necessary aspects of sustainable development:

- The economic aspect: An economically sustainable system must be able to continuously produce services and goods, to maintain manageable levels of government and debt, and finally to avoid sectoral imbalances that often damage agricultural and industrial productions.
- The environmental aspect: An environmentally sustainable system must maintain a stable resource base, avoiding overexploitation of renewable resources or environmental sink functions. This includes the maintenance of biodiversity, atmospheric stability, as well as other ecosystem functions.
- The social aspect: a socially sustainable system must achieve fairness in distribution and opportunity, adequate provision of social services, including health and education, gender equity, and political accountability and participation.

These three elements of sustainability express goals that are multidimensional, and raise the issue of how to balance objectives as well as how to judge success or failure. In 1992, the UN Conference on Environment and Development (UNCED) or Earth Summit recognized that sustainable development requires countries to "build upon and harmonize the various sectoral economic, social and environmental policies plans." Integrating the three mentioned dimensions of sustainable development, the UN Department of Economic and Social Affairs (UNDESA) subsequently defined as national sustainable development strategies: "coordinated, participatory and interactive process of thoughts and action to achieve economic, environmental and social objectives in a balanced and integrated manner", whereby the "process encompasses

situation analysis, formulation of policies and action plans, implementation, monitoring and regular review", understanding sustainability as "a cyclical and interactive process of planning, participation and action in which the emphasis is on managing the process toward sustainability goals rather than producing a 'plan' as an end product" (UNDESA, 2000b, p.8).

2. *Tensions of Sustainability*

In 2001, the International Forum on National Sustainable Development Strategies discussed in Accra, Ghana, lessons learned about sustainability. The Forum highlighted a number of obstacles such as ambiguity to developing a clear approach to the issues, and often a proliferation of policies, institutions and activities focusing on different sustainable development concerns, with little coordination among the different ministries and agencies. As a result, the Forum stressed the need to:

- Make better use of integrated approaches to existing development in the country rather than creating new capacities and initiatives;
- Involve all stakeholders by using efficient networking and coordination systems, in all phases of the process;
- Promote equity and local empowerment;
- Progress through concrete projects that are realistic in terms of institutional, financial, and human resources. (UNDESA, 2002a)

As the Forum highlighted, greater dialogue among industrial interests, communities and governments is most needed to clarify the roles and responsibilities of all parties in order to meet the ambiguous goals set of sustainable development.

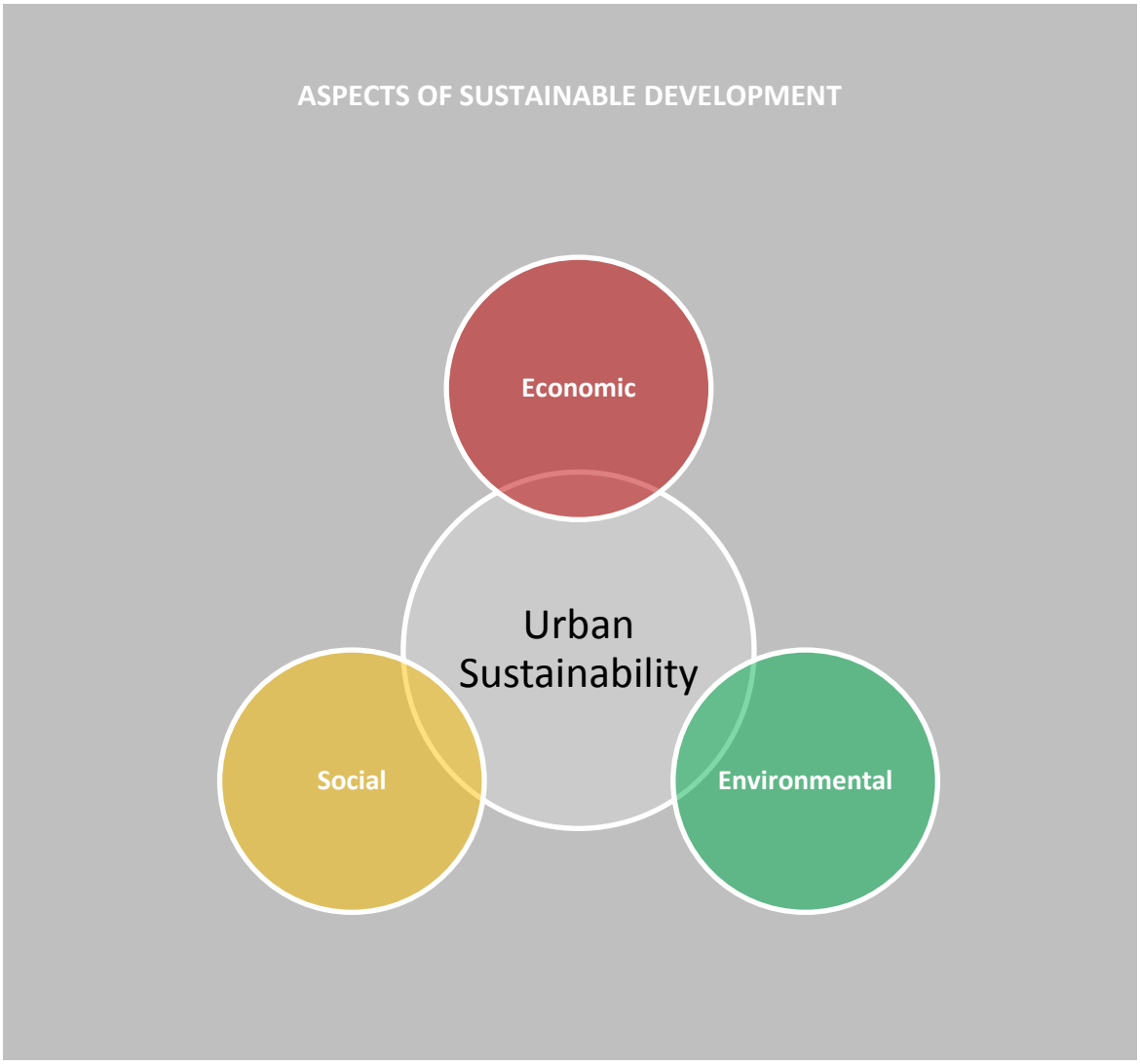


Figure 3.1: Essential pillars for Sustainable Development

3. *Sustainability Framed in Typology-Morphology Studies*

The morphological dimension of urban design focuses on the layout and configuration of urban form and space. Urban morphology studies the shape and form of settlements, which allows urban designers to trace local patterns of development and processes of change by analyzing the transformation and evolution of urban spaces.

Understanding the urban morphology of spaces is one of the key entry points for structuring sustainable revitalization interventions. This is based on the understandings that, 1) from an economic perspective, it is more financially sustainable to retain buildings and re-use them rather than razing them to the ground and building new ones, 2) from an environmental perspective, it is less harmful for the existing natural resources to be reused rather than to employ new ones, and finally 3) from a social perspective, retain building structures where they exist presents less of a risk for local displacement.

Urban morphologists mainly look at four essential elements: land use, building structures, plot patterns and street patterns (Conzen, 1960). They focus on the tangible results of social and economic forces (Moudon, 1997). This approach helps to craft more sustainable urban interventions that bring the transformation of a particular area in harmony with the overall fabric of the city.

While morphological approaches to urban design tend to be premised on patterns of urban form rather than on economic or social arguments that generate form, and although it is naive to presume that spatial forms will create a particular social behavior, such spaces can offer potential catalyst for certain activities to take place in the future. Whether particular formal types and patterns can be applied in differing

cultures with varying social and climatic conditions is debatable. This, however, does not preclude the identification of locally appropriate types.

Urban morphologists mainly look four essential elements: land use, building structures, plot patterns and street patterns. Land Use: Compared to other key elements, land uses are relatively temporary. Incoming uses often lead to redevelopment and the creation of new buildings, to plot amalgamations and rarely to subdivisions and changes in the street pattern. In contrast, displaced land uses are more likely to relocate to existing buildings in older areas.

Building Structures: Certain buildings last longer than others for a number of reasons. Religious monuments such as churches, mosques, as well as public buildings often include great financial and symbolic investment in their design and construction, frequently acquire a particular meaningfulness to locals and visitors and with time begin to symbolically represent a place. This makes it difficult to tear them down, and such buildings often accommodate various functions and intensities of use throughout their lifetime.

The Plot Pattern: Urban blocks are usually subdivided into plots. Boundaries change throughout time, as plots are bought and sold. Large lots can be subdivided, and several smaller ones amalgamated. Although block and plot amalgamations usually erase most evidence of earlier forms, especially in examples of large construction of shopping malls in urban centers which privatize and build over intervening secondary streets, traces of earlier plot patterns can still be revealed from earlier periods in older towns in Europe. This shows that buildings change more rapidly than plot patterns.

The Street Pattern: The street pattern is the layout of urban blocks and the public networks of movement and space between them. The ground plan of most

settlements is a series of the layers of time. An important urban design quality, permeability, is the extent to which an environment's pattern allows a choice of routes, Physical permeability refers to the ability of movement through an environment, while visual permeability refers to the ability of seeing the routes through an environment.

Accessibility, a related quality to permeability, is the extent of interaction between the individual and the cadastral system, which establishes an urban area's public space network. Beyond providing access to the public face of private properties, the public space network accommodates the overlapping realms of movement space and social space, where people engaged in economic, social and cultural transaction, especially when the movement space is not solely dependent on the car, as most forms of social exchange often take place once the car is parked.

The network of public space together with the pattern of blocks, basic infrastructure and other visible elements of an urban area constitute the "capital web" (Crane, 1960). The capital web structures a city, its land values and uses, the density of developments, the intensity of their use, and how city dwellers move through, experience as well as remember the city, and encounter other fellow citizens (Buchanan, 1988a, p. 33). The movement network, the services beneath it, and the landmark and civic buildings adjacent to it, are the elements that form the relatively permanent parts of the city (Buchanan, 1988, p. 32). Within this rigid framework, individual buildings, activities and land uses are easily interchangeable. As a result, even though subject to change, some essence of a city's identity is always retained.

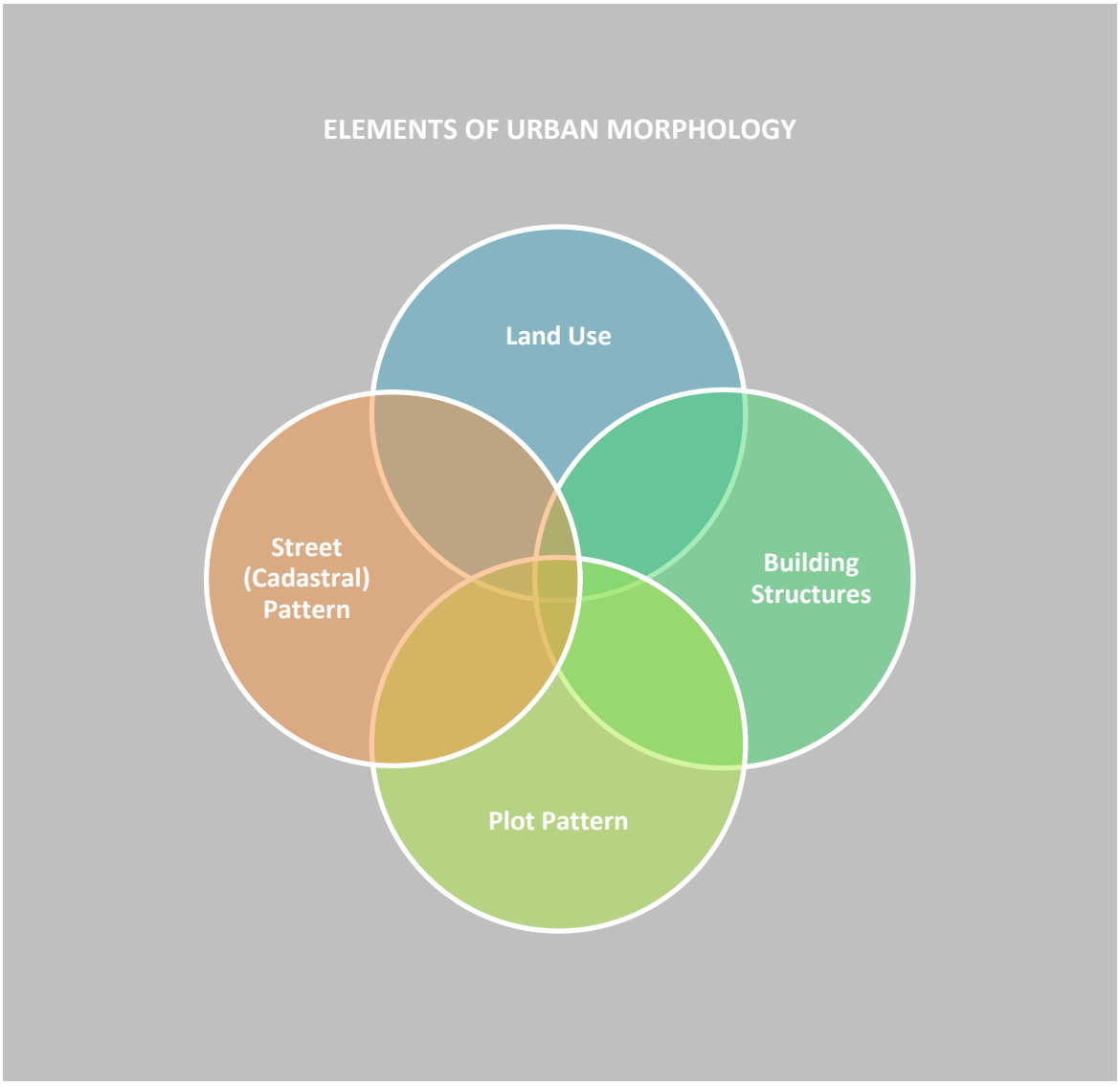


Figure 3.2: Elements of Urban Morphology

C. Case Studies

In order to demonstrate the relevance of the concept of sustainability in in reclaiming post-industrial landscapes, three different cities around the Mediterranean with reclamation projects will be analyzed: Barcelona, Marseille, and Cairo. The case studies will concentrate on aspects of sustainability in enriching the revitalization of post-industrial landscapes.

1. *Barcelona: Sustainable Urban Revitalization for the Olympic Games*

The overall vision of transforming Barcelona in the 1980s and 1990s can be summarized as a long-term sustainable approach to enhancing the city's overall quality of life. The city was capable of managing a unique flagship event such as the Olympic Games, converting it into levers and strategic instruments of urban renewal and regeneration (Monclus, Francisco-Javier, 2003).

The Barcelona Model includes key planning and design elements that provide solid comparative grounds vis-à-vis the proposed approach in revitalizing Minet el Bassal in Alexandria. Similarly to Alexandria, Barcelona is a post-industrial Mediterranean city. The fact that it is located in the European continent enriches the example as it provides planning and design tools and strategies from a western lens. The former industrial district of Barcelona, called "Poblenou", was a main focus area in its revitalization scheme. Another major part of the model incorporates the restoration and introduction of small-sale public spaces for immediate catalysis of socio-economic growth.

Figure 3.3: The Barcelona eastern transformation includes the revitalization of 3 different districts. 22@ is the corporative name given to the new central business district in the former industrial area of Poblenou, retrieved via www.22barcelona.com

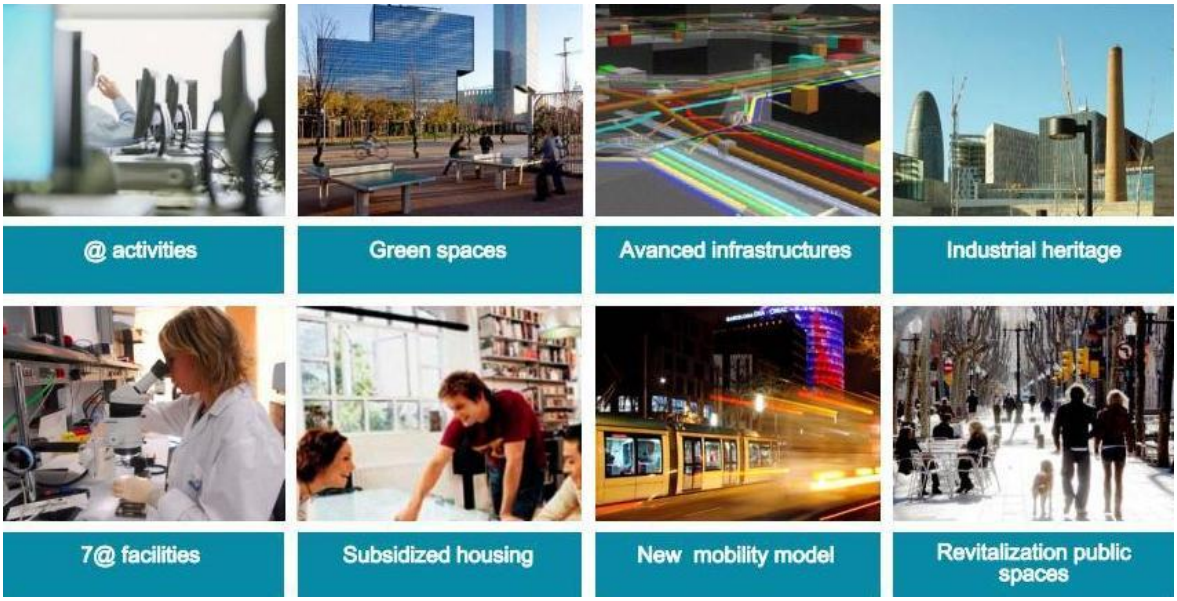


Figure 3.4: The different aspects of 22@ Barcelona plan to revitalize the former industrial area, retrieved via www.22barcelona.com

a. Historical Background

Historically, Barcelona has been gone through a series of urban transformations. Initially in 1854, the old city walls were brought down, following the urban planner Ildefons Cerdá's (1815-1876) vision for the urban extension. Based on a scientific analysis of the city's then-modern requirements, Cerdá' introduced the Eixample plan, which consisted of 550 regular blocks with chamfered corners to facilitate the movement of trams, and crossed by three wider avenues. The blocks were built around central gardens and orientated NW-SE to maximize sunlight, improve the health of the inhabitants and foster social integration (Busquets, 2005).

Following the years of significant urban growth in Europe and North America (1950-1970) and as a reaction to the limitations and abstraction of an all-encompassing modernist urban planning, new concepts began spreading. In the 1960s and early 1970s, a re-emerged appreciation of the historic city and its components began to surface such as small-scale streets, squares and closed street-blocks, contrasted by the rejection of blocks in modern schemes and the abstract role of public space. Detailed morphological analysis of the city and identifying architectural types began to be adopted.

This was paralleled with substantial changes produced by the slowing of demographic and urban growth in European cities as well as by the effects of the economic crisis of the 1970s. There was a new-born interest in contexts and in restoring the links between architecture and urban planning. The novel idea of targeting urban problems through specific projects, especially the regeneration of public space and community facilities, was gaining ground gradually everywhere. Spanish cities were no strangers to this trend, and Barcelona was in the lead.

However, the modernization of Barcelona was significantly delayed during the decades of Franco's dictatorial regime, which had started in1939, lasting until his death in 1975. By the end of the 36 yearlong dictatorship, the city was facing serious urban decay. Following its newfound democracy supported by rising urban social movements, planners saw the games as an opportunity to gather enough funding to complete an amount of reconstruction that would take any other city decades to accomplish.

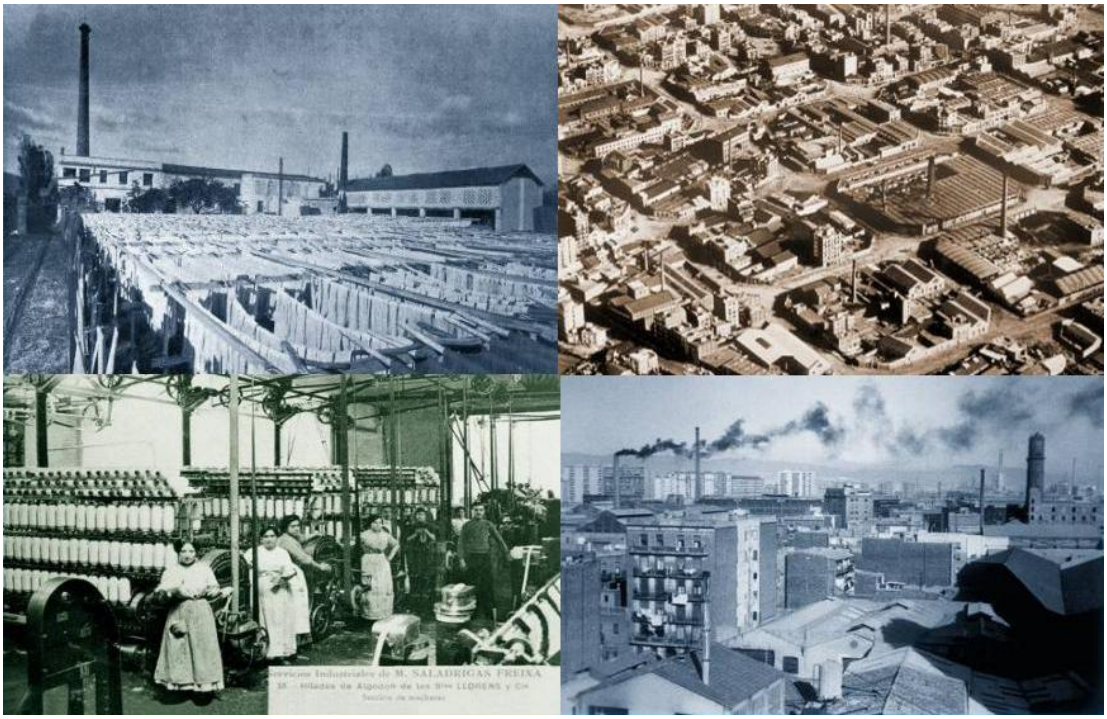


Figure 3.5: Barcelona was referred to as the “Catalan Manchester” between 1860 and 1960 due to its heavy industrial activity, retrieved via www.22barcelona.com

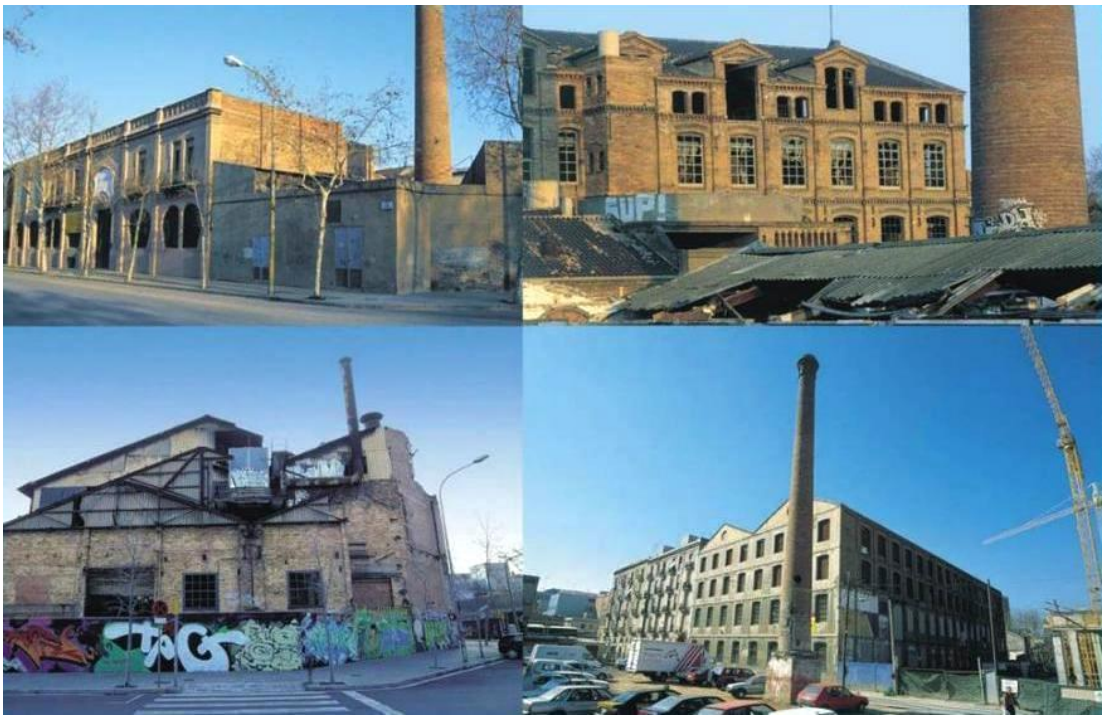


Figure 3.6: Between 1960 and 1990, Barcelona's industrial district Poblenou was suffering from extreme degradation and obsolescence, retrieved via www.22barcelona.com

b. Urban Revitalization of Post-Industrial Barcelona

The methodology behind the Barcelona Model is centered on a dual approach of both ‘qualitative’ and ‘strategic’ urban planning. The phasing was split into two types of interventions:

Phase 1: The first phase consisted of qualitative urban planning, a type of intervention best expressed by Barcelona’s former mayor Pasqual Maragall: “it is critical to understand that improving public spaces is relevant to solving social and economic problems”. This phase focused on the regeneration of public spaces through multiple-scale operations of urban reform, injecting public amenities in dilapidated neighborhoods first, reclaiming forgotten inner courtyards within blocks, and re-connecting the city to the sea. Rail lines had separated the city from its shore for long enough, and accesses to usable beaches were being reintroduced.

The opening of the city to the sea front, with new kilometers of public beach was of paramount importance, due to it being sealed off due to industrialization that has been under way since the second half of the nineteenth century. This tendency was changed from the eighties.

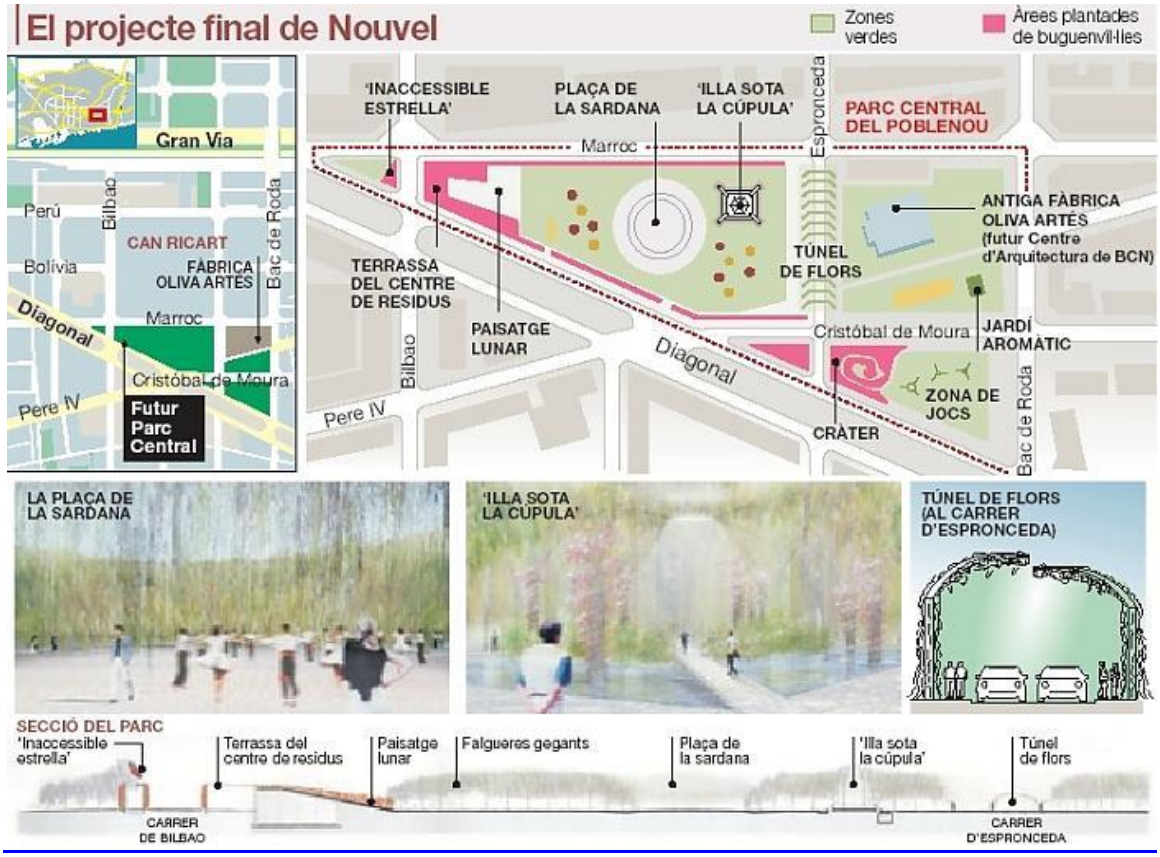


Figure 3.7: An example of public space: The Poble Nou Park by Jean Nouvel offers different public sections of different scales, retrieved via www.architecturetoday.co.uk

Figure 3.8: Photographic shots of the completed Poble Nou Park, retrieved via www.architecturetoday.co.uk

Phase 2: The initial small-scale operations were followed by large-scale strategic urban planning projects in Phase 2. As Maragall notes: “The trick in Barcelona was quality first, quantity after”. The revitalization of Barcelona followed a diverse urban model, where new buildings and public spaces coexist with traces of history and elements representing the neighborhood's industrial past to create a place with great cultural value where tradition and innovation come together.

In order to favor this restoration process for the symbols of Barcelona’s industrial past, the cities “Catalogue of Heritage Sites” was modified. This approach was born out of the desire to recognize that the city’s industrial past was one of elements that most influenced the definition of urban spaces, particularly in Poblenou, the formerly industrial area of Barcelona’s Sant Martí district.

Poblenou’s rich industrial heritage is evident when consulting the number of buildings and other elements that are catalogued as heritage sites. Sixty-eight new elements were added to the thirty-six previously catalogued, six of which (la Escocesa, Can Gili Nou, Palo Alto, la Frigo, Ca l’Illa, Fàbrica Waldés) were put forward as cultural assets of local interest due to their great importance; and one (Can Ricart) was put forward as cultural asset of national interest, the maximal protection. In order to aid the conservation of this group of buildings, special regulations were introduced to protect other elements, like alleyways, residential buildings and structural elements. In parallel, the Barcelona Center of Industrial Culture was created in Can Saladrigas to develop different initiatives that promote Barcelona’s industrial heritage.

Figure 3.9: A mapping of Barcelona's industrial patrimony and the salvaged industrial buildings, retrieved via www.22barcelona.com

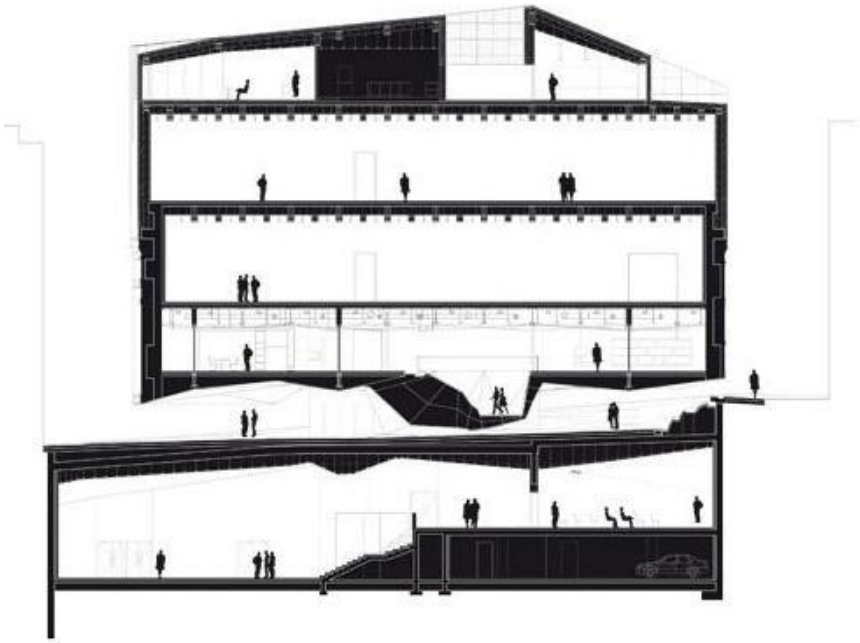


Figure 3.10: A reference example of adaptive reuse of an old industrial building into a cultural center, the Caixa Forum in Barcelona with an addition on top, retrieved via www.herzogdemeuron.com

Figure 3.11: Example of adaptive re-use: The Cai GiliVell, one of the earliest flour factories in Poblenou is transformed into residences. The repetitive and emblematic architectural language allowed for its re-use into 56 lofts. Total area 5,396 sqm, retrieved via www.22barcelona.com

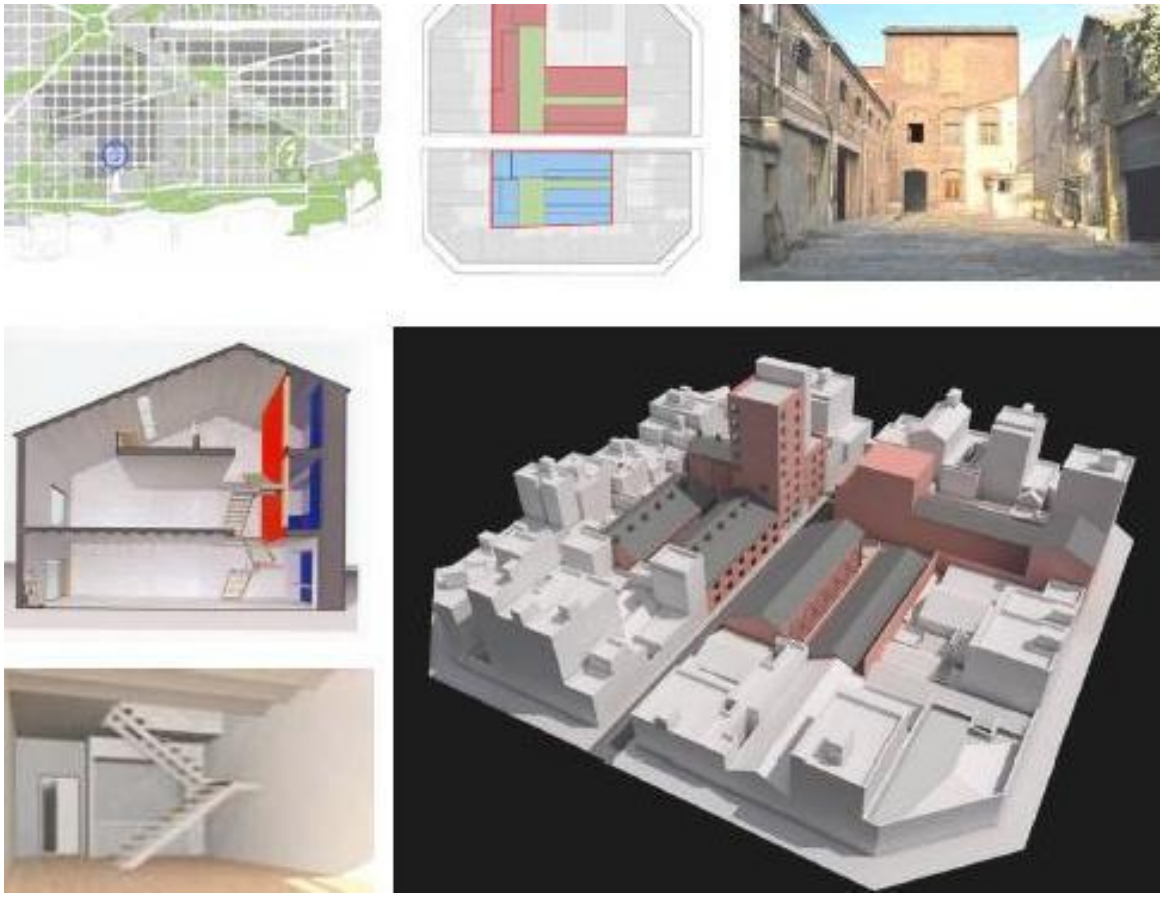


Figure 3.12: Another example of adaptive re-use: this former agricultural company is also transformed into unconventional living lofts. The adjacent buildings are converted into spaces dedicated for talent activities, retrieved via www.22barcelona.com

c. Lessons Learnt and Best Practices

The Barcelona Model is often considered as a leading example in innovative planning. Internationally, the city is celebrated for its accessibility, open spaces and walkability. The major catalyst of the city's modern transformation was the Olympic Games in 1992. The Urban planner Oriol Bohigas used the games as a springboard to build more than 200 parks, plazas, schools and other public facilities.

The Barcelona experience is sometimes attributed to the special situation of the city, in the context of the then recently achieved democracy and of citizen movements, who had already formed the bases of the "new Barcelona" (urban revitalization from within). On the other hand, Barcelona can be seen as an authentic "planning model", which became "one of the most potent international models of urban planning of the late 20th century" (Ward, 2002, p. 371). The city was capable of using a unique flagship event such as the Olympic Games by converting it into levers and strategic instruments of urban renewal and regeneration (urban revitalization from outside).

In order to understand the degree of originality of the urban processes and the planning strategies undertaken in this period, eventually both perspectives (urban revitalization from inside and outside) need to be taken into consideration (Ward, 2002). This also requires acknowledging the beginning of changes in international planning culture, which induced processes and strategies developed in Barcelona during this period.

Architecture was given to the politicians and professional architects of the city council, for their “commitment to planning”, including “the combination of spectacular urban projects and of small-scale improvements of squares and streets”. Having survived the economic, environmental and social changes of the last decades by first focusing on the provision of urban spaces that centralize activity on a variety of scales such as the city, neighborhood and block, and second by revitalizing its chief post-industrial neighborhood, Barcelona has transformed from a city with serious urban decay in the inner and peripheral districts to a best-practice example on how to facilitate increasing density while enhancing livability within a relatively compact city.

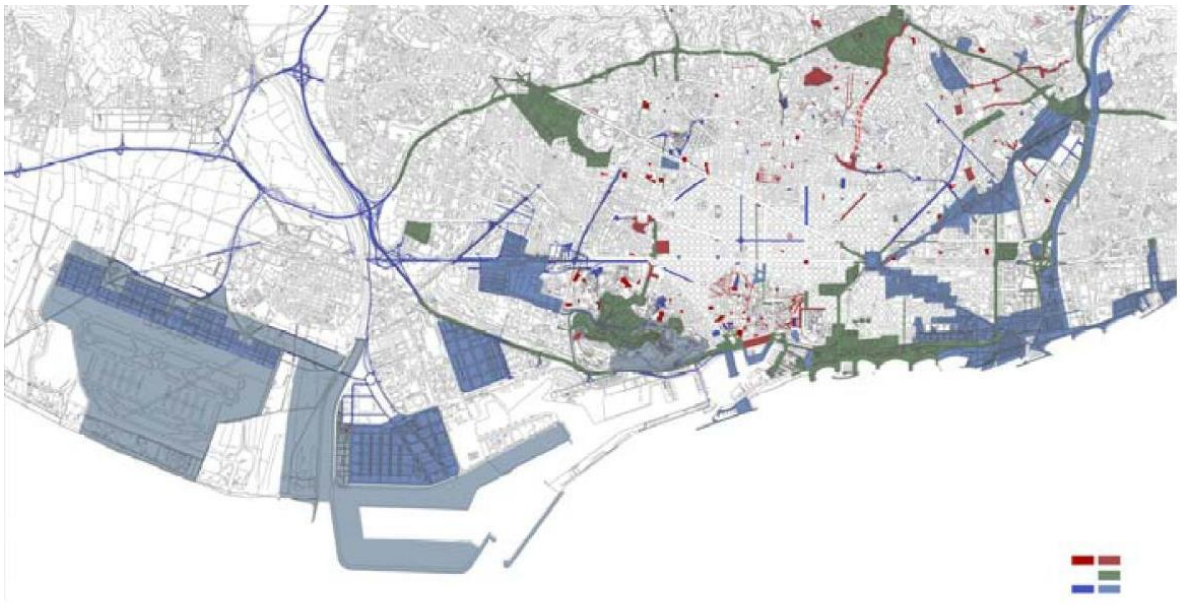


Figure 3.13: The 3 different phases of urban renewal in the Barcelona Model, retrieved via www.22barcelona.com

2. *Post-Industrial Marseille and the Euroméditerranée Project*

When the Barcelona process was launched in November 1982, it defined a framework of cooperative projects among Mediterranean rim countries in the fields of development, culture and security. Inspired by Barcelona's transformation, Marseille also decided to convert the area between its harbor and city center, and update its community services, infrastructure, housing, and recreational activities. Undergoing sustainable urban revitalization since 1995, the Marseille 2020 -Euroméditerranée project became the largest sustainable urban renewal project in southern Europe.

The launch of the Cité Euroméditerranée project prepared the city to undergo a large-scale urban rejuvenation based on the principles of sustainable development, aiming to balance economic efficiency with social cohesion and a respect for the environment. Thus the Marseille model offers a platform for solid comparative grounds to the previous Barcelona model, as well as to the model proposed in revitalizing Minet el Bassel in Alexandria. For the reasons above, the Marseille 2020 – Cité Euroméditerranée project is chosen as the second case study of the thesis.

The area of intervention encompasses a 200-hectare triangle stretching from Arenc to the north, the J4 waterfront esplanade to the south, and the Saint-Charles TGV station to the east.

a. Historical Background

Marseille is France's second largest city and commercial port on the Mediterranean coast. The city's economy was dominated by its port role being one of its main gateways, ideally linking France to its North African colonies: Algeria, Morocco and Tunisia. With the original port confined within the city and unable to expand, a new commercial harbor was built in the mid 1800s along the open waters of the Bay of Marseille in Fos-sur-Mer, North West. During the 19th century, the city was also the site of industrial innovations and a growth in manufacturing.

Following the destruction of World War II, the city went about rebuilding its port and industrial complexes. After 1950, the port had become an entry point for more than a million immigrants to France. However, the end of the colonial period in the 1960s, the recurrent strikes of dock-workers, the relocation of most port activities to the new harbour 50 km to the north, and the economic slowdown of the 1970s brought poverty and crime to the port area, which began losing population and industry. In the 1980s and 90s, Marseille's port-district was one of France's poorest neighbourhoods and had a notorious reputation for its gang violence, street crime and drug trade.

In 1995, the Euroméditerranée Urban Development Agency (EPAEM) was launched in a joint-effort between different stakeholders including the French national government, the city of Marseille, and local and regional authorities. Marseille 2020 – Euroméditerranée aims to become a new urban model for a sustainable Mediterranean city, a model which aims to be usable to any urban area where the sea is an integral part of the environment.

b. Urban Revitalization of Post-Industrial Marseille

The Euroméditerranée project (1995-2020) features 10 key points:

- It is the largest urban regeneration project in Southern Europe
- It acts as a catalyst for economic and cultural development to transform Marseille into one of the top 20 European cities
- The core of the Marseille-Provence 2013 European Capital of Culture program houses 80% of the cultural facilities within the Euroméditerranée area
- The model introduced a productive partnership between city and state authorities, ensuring that for each € 1 of public investment, € 4 to 5 of private investment are generated, for a total investment of € 7.5 billion
- The urban regeneration zone of 1200 acres, equivalent to 480 hectares, includes: + 1 million m² of office space, + 24,000 new and regenerated housing units, + 200,000 m² of premises , + 200,000 m² of public facilities, 150 acres (60 hectares) of new or renovated parks and public spaces
- The emergence of a city skyline designed by internationally renowned architects who compete for each winning scheme
- A pioneer, environmentally-friendly project named the "EcoCité", devoted to sustainable development and improving the quality of urban life in Marseille. It encompasses housing, employment, social equality, economic growth, transport and mobility, architecture, culture, respect for the environment, seaside spaces, and green spaces
- The project introduces 40,000 new residents and 35,000 new jobs

- Fewer cars and better access to city centre: TGV high-speed train station Saint Charles; Arenc multimodal station with connections to the airport by TER commuter train; building new tunnels and 7,000 new underground parking spaces.
- 5 km of waterfront promenade, running from the Old Port to Cap Pinède

As the scale of the Euroméditerranée project is very large, the focus will mainly be on the following elements: a) the former industrial area that is transformed into the "EcoCité" district, b) the adaptive-reuse of a decrepit grain silo into the latest Opera house of France, c) the OPAH housing strategy, and d) the new city park along the river.

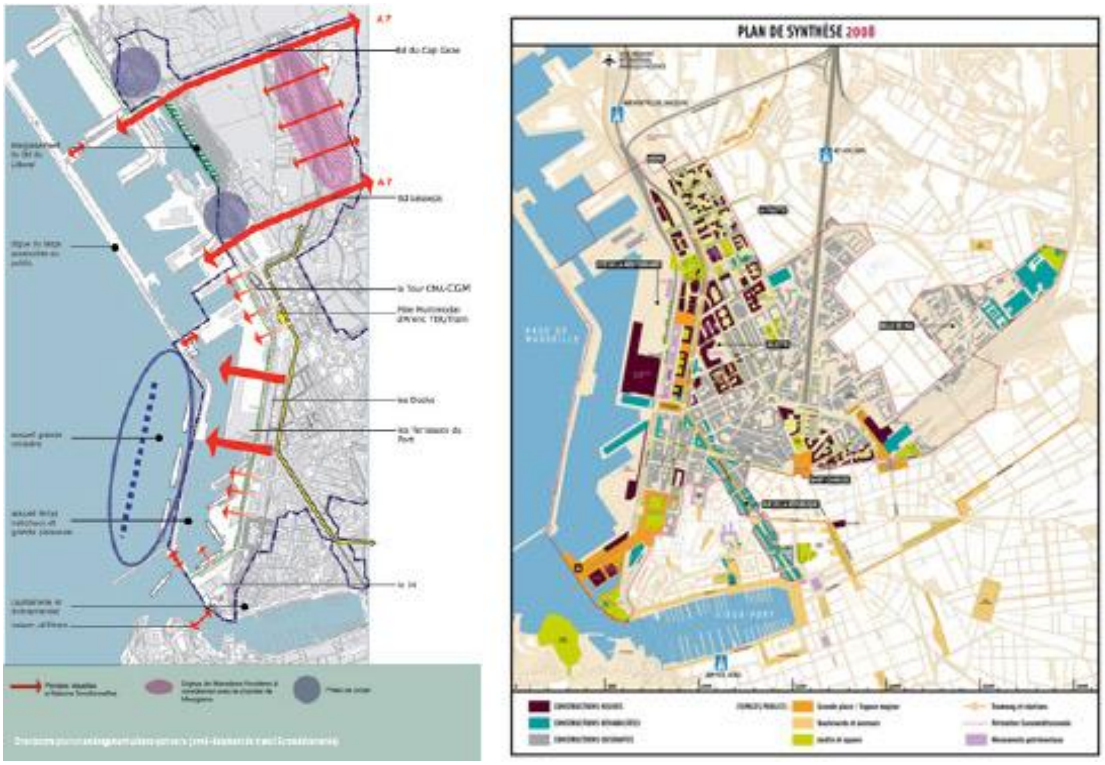


Figure 3.14: Strategy and Synthesis maps, retrieved via http://www.euromediterranee.fr

c. EcoCité

This once abandoned area of warehouses and brownfield sites from the 19th century with less than 3,000 people is envisioned as an EcoCité, a part of the city of Marseille where residents will live, work, learn and consume with the least possible use of a car due to the enhancement of public transport, cycle lanes, and restricting through traffic, among others. Located between Cap Pinède and Les Arnavaux in the north, the village of Canet in the east and the CMA-CGM tower in the south, this post-industrial area was added to the project in 2007 and is referred to as Euroméditerranée II. Old and unwanted buildings in these 425 acres (170 hectares) will be torn down to make way for new development.

The EcoCité project includes low-energy housing, parks, public spaces and amenities, businesses, shops, services and transportation, and is designed to work in perfect harmony with the elements of nature and community life, such as sunshine, wind patterns, rainfall, the seafront and outdoor activities. There is a return to a village landscape, the creation of low-energy housing units, new local shops and facilities, the conversion of brownfield sites to welcome new businesses or cultural activities, and the integration of public and sustainable transportation means and traffic calming initiatives, such as the creation of neighbourhood pathways and tree-lined walkways. The Euroméditerranée's EcoCité re-establishes a new Southern urban model integrating natural elements into architectural and urban design, and not through the use of costly technological means.

d. Adaptive-reuse of the Silo into the New Opera House

Les Docks, a large complex of maritime structures that housed a number of companies, and Le Silo, a musical venue that was once a former grain storage facility, are significant examples of the adaptive-reuse parade in the Marseille model.

The Arenc Silo, built in 1927, was used for storing grains that came through a shipment. An important architectural monument with a prominent position near the port of Marseille, the silo was highly visible from within the city and formed an important part of its skyline. For many years following the port's decline, it stood vacant and abandoned, and was almost left for demolition.

In 2004, the structure was listed as a "Heritage of the 20th century" site. And when the neighbourhood began undergoing renovations, the silo became a major part of the port area's revitalization. The reinforced concrete structure was upgraded, shored up and converted to house offices, a rooftop restaurant, new parking.

A large theatre space was carved out of a hollow area in the center, giving way to a large performing arts hall with over 2000 seats. Today, the structure sits on the border of the harbor and the city, retaining much of its original industrial character.

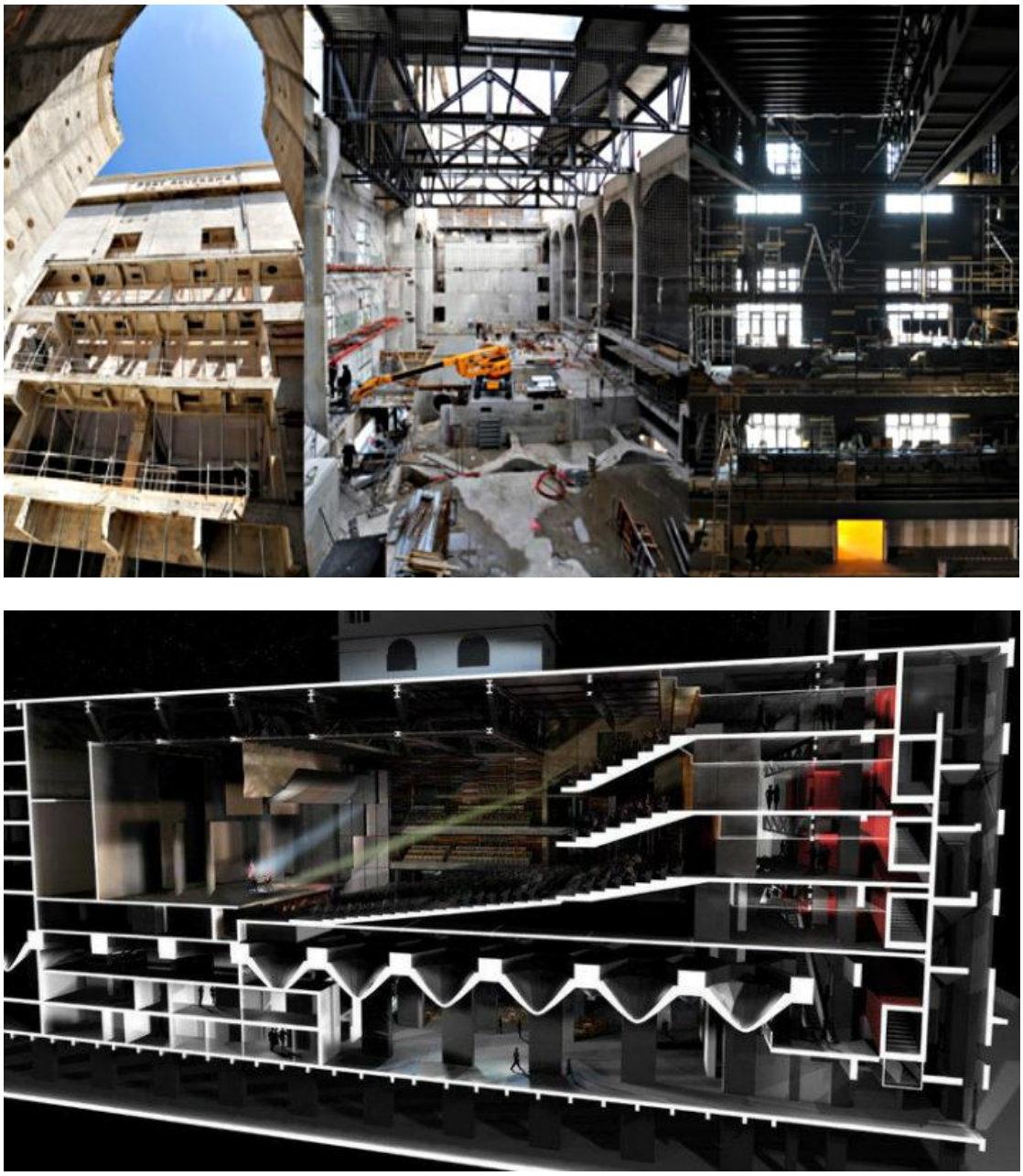


Figure 3.15: Silo Images, retrieved via http://inhabitat.com/abandoned-grain-silo-converted-into-arenc-silo-opera-house-in-marseille/silo-opera-house-ct-architectures-1/

e. Housing Improvement Program (OPAH)

The Housing Improvement Program (OPAH) is in charge of a total of 5,200 housing units in 482 buildings, including 2,150 condominium units in 181 buildings, 301 buildings with 2,700 units for rent, and 350 privately owned units. The program improved up to 3,370 homes throughout the Euroméditerranée perimeter.

The importance of OPAH is that it included the creation of more than 400 publicly assisted housing units, reserved in priority for former tenants. Up to one third of dwellings built in this zone consist of social housing or rent-controlled units to ensure social diversity, avoid the displacement of the locals and foster mixity.

The OPAH also provided 10 million Euros in subsidies to renovate 4,000 housing units since 2001, allowing building owners to directly improve the quality of their properties. This helped fight urban decay and allowed for the comprehensive and sustainable renovation of deteriorating buildings.

These subsidies include upgrading to higher standards of electricity and plumbing, upgrading to safety standards in the bracing of floors and stairwell repairs, adapting houses to become inclusive for people with disabilities, and making them energy efficient by double glazing and introducing low-consumption heating. In most renovations, houses were adapted to 300 days of annual sunshine and 80 days of mistral winds and heavy storms.

f. Lessons Learnt

The initial strength of the Marseille model lies in that it was supported by a coalition of regional, national, and continental partners, turning the city's long-dormant waterfront into the spotlight of a thriving new cultural and business district. Another factor is the OPAH. By favouring the improvement of rent-controlled housing, the UR-OPAH promotes diversity and contributes to upgrading the downtown area.

The arrival of the high-speed TGV in 2001 cut rail time from Paris from four and a half to three hours, and 17 trains now arrive daily; this year, XL Airways introduced twice-weekly nonstop flights from New York City during the May-through-October high season, making Marseille the natural entry point for the surrounding Provence region.

3. *Cairo: Al Azhar Park as a Revitalizing Catalyst for Darb el Ahmar*

The following section provides an overview on the revitalization of the Al Azhar Park in Cairo, the construction of which led to the discovery of the forgotten and hidden 15th century Ayyubid Wall. The reclamation and reconstruction of the wall led to a spill-over effect, which injected sustainable urban revitalization in the adjacent neighborhood of Darb el Ahmar. As a comparative case study to Alexandria, the experience of Cairo gives useful insights into viable urban revitalization programs that could inspire urban interventions in Minet el Bassal.

a. Historical Background

In 1992, the Aga Khan Trust for Culture established a Historic Cities Support Program to implement urban rehabilitation projects in the Islamic world. In a conference organized by the Aga Khan Award for Architecture in 1984 on "The Expanding Metropolis: Coping with the Urban Growth of Cairo", a study showed that, per inhabitant, the amount of green space was equivalent to the size of a footprint, one of the lowest proportions worldwide. Evident was that Cairo immediately needed more green space.

As a result, the Agha Khan Trust for Culture donated the equivalence of $ 3 million USD, dedicated to build a large park at the heart of the bustling Egyptian capital. One third of the historic cities on UNESCO's world heritage sites list in the Islamic world were facing similar pressures, and the aim was to promote Al Azhar Park

A late 19th-century view of Cairo's rubbish dump, to the right, the 12th-century Ayyubid city walls and the Darb al-Ahmar district, also restored in this project

Figure 3.16: Al Azhar Site before renovation, retrieved via www.akdn.org

Figure 3.17: Al Azhar Park site under grading and construction, retrieved via www.akdn.org

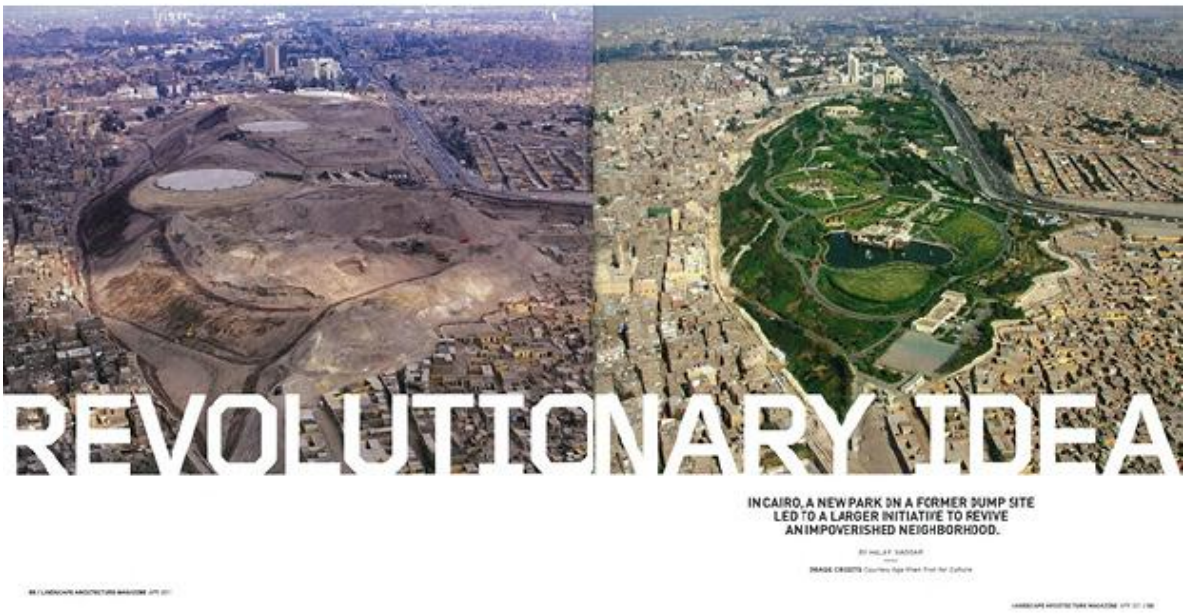


Figure 3.18: A before & after shot of Al Azhar Park, retrieved via

www.sasaki.com/blog/view/42/

project as a pilot project for future models of development with similar constraints and settings.

The only available central location which appeared of adequate scale was the rundown Darassa site, a 30 hectare, 500 year old mountain of debris in the inner city between the eastern edge of the 12th century Ayyubid city and the 15th century Mamluk city of the dead.

The site was facing several challenges such as extreme environmental degradation, social alienation and economic deprivation. The wasteland, which required excavation, grading, as well as replacement with appropriate fill, was envisioned to transform into the largest park of the Middle East, in addition to acting a catalyst for surrounding development. Although the concept of environmental improvement in cities was limited to planting trees in the early 1980s and despite earlier criticism that landscape urbanism as a catalyst for transformation in city centers was a new and untested concept, the local authorities approved the choice of the site. The challenge was to revitalize the mountain of waste in ways that transform embedded notions of environmental pollution, and to launch the project as a stimulus for economic and social development. Upon operation, the park had created over 250 permanent jobs on site along with other financial opportunities for local suppliers and vendors.

b. Urban Revitalization and Catalytic Effect

Before excavation, not more than the crenulations of the buried wall were visible. Once the digging started, over a kilometer and a half of the forgotten historic 12th century Ayyubid city wall and its towers were revealed. With a depth of 15 meters of archaeological value, it became impossible to conceive of the park project without integrating the wall that delineated the site. Restoration began in 1999, funded by the Aga Khan for most part, and other donors including the Supreme Council of Antiquities.

Tucked away behind the Ayyubid wall was one of the poorest neighbourhoods of Cairo. The decaying district of Darb el Ahmar contained one of the richest concentrations of Islamic art and architecture in the world, including a number of mediaeval Cairo's significant historic monuments, 65 of which were later on listed.

Due to the untamed mountain of waste as its backdrop, Darb el Ahmar had long been stigmatized as a dilapidated neighborhood, characterized by absent landlords, squatters, and no maintenance to its buildings or historic monuments, putting a strain on the quality of daily life for the past decades. Despite a decline in the neighborhood's physical infrastructure and amenities, the entrepreneurial spirit had not died. Local skills in small family businesses such as tile-making, handcrafts and carpentry had prevailed, enabling some inhabitants to make a living.

The scope of the project immediately expanded to include the rehabilitation of Darb el Ahmar district. An integrated approach consisting of several pilot interventions aimed to restore a number of landmark buildings in an attempt to generate a catalytic effect for socio-economic development that would reflect in the general improvement of the area.

Figure 3.19: The restored 12th century Ayyubid wall, separating the park from Darb el Ahmar neighborhood, retrieved via www.wikipedia.org/wiki/Al-Azhar_Park

Figure 3.20: The neighborhood of Darb el Ahmar, seen behind the Ayyubid wall, retrieved via www.panoramio.com/photo/19957121

Figure 3.21: A shot contrasting Al Azhar Park with the dense surrounding neighborhoods, retrieved via www.euromedheritage.net/intern.cfm?menuID=888

Figure 3.22: A shot of Al Azhar Park, retrieved via www.sasaki.com/blog/view/42/

A comprehensive survey of the local population's immediate needs was carried out to determine the community's personal development priorities. The Aga Khan Trust for Culture joined hands with municipal institutions and partners, neighborhood representatives, local non-governmental organizations as well as people living and working in the area.

c. Lessons Learnt and Best Practices

Most supportive for urban revitalization of the Darb el Ahmar district was the introduction of a microfinance program. A microfinance program along with training session to empower and further develop local skills was launched, essentially to allow inhabitants to rehabilitate their district's houses. Other programs for rubbish collection and sanitation, health care facilities and community centers were being organized.

Most skills-training programs were set up in relation to the rehabilitation of the wall or in restoration projects in the district, offering over 150 training positions in activities such as stone carving, masonry work and material conservation. Apprenticeships with local businesses were also arranged in the fields of car electronics, computers, administrative expertise, mobile phone services, furniture making and tourist market goods.

More than $ 4 million USD were allocated towards the urban upgrade and socio-economic rehabilitation of Darb el Ahmar district for housing projects and monument restorations by the end of 2004, with additional grants from Ford Foundation, the Egyptian-Swiss Development Fund, the World Monuments Fund and the Aga Khan Trust for Culture.

A microcredit program and loans was also launched and recovered by almost 100% within the first six months of the project. This increased the income levels in the area as well as enhanced the quality of life. By 2004, 19 community-owned houses, a healthcare center, a business center, the restoration of an old school building and two reconstructed minarets were completed.

A comparative matrix of the case studies in relation to the initial urban design proposal of Minet el Bassal can be found in Annex 1 to this thesis.

IV. CONTEXT APPRAISAL

The following chapter begins by providing a historical overview, recounting the chronological circumstances that have shaped the current conditions and spatial morphology of Minet el Basal within the greater city of Alexandria. The chapter then presents an analysis of the existing situation of the site while assessing its strengths, weaknesses, opportunities and challenges. Stemming from an analytical base, the chapter concludes with a diagnosis on how to sustainably revitalize the site. Five responsive guidelines for each urban design dimension are presented at the intersection of sustainability's three pillars.

A. Brief Account of Alexandria's Urban History

As the second largest metropolis in Egypt after Cairo, Alexandria was first founded by the historically renowned Macedonian conqueror Alexander the Great, and the city today still holds no other than his name. By the time he reached Egypt, his conquests had already set up new territories in vital military and trading locations across the Mediterranean Sea, reaching Afghanistan and India.

The site he chose consisted of a modest fishing settlement named Rhakotis, sprawling along the shore**.** South of it between Lake Mariout and the Mediterranean, were five scattered villages, with the Island of Pharos just off the coast – which has long disappeared –, offering unique geological protection against invading armies from the sea. The close proximity of Rhakotis to other villages also meant easier access to labor and other services for creating the city. And with only 30 km separating it from the eastern edge of the Nile Delta, Alexandria was safe from flooding, yet close for trading.

This coastal city, was planned ideally facing north towards the Greek World, on the premise of becoming a vital hinge between Greece and the fertile valley of the Nile: a first-class commercial port for the Mediterranean region. The city's far western edge, where Minet el Bassal stands today, faced the Island of Pharos. The old city then extended further east, to be closer to the Nile and trading routes.

Historians believe that Alexander's urban vision defined the new city walls, borders and area, as well as the location of important civic buildings such as the Agora and temples. The greatest infrastructural development was an artificial bridge built to connect the nearby Island of Pharos to the mainland. It was built at the enormous scale of seven stadia long, almost 1,260 meters. This extension into the waters formed a double bay with a harbor on each side, both of which still exist to this day.

The Great Harbor settled in the east facing the city's main buildings: the royal palace, the museum, and later on the famous Library of Alexandria. Its tip was home to one of the Seven Wonders of the World since 280 BC. Now gone, it had an unsurpassed height of 140 meters.

The foundations of the city were laid out by constructing a 15.8 km city wall, creating the largest urban enclosure after Athens and Syracus at the time. Archaeological evidence also demonstrates that the urban street grid has been rotated 25 degrees off the cardinal axes, exposing the city to the prevailing northern winds, thus cooling the air and providing its inhabitants with a moderate climate.

Historic Alexandria was divided into four quadrants by two intersecting main thoroughfares: the east-west Canopic Way and the north-south Street of the Soma. The surrounding streets were laid out in the then popular Hippodamian grid and were exceptionally large, keeping in line with the majestic city. Archaeologists believe that

secondary streets were as wide as 12 m, making the streetscape wide enough for carriage driving, horseback riding and socializing.

Following Alexander's death, Alexandria became the new capital and the main Greek city, a major port of the ancient times, as well as the center of commerce and trade between Europe and the Arabian and Indian east, surpassing Athens as the cultural center of the Greek world and was only second to Rome in wealth and size. The city had grown from a small port town to become the grandest and most important metropolis in ancient Egypt.

Crossing over to the Roman era with the rest of Egypt in 30 BC, Alexandria became the second city of the Roman Empire, after having been under its influence for over a hundred years. During Byzantine times, the heavily-trafficked port district of Alexandria was regarded as one of the primary army and naval bases with significant trade activity, mainly in wheat, throughout the entire empire. Thus, port control was crucial for the city to maintain imperial power over the region.

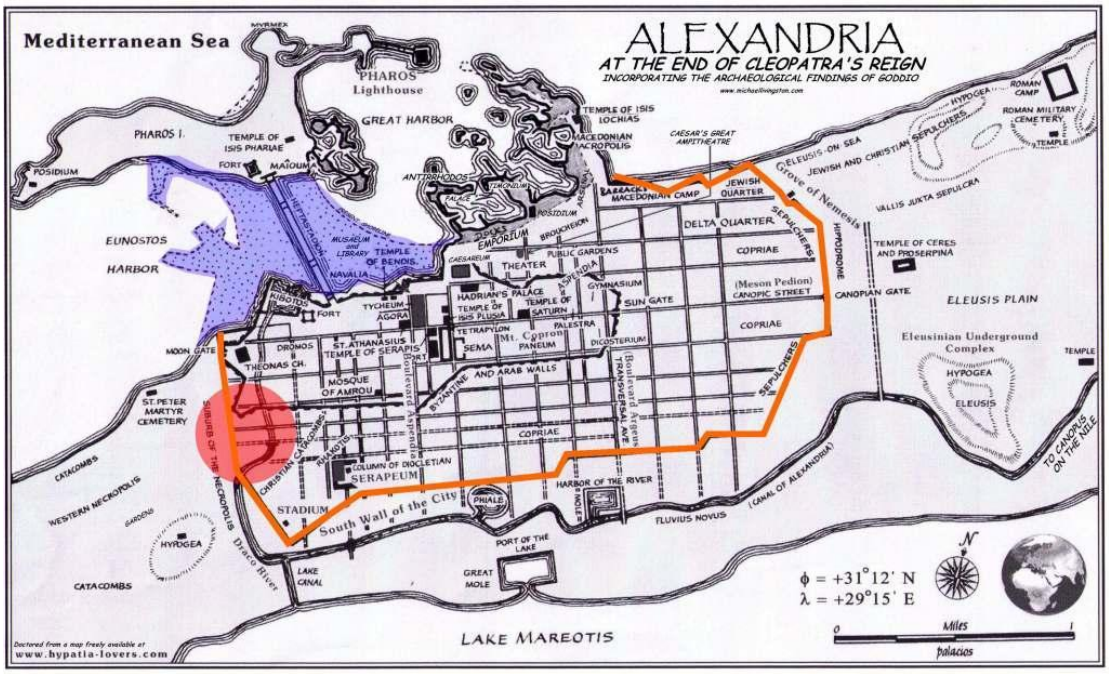


Figure 4.1: Alexandria in 30 BC with old city walls, extension into the sea & the site of Minet el Bassal

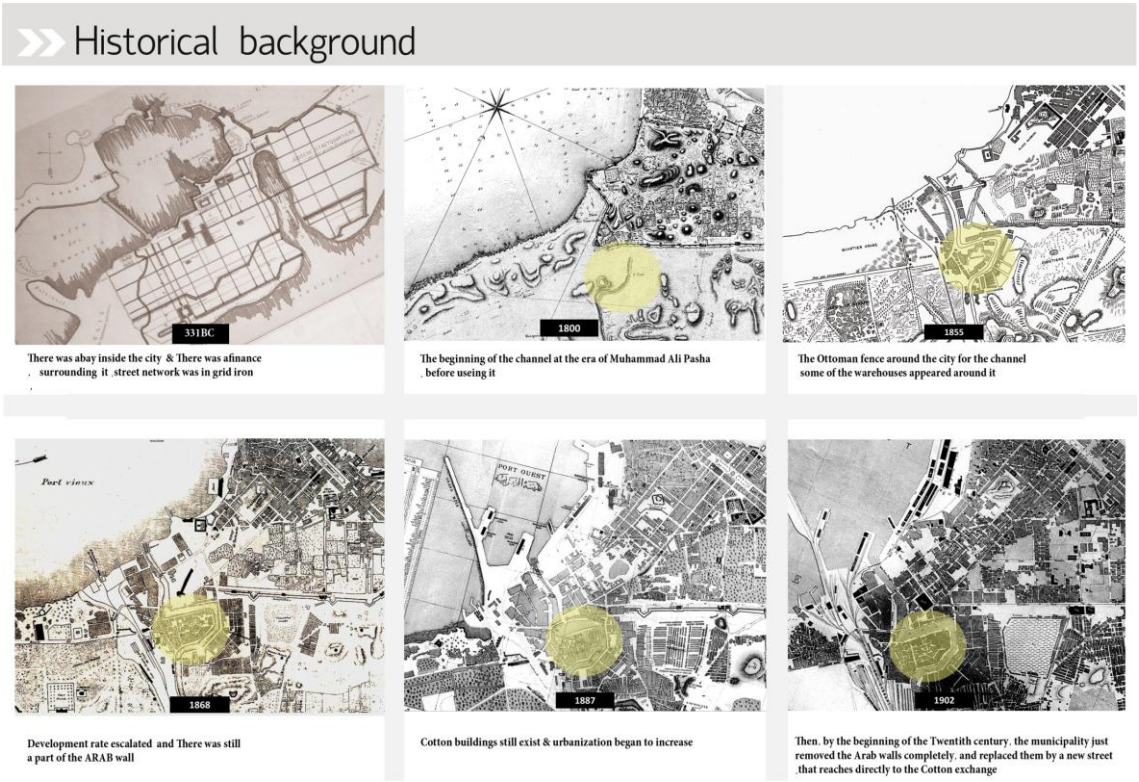


Figure 4.2: Physical evolution of Minet el Bassal across historical eras

During their 600-year presence in Alexandria, the Romans did not execute many changes in the existing urban fabric, aside from extending the city walls a few blocks to the east and apart from a few settlements flourishing outside these walls.

During the Islamic conquests, the Byzantines had no military force to face the attacks. Alexandria's substantial walls though proved to be valuable assets and protected the city from the foes at bay. The city had been heavily fortified, with walls within walls and forts within forts. And although there was no dearth of provisions or food supply, help from which what was then Constantinople in the form of supplies or army men was coming through the sea route.

The Byzantine officials finally turned the city over to Islamic rule and Arabs had finally, and permanently, seized Alexandria in the middle of the 7th century AD (641 AD) from the Byzantine Empire. Historically, Alexandria which was the main economic provider in the Byzantium world had a steady economy counted for in both money and luxury items. The impact of such a major loss reverberated throughout the entire Mediterranean world, with the decrease in annual grain shipments from Egypt striking a decisive blow to the Byzantine wealth.

The city's fortunes changed again under the Mamluk period between 1250 and 1517, and once more with the hegemony of the Ottoman Empire from 1517 until 1882, which was peppered by the French invasion under Napoleon in 1798, and then followed by the British invasion of the French following their victory at the Battle of Alexandria in 1801. Subsequently, the city was under British occupation for four decades between 1882 and 1922.

B. Alexandria's Recent Industrial History

Muhammad Ali Pasha, an Ottoman commander of Albanian descent, is often cited as the founder of modern Egypt. His reign was characterized by a period of rapid reform and modernization because of the remarkable reforms in the economic, military and cultural spheres that he instituted. He led Egypt to becoming one of the most developed countries outside of Europe at the time. With the help of the French, he set about making one of the biggest economic changes in Egypt by ordering wide-scale planting of a new strain of cotton, which was to be the cash crop that would finance the county's revival, and distinguish Minet el Basal for its traditional cotton weaving, storing and trade activities (Bodenstein, R.).

As British textile manufacturers were eager for such cotton, Muhammad Ali ordered Egyptian peasants to cultivate cotton at the expense of all other crops. He set up a number of factories and began in 1819 digging a new canal, the Mahmoudiah as a safe channel between Alexandria and the Nile to help with the trade activities between the Alexandrian port and the rest of Egypt (Bodenstein, R.).

Egypt is one of the first countries in the Middle East to develop modern industries on a large scale, starting in the 19th century under the rule of Muhammad Ali Pasha (1805 – 1848). Egypt's first wave of industrialization can be dated from 1810 until the late 1830s. The wave first started with the ambition to build a modern army, quickly shifting the aim to reduce dependence on imported goods. His policy was to seize direct control over Egypt's local resources and avoid interference of the Sultan in Istanbul (Bodenstein, R.).

He engaged in a swift factory-building efforts, with his first factories including an arsenal for ship building on the Nile in Cairo. Other factories included silk spinning

and weaving, an arsenals for manufacturing weapons and military equipment, textile, bleaching, printworks and cotton spinning and weaving mills.

Following the successful introduction of long fiber cotton in 1820, Muhamad Ali order the construction of 23 more cotton factories across the country by 1828. However, some basic ingredients of successful industrialization and could not be provided locally in a sustained manner. For example, human and animal power was used in lieu of the industries lacked Of the 70,000 workers in the factories, some of which were women and children, to drive the machinery rather than steam engines. This led Roger Owens to question how far Muhammad Ali's factory construction can really be characterized as industrialization (Bodenstein, R.).

Enormous problems faced the ruler of a small country with a narrow local market, no coal, wood or workable iron, and none of the accumulated technical or entrepreneurial resources of Western Europe. The failure of Mohammad Ali's industrial scheme, which lead to the closure of most factories has to be seen within the context of inherent structural problems, the economic crisis of 1836-1837, a process of all policy change that banned all monopolies, administrative decentralization, and economic retrenchment that took place in the late 1830s (Bodenstein, R.).

As a result, the abandonment, demolition and selling of Mohammad Ali's factories between 1830 and 1850 is a major reason why so little of the building stock has survived. The two factory complexes that still give a fairly good idea of its original architecture is the arsenal on Cairo's citadel and Minet el Bassel in Alexandria. The general layout can still be discerned: a sequence of broad straight thoroughfares is lined on both sides by single-floor storey buildings with high limestone walls and arched gates (Bodenstein, R.).

The factories along the Mahmoudiah canal provide evidence of the influential role or local masons in the architecture. The expressions of local Egyptian culture were not seen as hindering the modernization program. The factories, which were important material expressions of Mohammad Ali's modernization program, often integrated local architectural elements. Judging from the surviving remains in Minet el Bassal, factories were not seen as mere utilitarian buildings but as architectural buildings built to impress and to visually communicate the Pasha's ambitions. (Bodenstein, R.)

Today Egypt is divided into 27 governorates for administrative purposes, each of which is appointed a governor by the president. Alexandria, a longitudinal governorate, is only 30 km from the eastern edge of the Nile delta, and at present extends along a 70 km coastal line. Since the time of Muhammad Ali, it has become a major center of international shipping and trade between the late 19th century and late 20th century, handling over 80% of the country's imports and exports, mainly due to the lucrative trade in Egyptian cotton until the mid-50s. This was the main reason that had transformed Minet el Basal into a significant and booming industrial area of factories for cotton balling and stock exchange for over 80 years.

C. Site Analysis: SWOT Assessment of Minet el Bassal

Strengths within Minet El Bassal	**Weaknesses within Minet El Bassal**
- Significant buildings along the canal dating back to the industrial era - Street alignment of buildings on the eastern side of the canal - Good condition of most buildings on the eastern side of the canal - A unique contrast between industrial structures and residential buildings - A diversity of building footprints, sizes, heights, styles and structures - A socio-cultural site in the village: Abdallah El Nadim residence - Low vehicular traffic - Strong social ties and community surveillance - Crafting skills - Direct access to the Mahmoudiah canal	- Lack of public or open space - A halt in all industrial functions of the factories leading to desertedness - Over-density in residential area - Unsafe structural conditions of residential buildings - Residential village an informal settlement - Lack of infrastructure maintenance - High level of poverty - Low level of literacy - Lack of public amenities such as healthcare facilities, schools or police stations - A halt in the water flow of the Mahmoudiah Canal leading to water stagnation & pollution - Lack of waste management - No future provision of revitalizing

- Vegetative growth along the canal	the area
Opportunities around Minet El Bassal - Proximity to a listed heritage site & buildings - Proximity to touristic attractions such as the upcoming tourist port, the sea, Catacombs & Pompey's Pillar - Proximity to the tramlines - Proximity to city wall footprint Proximity & direct connection to the city center - Proximity to the Friday market - Centered in the east-west connection of governorate of Alexandria - Proximity to Mahmoudiah Canal	**Threats around Minet El Bassal** - A heavily-trafficked infrastructure leading to the city center from Minet el Bassal - Congested traffic nodes - High poverty in surrounding neighborhoods - Drug dealers in surrounding neighborhoods - A halt in the train lines to the west making act as a boundary - Waste and pollution in the surrounding neighborhood

Table 4.1: SWOT Assessment of Minet el Bassal

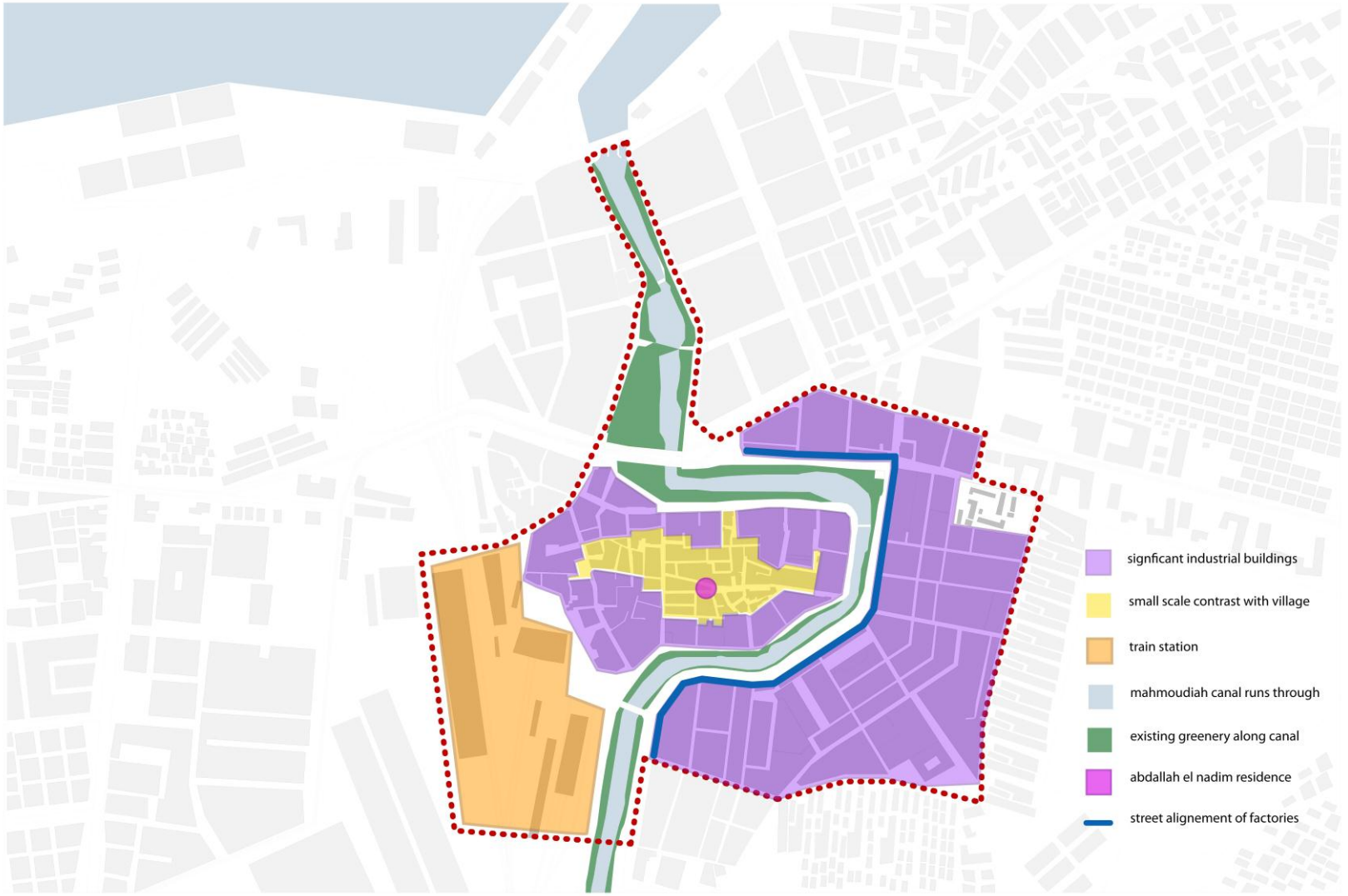


Figure 4.3: Strengths within Minet el Bassal

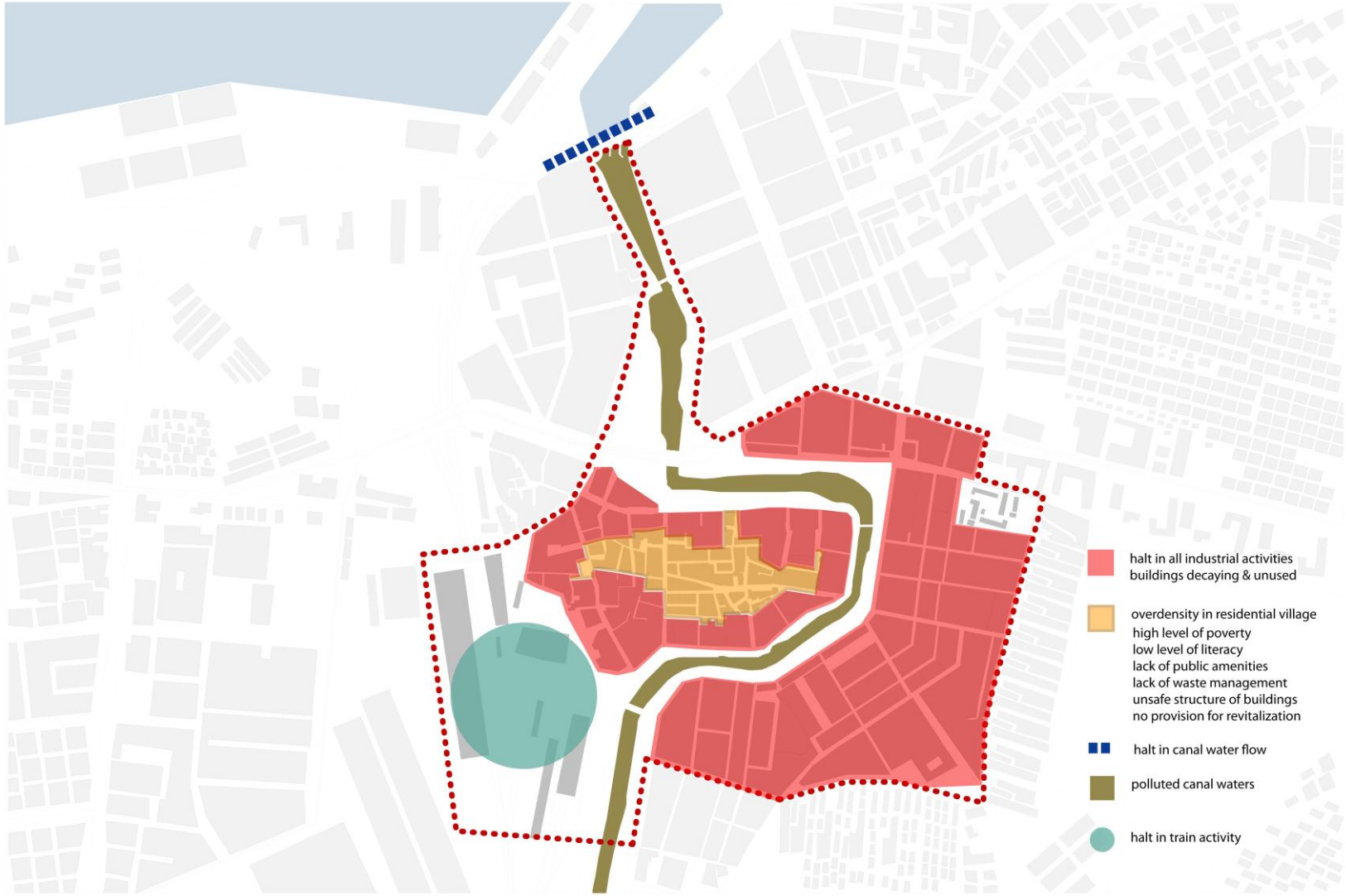


Figure 4.4: Weaknesses within Minet el Bassal

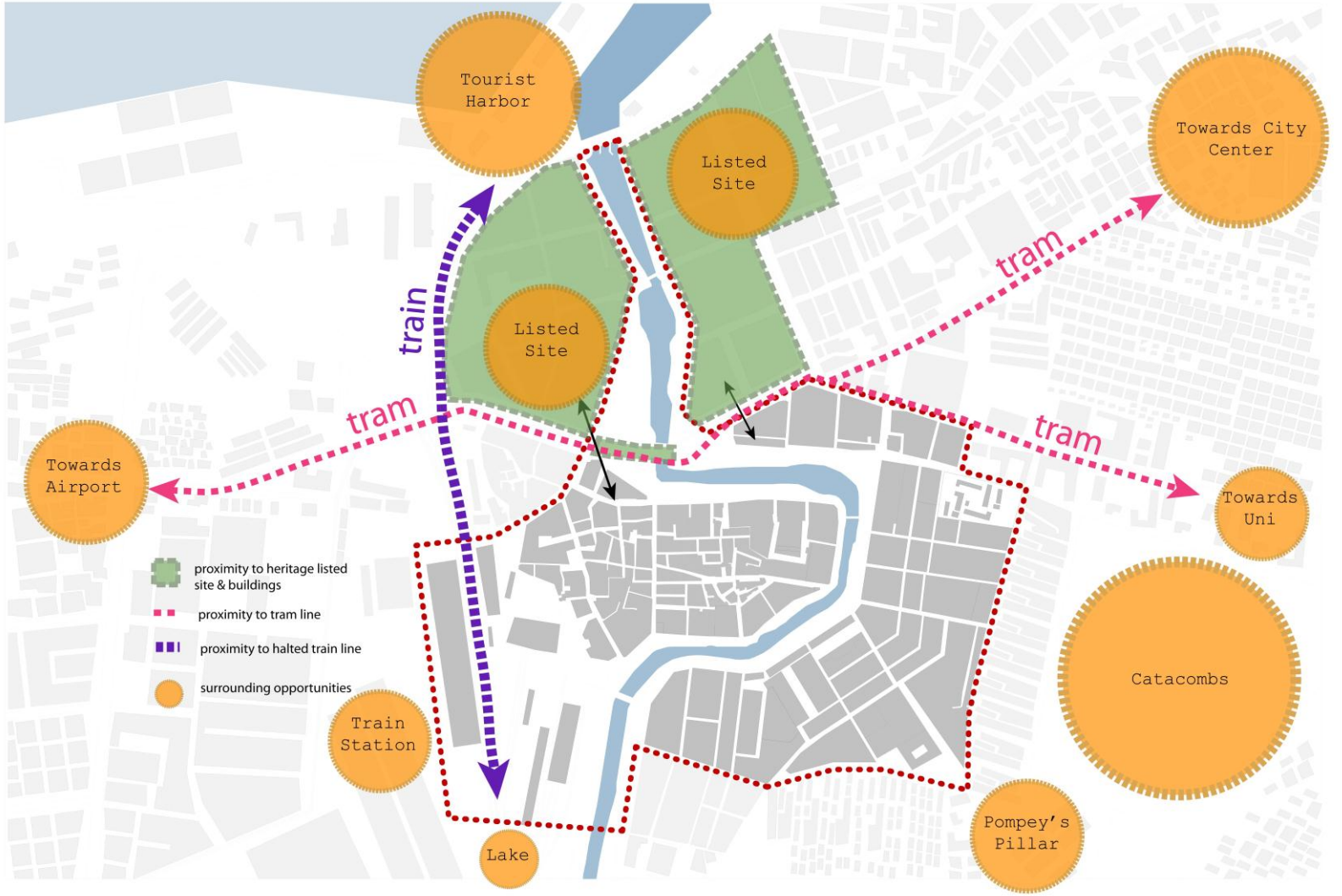


Figure 4.5: Opportunities surrounding Minet el Bassal

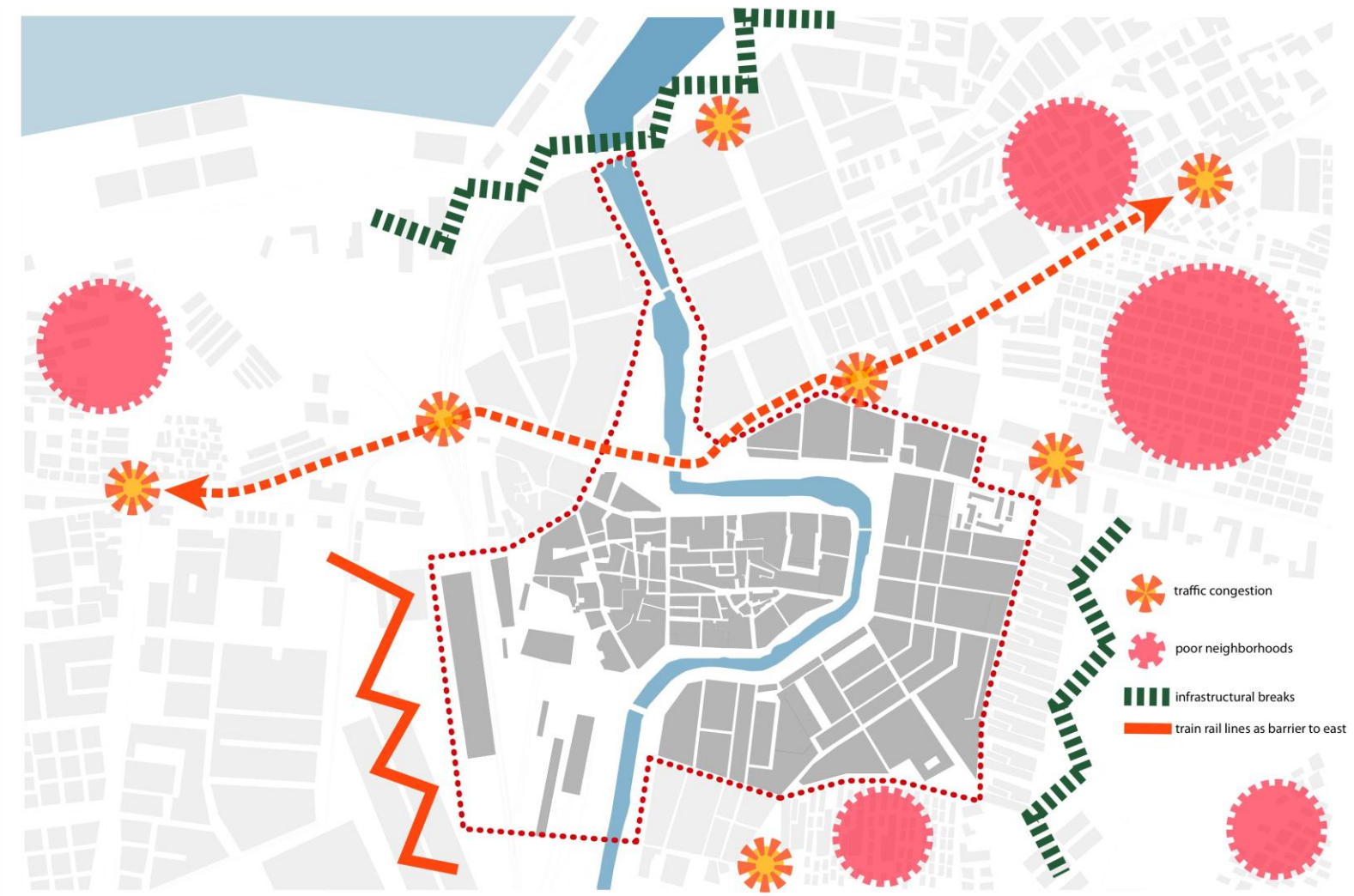


Figure 4.6: Threats surrounding Minet el Bassal

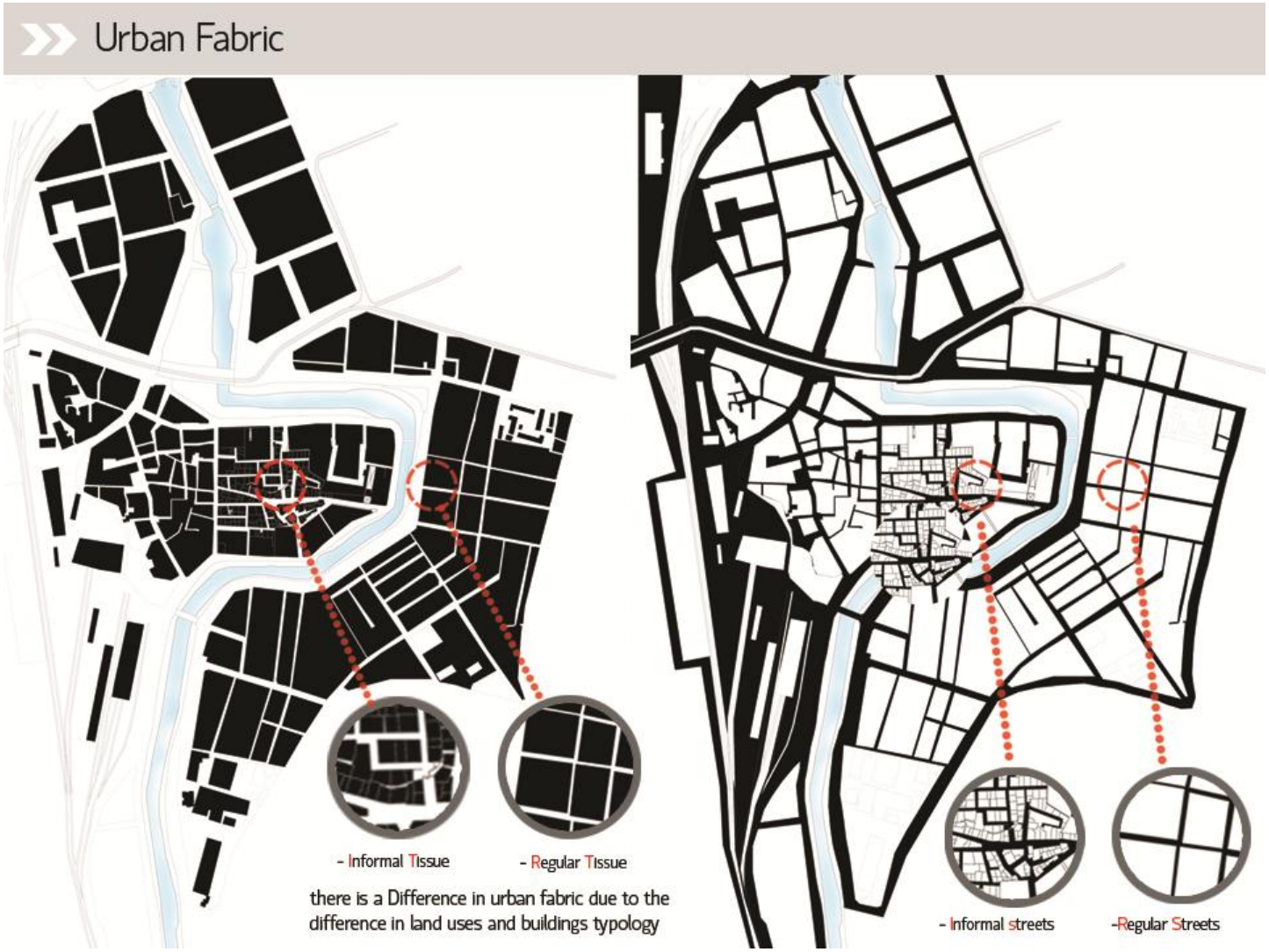


Figure 4.7: Solid/ Void and Nolli maps study the density and different character areas of the site

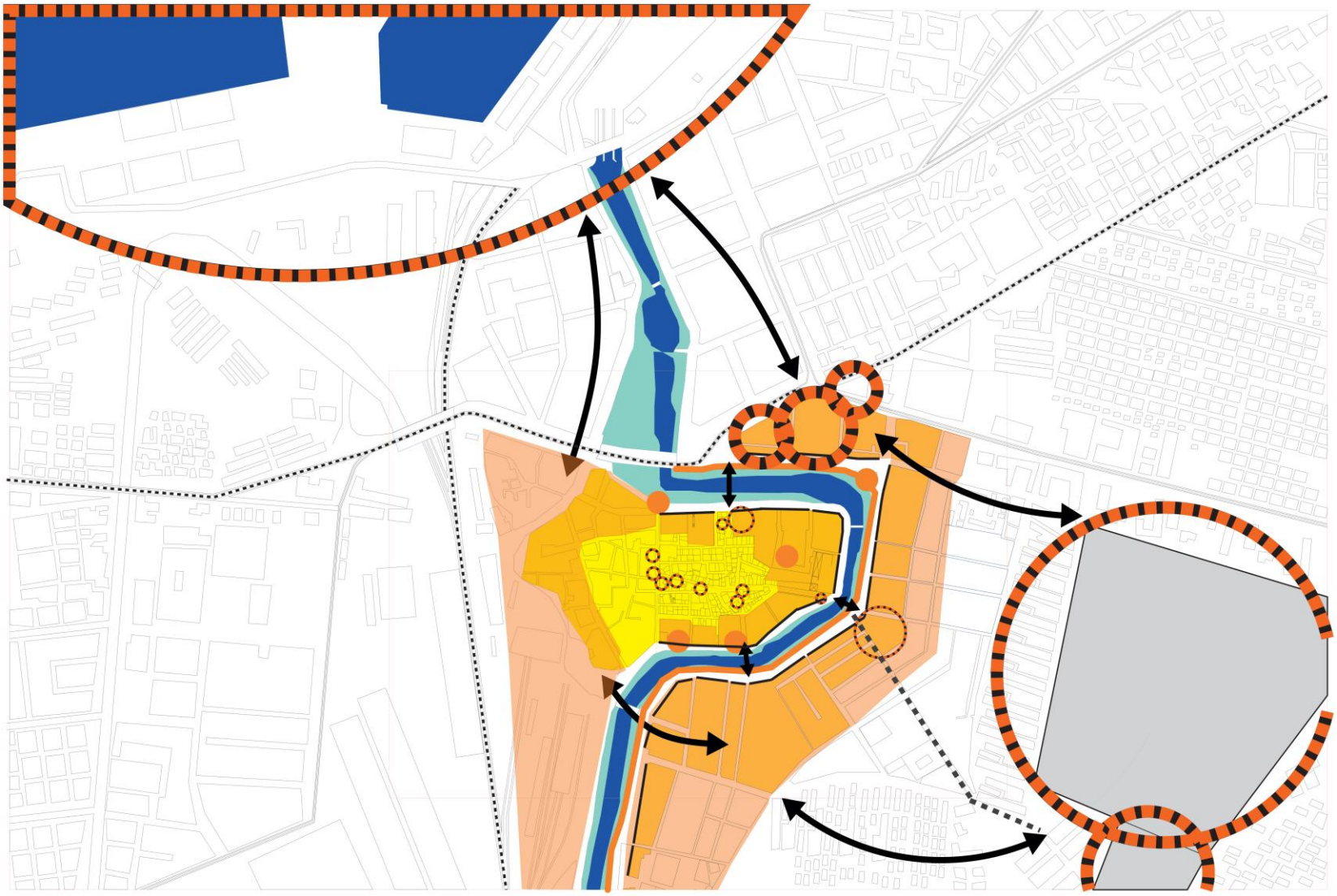


Figure 4.8: Initial concept diagram

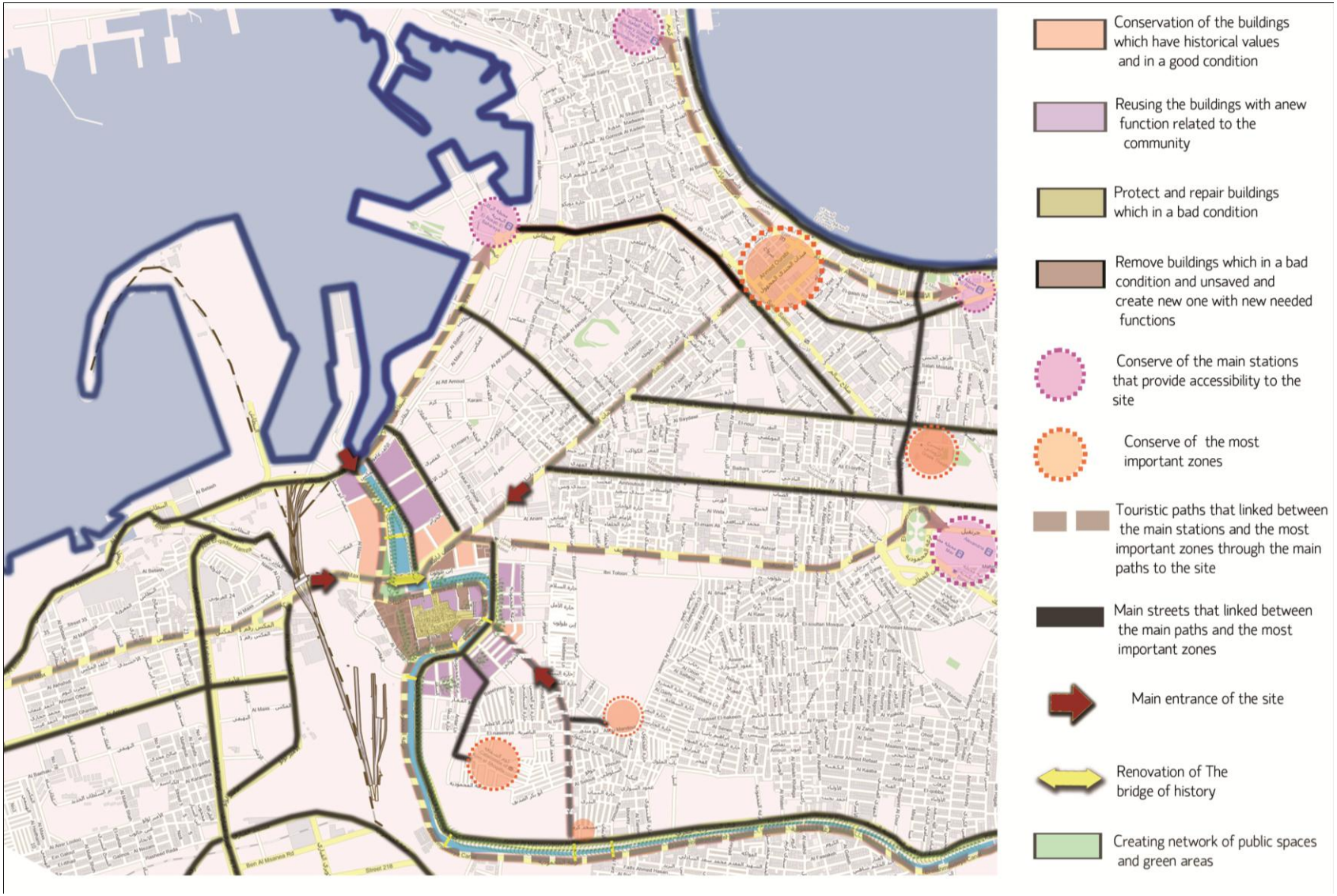


Figure 4.9: Relationship, surrounding infrastructure and accessibility to site from city center

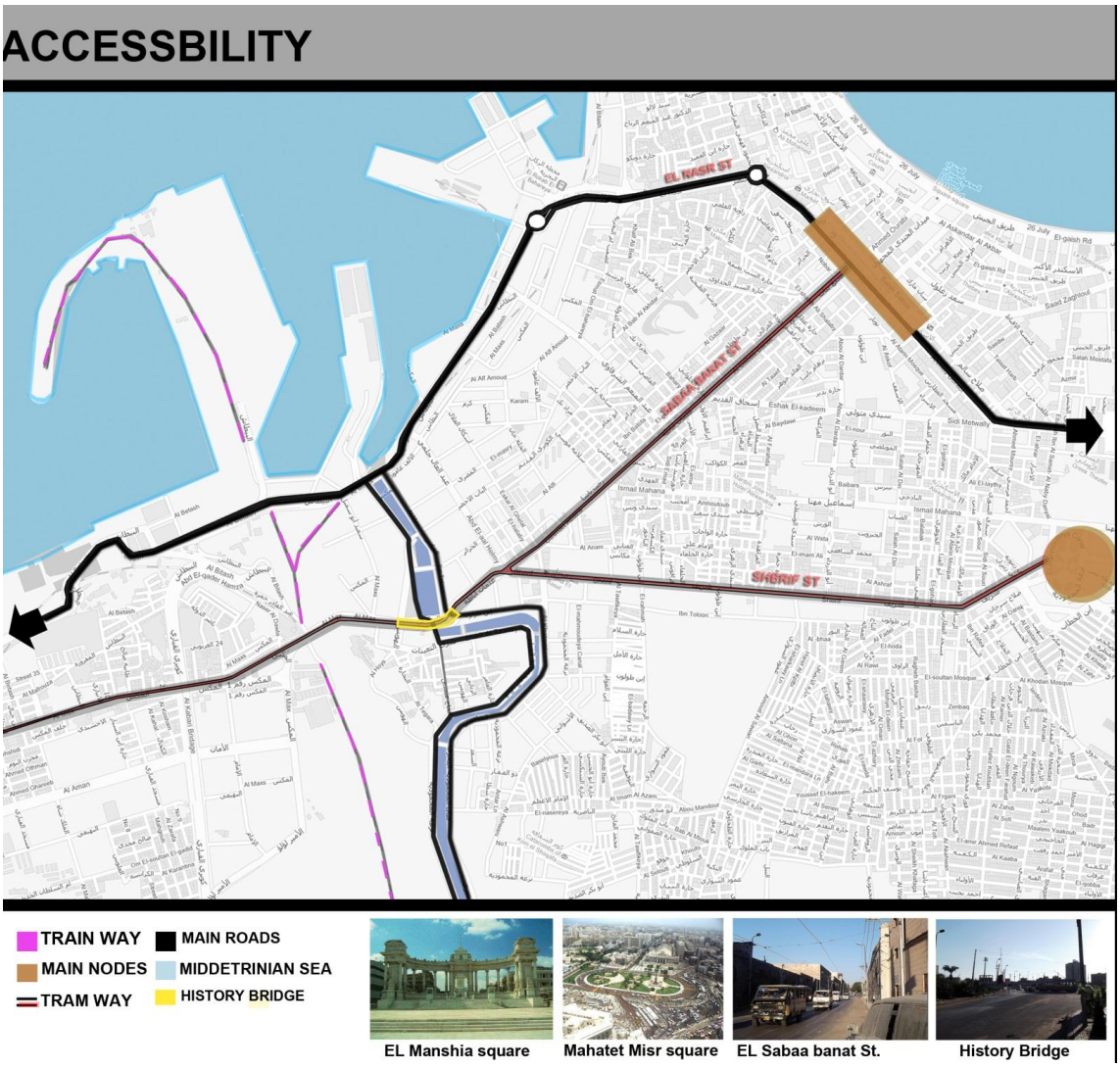
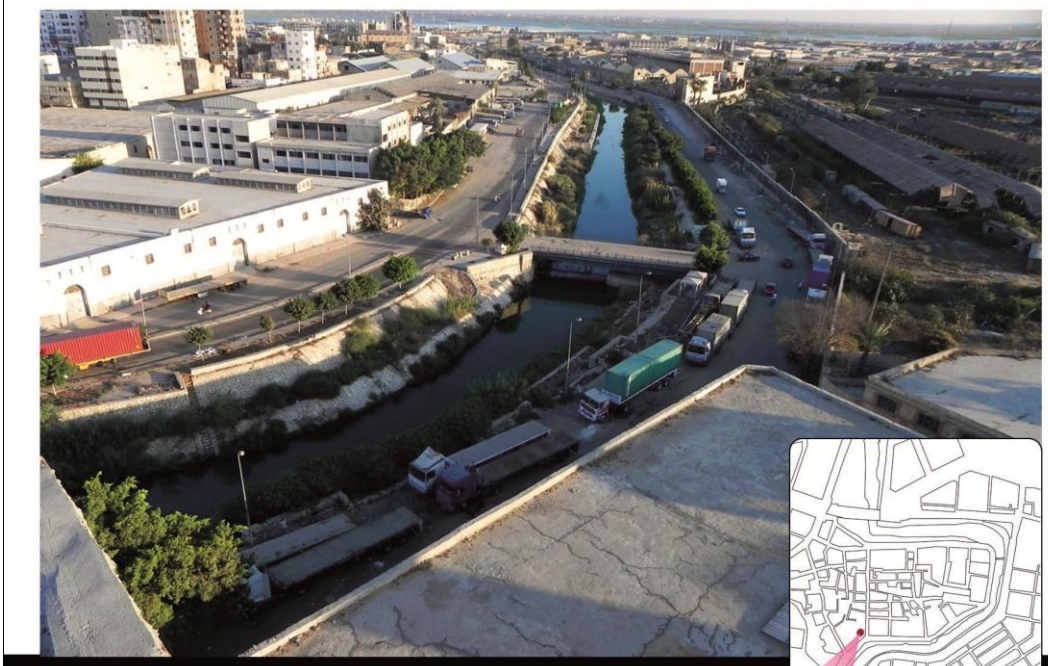
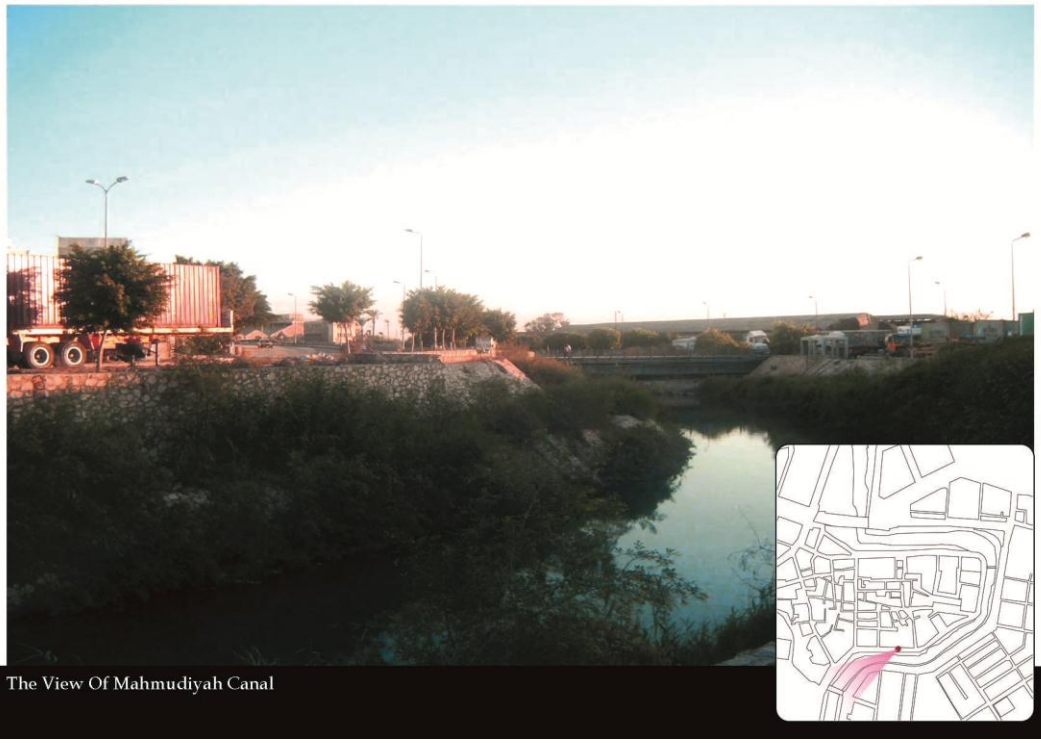


Figure 4.10: Main accessibility roads and attractions along them

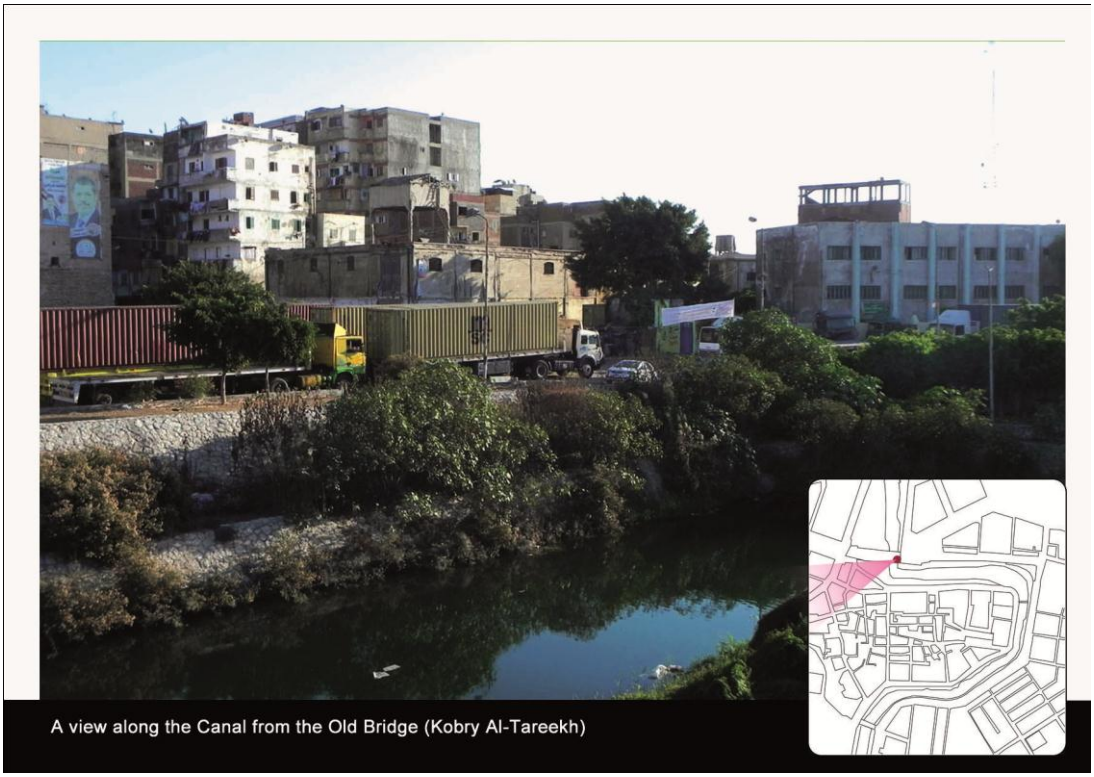
Figure 4.11: Panoramas of Minet el Basal and the Mahmoudiah Canal



A view of the Canal from a high residential building



The View Of Mahmudiyah Canal



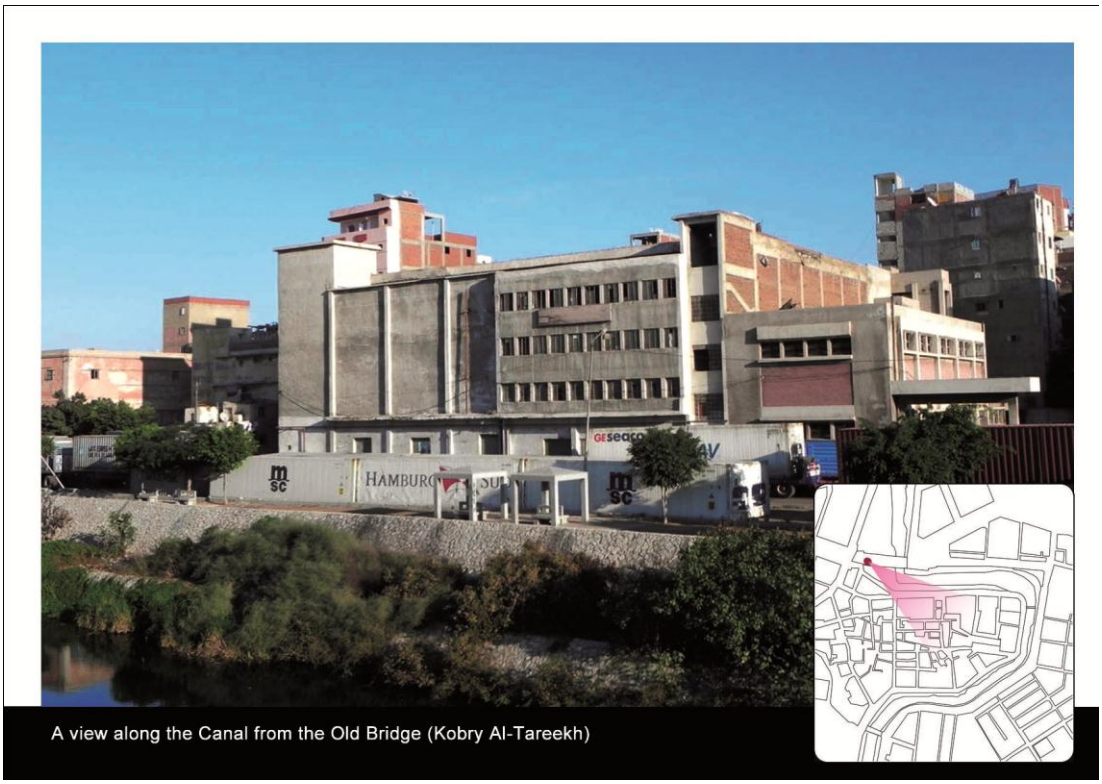


Figure 4.12: Photographic shots of the Mahmoudiah Canal from different sides

Figure 4.13: Skyline of the factories along the Mahmoudiah Cana

Figure 4.15: photographic documentation of undesirable conditions of pollution and waste along the Mahmoudiah Canal

D. Diagnosis: Responsive Urban Design Guidelines

Following the research and on-site data gathering as well as further analysis, the design studio proposed an urban design response which is at the intersection of the five generic urban design issues (identity, ecology, infrastructure, public/civic space, and private development) and the three pillars or sustainability (economic, social and environmental).

As it will be elaborated in greater detail in the next chapter, the suggested design intervention to sustainably revitalize Minet el Basal includes:

Safeguarding the industrial identity through urban design guidelines that preserve the morphological contrast between the factories' typology and the incrementally-built village regardless of future programmatic reconfiguration,

Upgrading existing, as well as creating new, public spaces with different functions on the outskirts of the village in order to design qualified access points and meeting spaces,

Responding to the housing shortage by retrofitting the interior of the factories into smaller residential units,

Ecological rehabilitation of the Mahmoudiah Canal by retrofitting its banks into an urban promenade that links the new pedestrian terminal in the western harbor to the site.

Following the criteria for sustainability (economic, social, environmental), four urban design guidelines frame and gear the project:

Re-connecting Minet el Basal to neighboring magnets in the city and injecting new economic opportunities (Economic criteria of sustainability): Considering neighboring transportation hubs (e.g. tram lines, train lanes, bus lines, and pedestrian terminal in the

eastern harbor, etc.) and with nearby touristic attractions (e.g. Catacombs, Pompey's Pillar, adjacent listed heritage buildings, etc.).

This allows an easier flow of movements in both ways: the residents will have better accessibility to the city center and a higher chance of finding employment, and other people will have an easier access to the area, be it to visit, invest or live in.

The approach also includes the manipulation of urban form in order to expose and encourage local commerce and skills such as creating small shops and ateliers for rent on exposed streets (neighborhood level), to introduce new financial opportunities such as ground floor retail in limited designated streets (district level), and to create a large-scale cultural frontage of museums and exhibition spaces at the frontage of the project that is facing and easily connects to the city center (national level).

Re-using and re-adapting the existing urban form while keeping the industrial identity of the site (Economic & environmental criteria of sustainability): Maintaining the contrast between the incrementally-built and organic village, and the strip of planned large-scale factories buildings on the other side of the canal.

V. URBAN DESIGN INTERVENTION

This chapter presents the initial and revisited design interventions for Minet el Bassal. The first part begins with the initial urban design proposal for revitalizing the area, a product of a workshop mostly based on site visits and a SWOT assessment, yet lacking a solid literary review. This part retraces the steps adopted in the workshop and how the site analysis culminated in a first concept and proposal for Minet el Bassal. Students were encouraged to choose a direction based on a prominent urban design problem. In this case, the lack of open spaces in a highly dense area was the focal problem, and the concept of sustainability through retaining the existing structures yet re-morphing them to create more breathing spaces was introduced. Beyond the re-morphing exercise on the district level, the initial proposal further targets urban changes on all scales, focusing on commercial strips and a large-scale cultural frontage for the project. **Based on the literature review findings,** such an approach proves to attract speculators and tourists, factors that would automatically start pushing the local residents out. Such an outcome, as concluded later on, seems to defeat the aim of sustainability.

The second part of the research takes a critical distance from the workshop proposal**.** Based on the findings of the literature review as well as a comparative assessment of the case studies (see table in Literature Review p. 45), an alarming conclusion was reached, finding that the initial proposal could actually not be entirely sustainable, the biggest risk being gentrification and displacement of the existing social layer.

As a result, the second section of this chapter will introduce a revisited design intervention, a counter proposal as a response to the thesis research question and the design principles extracted from the case studies, always framed by the concept of sustainability. The revisited urban design intervention needs to remain at the neighborhood and district scale. A counter-proposal is presented, reclaiming the decaying industrial area of Minet el Bassal through phased urban design interventions that upgrades the physical infrastructure while capitalizing on community-based projects and social housing to preserve the social infrastructure. In addition to development guidelines and restrictions as well as rent controls, this approach could strike a more sustainable balance among the three pillars of sustainability. Before and after representations of the site are provided to demonstrate the change.

A. Initial Urban Design Intervention

The initial design intervention focuses on the issues of lost industrial 'identity' and the lack of 'civic spaces'. The issues are addressed from the three different perspectives of sustainability.

1. *The Morphological Reclamation of the Physical Infrastructure to Salvage the Past & the Introduction of New Economic Magnets for develop for the Future*

The economic criteria in the initial phase are twofold. The first aspect deals with the morphological reclamation of the physical infrastructure and industrial buildings, and the second with the introduction of adaptive re-use. Both are regarded as urban design tools for sustainable economic development. As discussed in the literature review chapter, reclaiming the primary street network as well as the physical form of the factories is an economically sustainable approach. This scenario assumes that the straightforwardness of the construction requires less economic resources than razing all factories to the ground and rebuilding new structures from zero.

This transformation is achieved by retaining the existing boundaries of buildings and by creating open spaces at their center, through subtraction of mass. Adaptive re-use is implemented as a key urban design tool, mostly to reclaim the hibernating box-like factories into community apartment complexes in order to respond to the housing shortage in Minet el Basal. In some cases of adaptive re-use, a single factory was large enough to be transformed into a whole new housing quarter. In other cases, several factories were grouped together to form one housing block.

While reclaiming the streets, some secondary streets were deleted. The main frontage of the factories along the canal, the original layout of the main streets and the

most prominent buildings and facades are maintained. In addition, the morphological contrast between the organic and small footprints of the incrementally built structures in the village and the geometric and large footprints of factories on the other side of the Mahmoudiah Canal is reclaimed.

The morphological reclamation of the infrastructure and buildings aims at preserving the identity of industries beyond the shell of their factories. As the notion of identity delves deeper than the envelop of buildings and is rooted in the industrial activities that had once shaped the place, and as the current situation of Minet el Basal can no longer cater for heavy industries anymore, the second aspect of the economic criteria design focuses on introducing new landuses and attractive economic magnets that can help in the district.

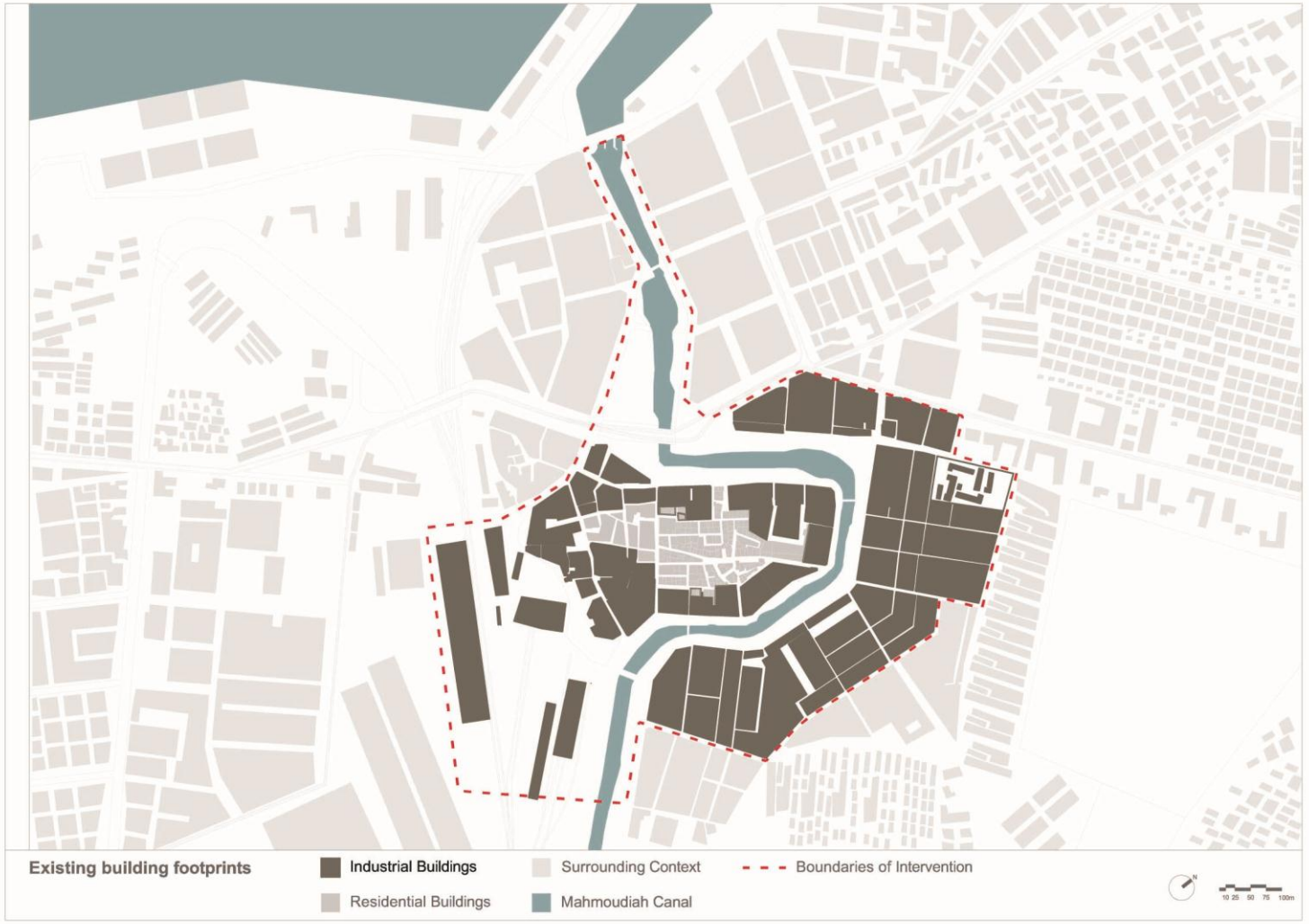


Figure 5.1: Site and intervention boundary

Figure 5.2: Overlaying existing and proposed spatial composition

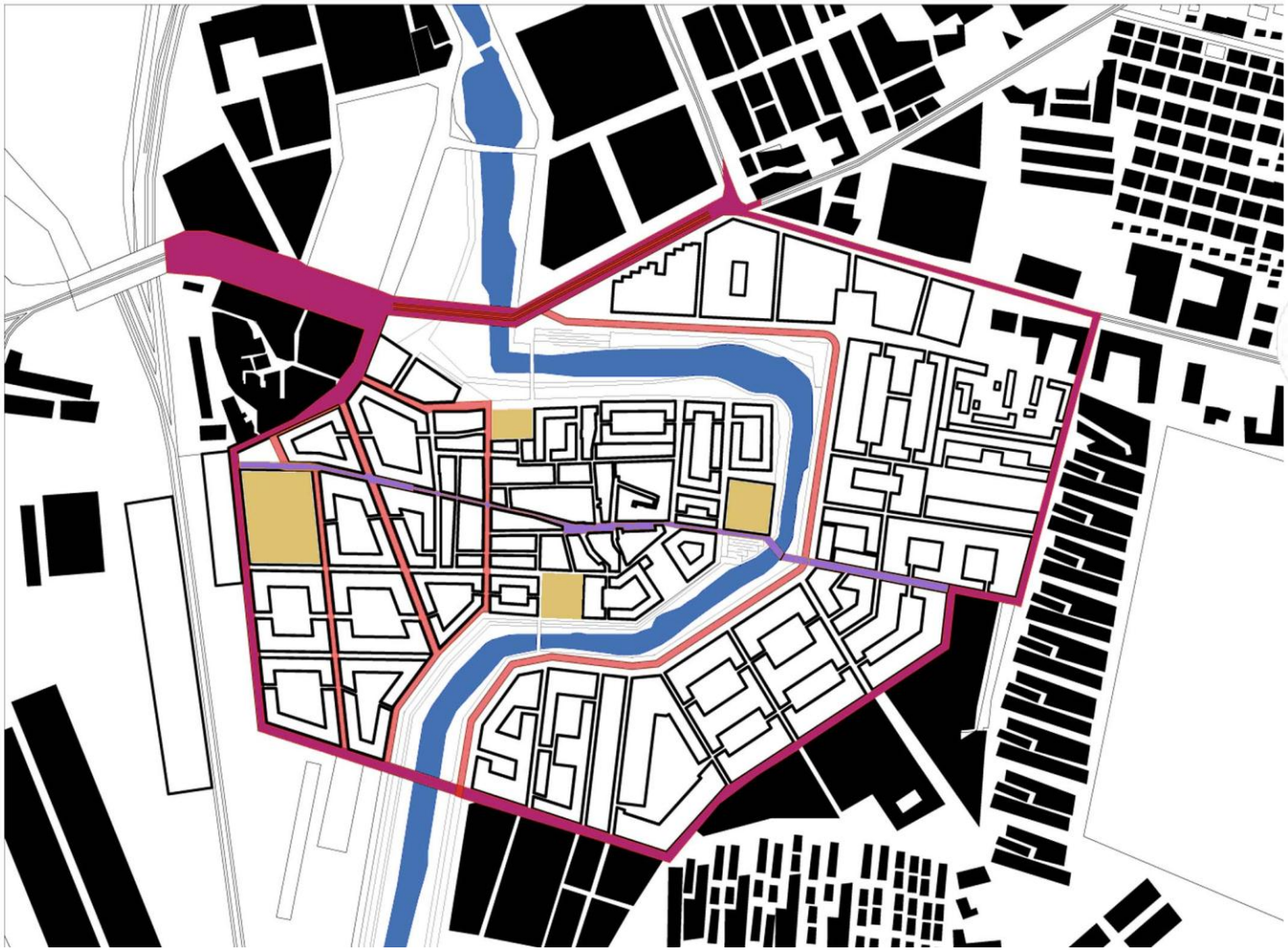


Figure 5.3: Reclaiming and upgrading existing street network

Figure 5.4: Morphing of factories to create open spaces

As a result of absent economic activities and opportunities, two commercial strips are introduced in different parts of the district, one in the village and the other one along the canal on the factory sides, attracting a different type and scale of clients. The two streets intersect at a vital point, at the edge of the canal where a new pedestrian bridge is introduced, creating a visual and physical link between both commercial streets. The aim is to encourage the locals to centralize and expose their skills, goods, know-how, and services as well as develop and introduce more commercial activities where they can be more visible and accessible.

Currently, the few shops and commercial activities that exist are scattered, with no visual connection between them, and sometimes hidden in uninviting dead-end corners of the village. The aim is to create commercial magnets in order to attract more people to the area.

The first commercial strip creates a more public stroll, an urban promenade that runs along the main facades of the factories that face the canal and is envisioned to connect to the future tourist port by the sea. What are introduced are market places, restaurants, cafes and shops, easily accessible for pedestrians strolling along the water. The products for sale are imagined to be representing local traditions and know-how in foods, drinks, as well as services, generally run and managed by the locals themselves.

At two instances, this commercial strip extends into two narrow alleys framed by the former factories. These alleys are conceptualized as the “Craftsmen’s’ Alley”. The aim is to invite all craftsmen and handy workers spread throughout the area to relocate to these two strips, in an attempt to centralize, expose and advertise their local skills, and to make them more accessible.

Figure 5.5: Existing situation, residential landuse (yellow) and commercial activities (red)

Figure 5.6: Proposed situation, residential landuse (yellow) and commercial activities (red)

The second commercial strip is more discreet and compact, and runs through the center of the village. It is envisioned as the main connection between the future train station on the western edge of the site and the village. It passes by the house of the former Egyptian activist Abdallah Al Nadim, a main source of pride for the locals for his political journalism, activism and influence on Egyptian press media.

2. *The Introduction of a New Housing Typology and a Network of Open Spaces*

The social criteria in the initial phase are also twofold. The first aspect addresses the housing shortage for the locals and introduces a new housing typology. As empty lots are rather scarce in the village, and as locals cannot bear the costs of going beyond Minet el Basal (other than the fact that they don't wish to), residents themselves are constructing new high-rise buildings, mostly with local brick material, without professional engineering help or safety measures.

Not only do these high-rises further add to the density of an already over-populated area making it more difficult to better the quality of life in the neighborhood, they also stand on small bases in proportion to their height, and sometimes bent at an unsafe angle. They present a true danger and a high risk of collapsing. The landuse diagram above showed the projected aim to retrofit most factories into housing lofts in order to respond to the lodging shortage in Minet el Bassal. This approach diminishes the chances of further building high-rises in the village, offers the district's future generations new and safe accommodation opportunities, complements the sustainable economic criterion of reusing the existing factory structures, and avoids the displacement of the local residents.

As a result, a new housing typology is created by reworking the interior of the existing factories and by preserving the shell. A survey of factories revealed that their initial structural built allows for creating skylights and courtyards. A technique of carving and subtracting is adopted, and common courtyards are created at the center of each building or group of buildings. Each central courtyard defines a housing complex, with entrances to all housing units from the internal courtyard. The factories are now double-faced. Their industrial façade still faces the canal and provides entrances to shops on one end.

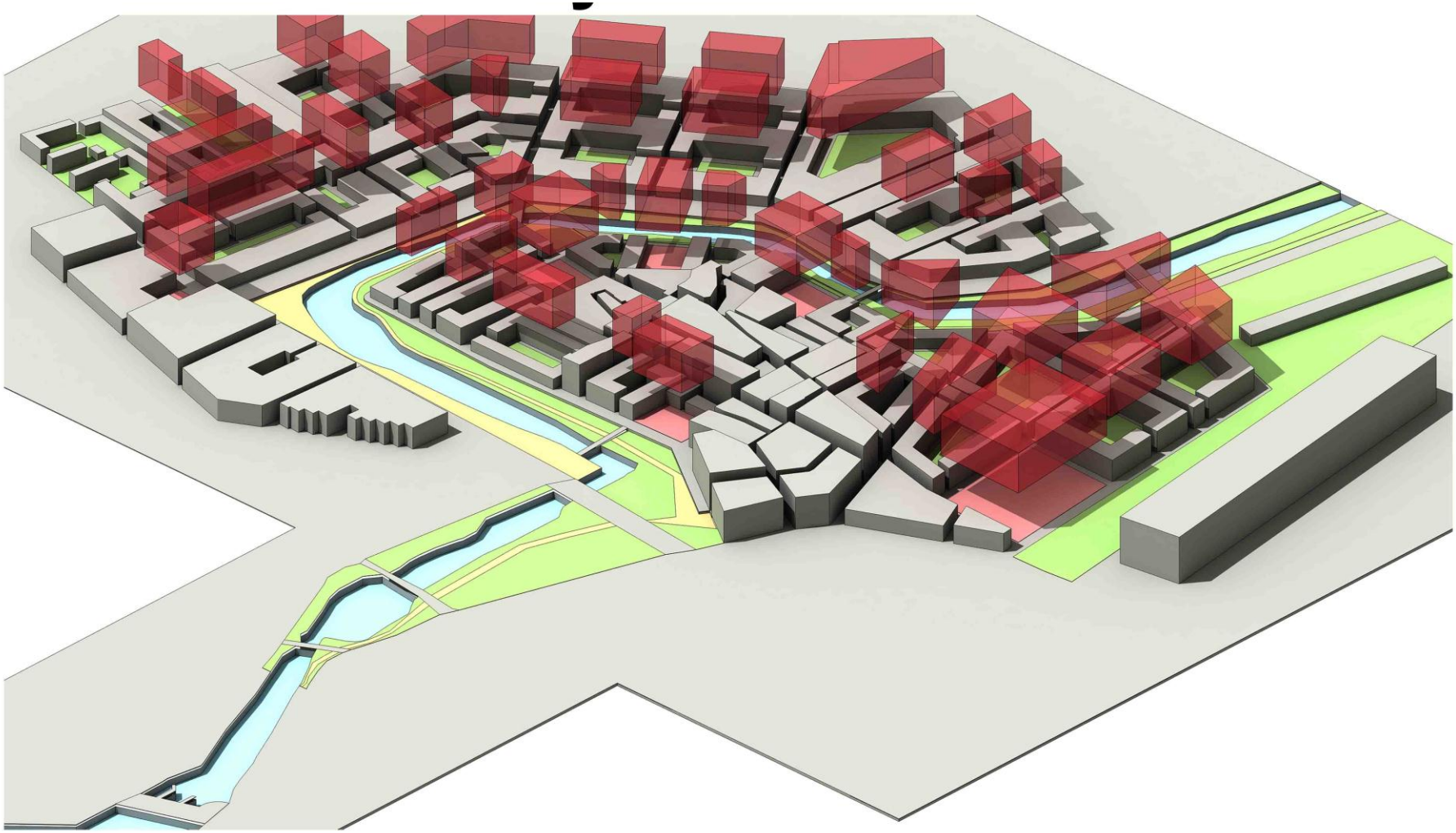


Figure 5.7: Mass subtracted from factoriesto create more open spaces, resulting in a new typology of buildings.

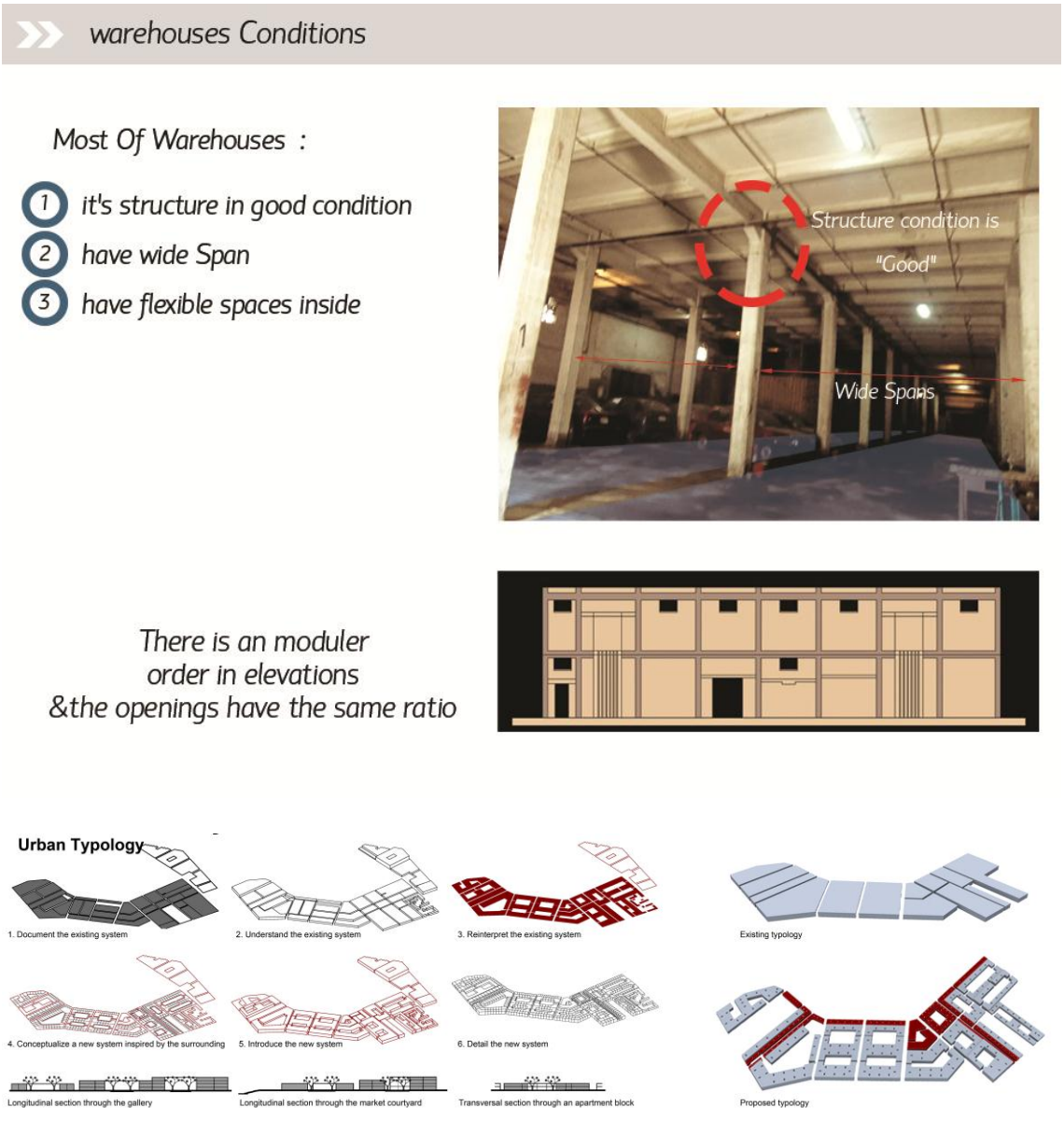


Figure 5.8: Initial structure of factories allows for creating skylights and courtyards, thus changing the typology

Access to the housing units on the other hand is through the courtyards: a more private entrance to the residents. The existing scale of houses in the village inspired the size of the new housing units. An introverted scheme, this new typology still preserves the privacy and fosters ties among locals, an important trait for residents of Minet el Basal, yet creates new, semi-public breathing spaces in front of their new homes.

In addition to creating this network of semi-public open spaces, five new civic spaces were created for the public throughout the village. Located at strategic points, four of these public squares overlook the canal, urban balconies that provide breathing spots in the highly dense village. Their location was scouted out by need. The first public space is at the entrance of the village, on the main street of Kobr et-Tarikh, which is the fastest access point to the city center. The space is adjacent to a mosque, an important social space of aggregation before and after prayer time. Another square as well is also envisioned near another mosque, this time in a more discreet location, in the village and overlooking the canal, providing a very different urban experience.

The third public space faces a school across from the canal, and is envisioned as a playground for the school students and other visitors. The fourth public square is at the intersection of both commercial strips in the village and along the canal. It is envisioned as an open flee market square, a space for people to gather, sell, buy and interact. The last public space is the largest. It is chosen in front of the train station to the east of the site and is imagined to be the main hub for gathering people who arrive or depart by railway. These new urbanized streets, squares, and open public and semi-public spaces are where people meet, grow, and where community ties are mostly fostered.

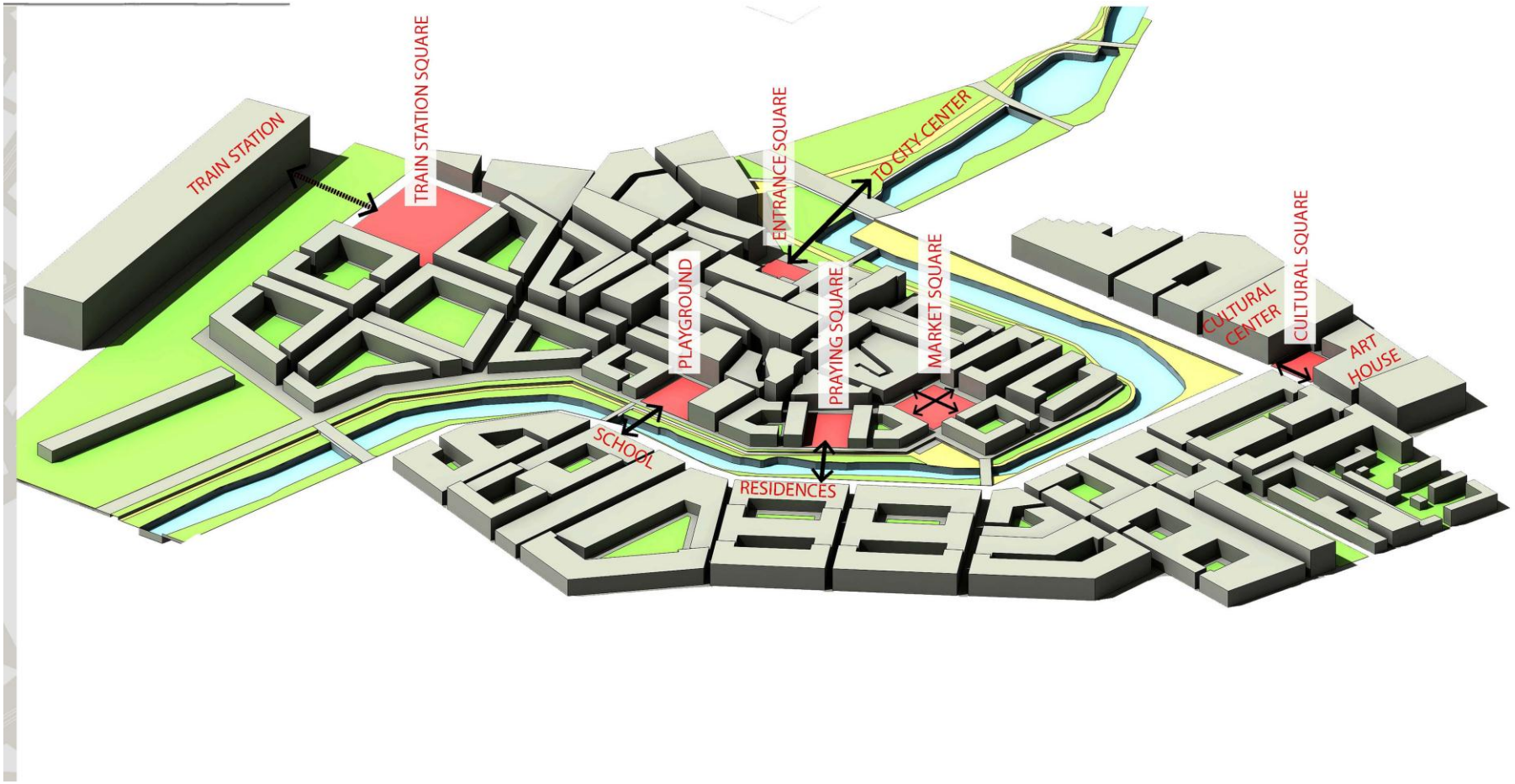


Figure 5.9: Location of 5 proposed public spaces

Figure 5.10: Location of 5 proposed public spaces in proposed intervention

Playground Square

Mosque Square

Figure 5.11: 3D massing of playground square & mosque squares

3. *Re-activating the Mahmoudiah Canal & retrofitting its Banks into an Urban Park*

The following section focuses on the environmental criteria of sustainability. The first environmental criterion aims to reactivate the Mahmoudiah Canal, by retrofitting it and transforming its banks into a green urban promenade, a pedestrian-friendly waterfront stroll that will connect to the new tourist terminal in the renovated harbor of Alexandria, an almost one kilometer long walk. The eastern bank of the canal, where the commercial strip will be, is envisioned as the more public one, running along the new shops on the ground floors of factories. The western bank that lines the village is more private, with fewer access points to it, thus maintaining the privacy of locals in the village. Along the Mahmoudiah banks, pedestrian and bike lanes are introduced, and water activities are provisioned such as a leisurely tranport. The banks of the canal have transformed into an urban park that will need constant maintenance, opening up employment opportunities for locals who can live and work near-by.

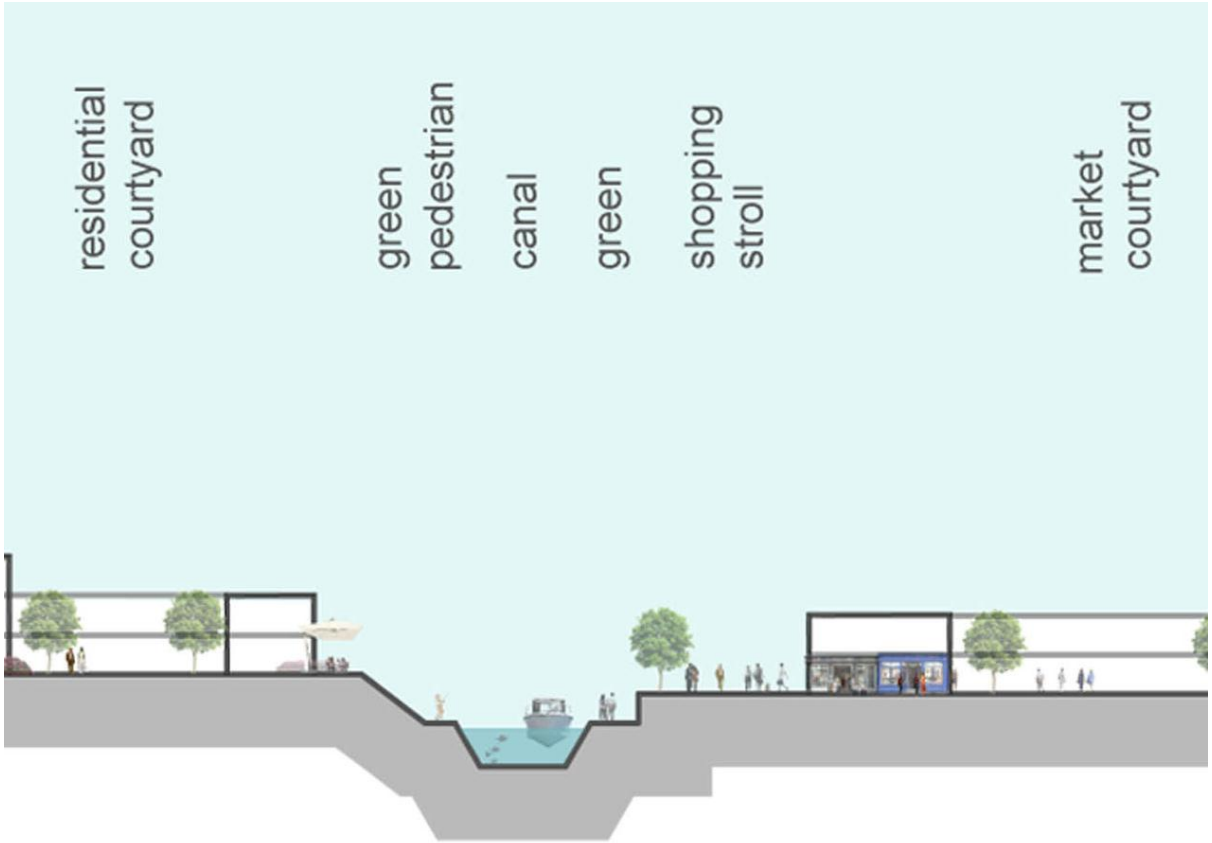


Figure 5.12: Transversal section across the Mahmoudiah Canal

Figure 5.13: Greening strategy: light green for public access, dark green for semi-public access

B. Revisited Urban Design Intervention

The revisited scheme of Minet el Bassal is inspired by the strategies, design decisions, and lessons learnt from the literature review and case studies on post-industrial landscapes. Based on the findings of the literature review as well as a comparative assessment of the case studies summarized in the matrix, the alarming conclusion was reached, pointing that the initial proposal for Minet el Bassal could actually not be entirely sustainable, the biggest risk being gentrification and displacement of the existing social layer. The reasons for that in specific are: 1) First and in retrospect, the morphing of "all" factories into accommodating open central spaces could be economically sustainable in terms of construction, however such a large-scale spatial transformation cannot be conducted by public intervention solely. Owners are different, and although some factories are governmentally owned, some are still private. In addition, such a scheme attracts visitors from beyond, putting the site at the mercy of market dynamics and at the risk of gentrification., 2) second, the large-scale cultural layer at the frontage of the site, visually linking to the tourist harbor, in addition to attracting international attention, and third 3) all the above coupled with the lack of community services and opportunities to empower the local residents defeats the social sustainability pillars and creates tension between economic and environmental upgrade on one hand and social equity on the other.

In addition, the important aspect of 'scale' had not been tackled in the initial scheme. In all three cases studies of Barcelona, Marseille and Cairo, the different scales of intervention were clearly outlined and factored into the process of design and construction accordingly. The main scales that emerged were that of the neighborhood, district, national and international scales. In the initial proposal of Minet el Bassal, the

scale of intervention was not clearly outlined. Following critical distance from the project for over a year, the initial design intervention is revisited and critically assessed in line with the theoretical findings and the comparative case studies of Barcelona, Marseille and Cairo. The updated scheme integrates the principles extracted from the theory chapter.

This thesis has been much inspired by the case studies of Cairo and Barcelona. In Cairo, the retrofitting of a large brownfield site catalyzed near-by socio-economic growth. In the case of Barcelona, upgrading and creating small scale public spaces before implementing large strategic programs also slowly changed the tainted image of the dilapidated industrial district, created incentives for surrounding economic investment and encouraged socio-economic development. In Marseille, retrofitting the river banks as an ecological infrastructure encouraged economic incentives around it, fostered social interaction along its banks and also transformed the stained impression of Marseille as a haven for crime, all through adopting a sustainable approach. In the case of Minet el Basal, phasing, or spacing and scale are two important elements to consider in order to avoid the displacement of the existing social infrastructure while upgrading the area.

As the pillars of sustainability overlap, and in order to achieve a balance between sustainable urban developments while responding to the thesis question, the revisited design scheme is restructured according to a phasing plan. There are three levels of intervention phased through time:

1. *Phase1*

The first phase includes the upgrading of the physical infrastructure of the site and is divided into three chronological sub-phases.

Sub-phase 1.1:

1) Retrofits the Mahmoudiah canal. [Environment]

Sub-phase 1.2:

2) Upgrades the street network and connects to the system of public transport, [Infrastructure]

3) Improves existing as well as creates new civic spaces [Public Spaces]

Sub-phase 1.3:

1) Adaptive re-use of six selected industrial buildings strategically placed on the outskirts of the site into community-based projects & utilities [2 schools, 1 hospital, 1 police station, 1 vocational training workshop, and 1 historic & cultural center] [Civic Spaces]

This first phase of urban interventions focuses on community-based services, both equally needed by current inhabitants and by future demands, and is less likely to lead to gentrification. Phase 1 insists on beginning with retrofitting the Mahmoudiah canal, the environmental criteria of sustainability, for the following reasons:

- Effective waste water management improves water quality, removes waste water loads, saves rain water, recycles water, can be used for agricultural irrigation, and lessens pollution
- A clean, unpolluted and safe canal with accessible green banks attracts people and creates a public park for the city along canal waters

- As the canal belongs to the entire city of Alexandria (and beyond), thus retrofitting it will positively impact the whole city and will not only be limited to ameliorating public and health life within Minet el Bassal
- Finally, effective wastewater management coupled with a minimal access & maintenance fee for the canal banks (Al Azhar park) generates financial revenue that can be re-invested by the city of Alexandria in its poorest neighborhoods. The park also creates employment opportunities.

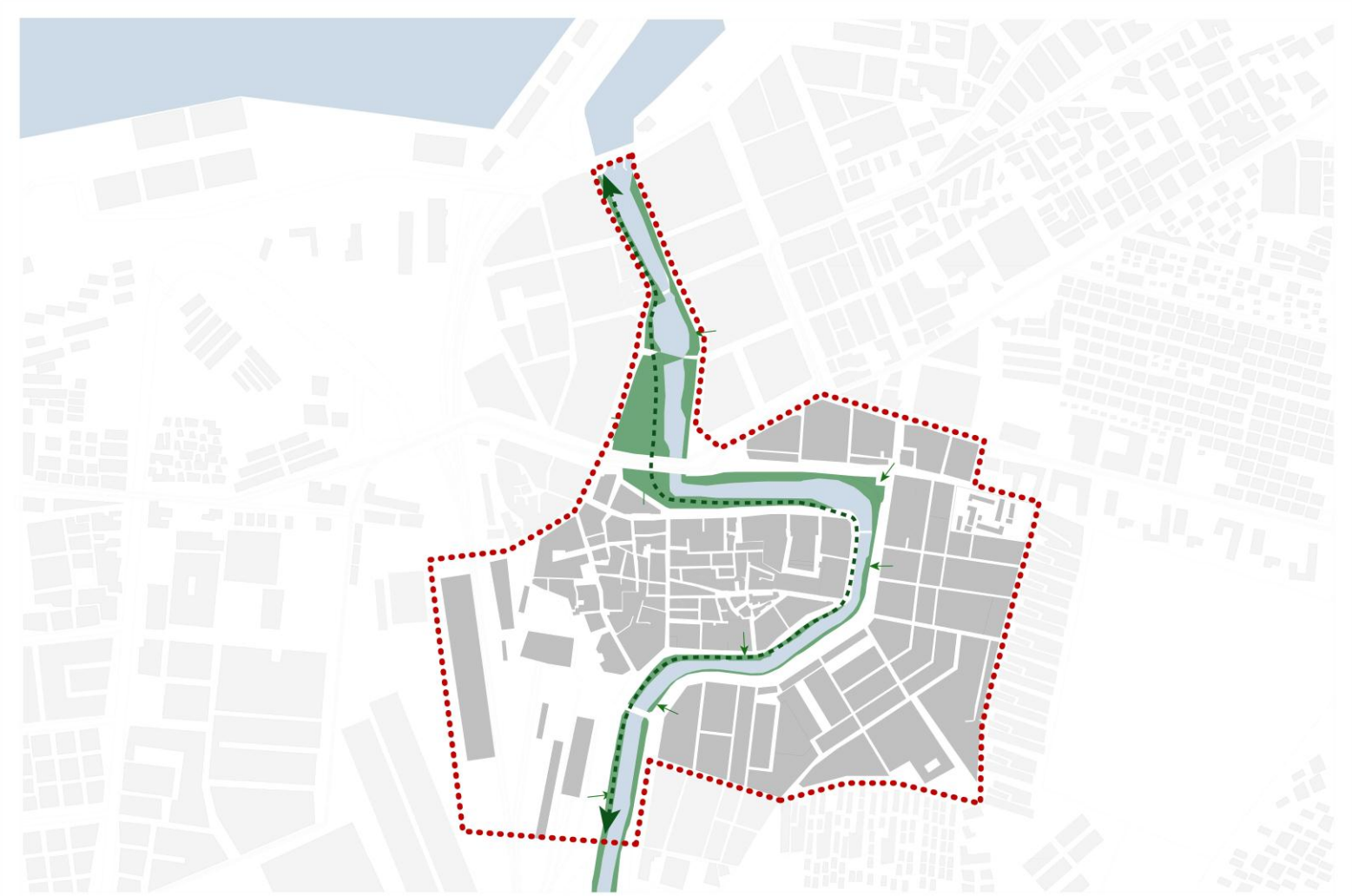


Figure 5.14: Mahmoudiah canal retrofitted

Sub-phase 1.2 aims to supply the area with adequate channels of accessibility from and to the city center by upgrading the street network, and with numerous small-scale public spaces of quality, it strives to ameliorate neighborhood public life for the residents of Minet el Bassal. In the revisited scheme, each empty spot that is not a building nor belongs to the street network is scouted out, mapped and envisioned as a green space. Each of these green spaces can hold either a permanent position, if it belongs to the city of Alexandria, or a temporary landuse position as a public green space while it awaits its next life cycle. In addition to the originally scouted out public squares in the initial intervention, [playground, mosque square, site entrance square, market square, square for administrative buildings] adding more small-scale spaces creates diversity and opportunity in the public arena choices (reference: Barcelona case study on small-scale neighborhood squares). One newly added and central green space is In addition to upgrading the infrastructure and greening the street network as well as capitalizing on pedestrian walkways, creating a tram and bus stop along the main street [Kobar et-Tareekh] provides a direct connection between Minet el Bassal and the city's transportation network.

Figure 5.15: Location of proposed public spaces in existing condition

Sub-phase 1.3 focuses on the adaptive re-use of the six selected industrial buildings into civic spaces that are much needed by the local residents. The 2 schools are placed at opposite ends of the site, offering proximity to residents living throughout the site. The public hospital is placed near the train station for quick accessibility from within or outside the site, the police station is placed on the main road, visibly present, demonstrating authority and presence, and quickly connecting to the city center. The vocational training workshop is located at the heart of the inner core near the residents and their existing shops, and the cultural center is the transformation of one of the cotton factories into a monument about cotton-making, with the cotton balling and pressing machines remaining on display, commemorating the areas historical importance. Placing most civic centers at the outer edge of the site provides 1) a protective edge from too much visibility of the central core, 2) allows people from other neighborhoods to join.

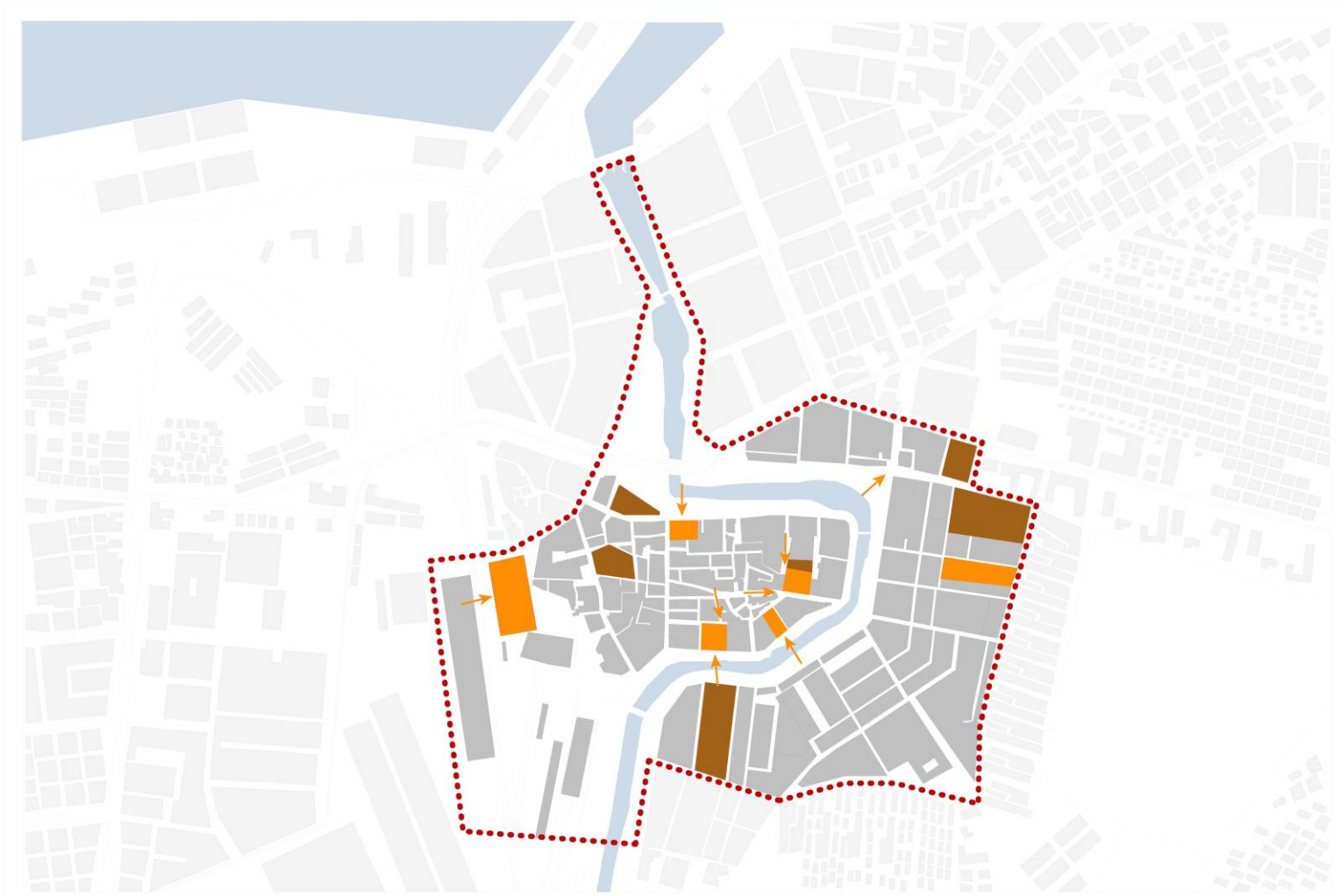


Figure 5.16: Upgraded community buildings and services

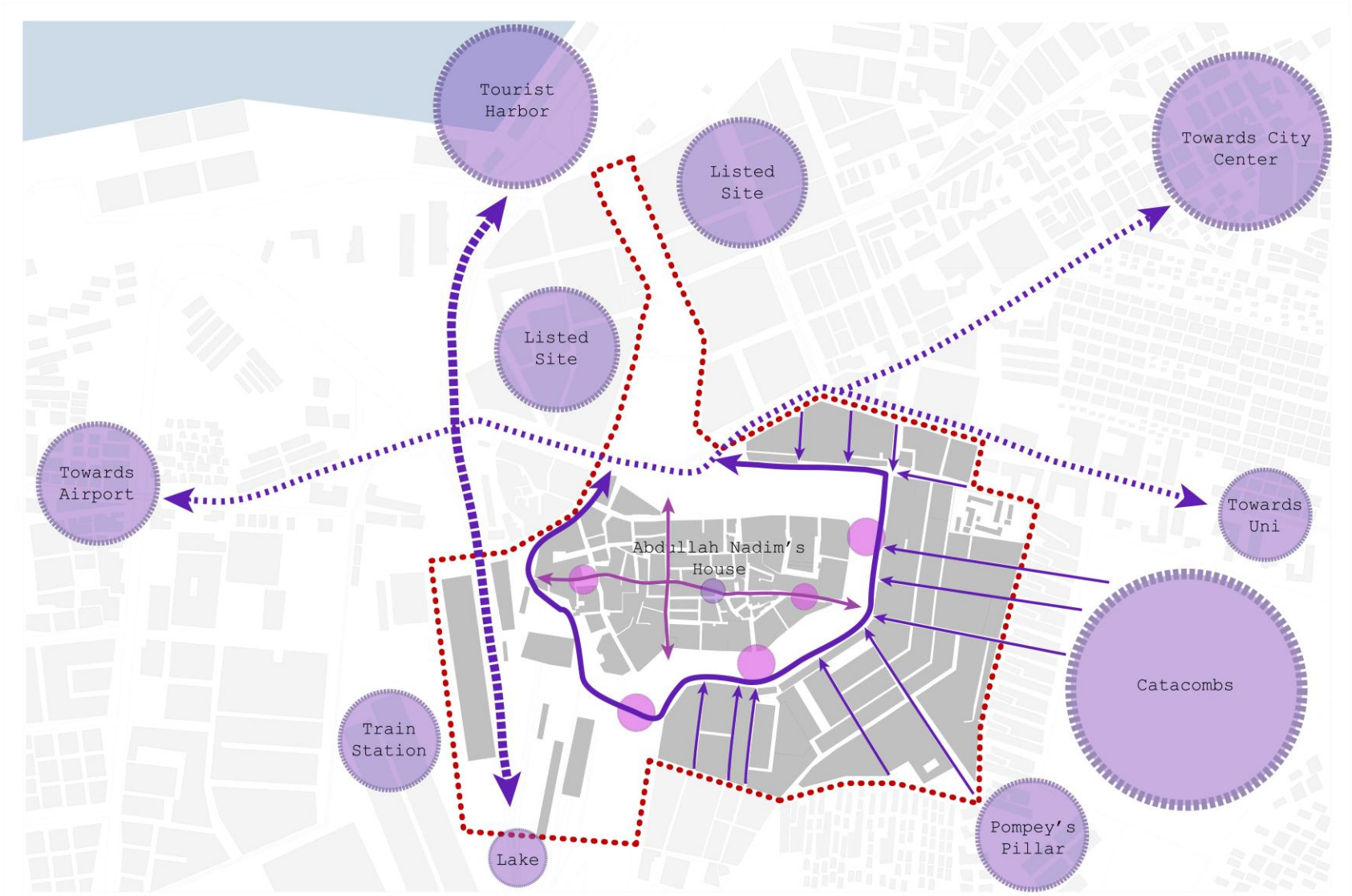


Figure 5.17: Upgraded infrastructural network and connection to the city public transport system

2. *Phase 2*

The second phase responds to the affordable housing shortage in Minet el Basal, and this phase is directly inspired by the case study of Cairo and more specifically by the phase that rehabilitated the dilapidated neighborhood of Darb el Ahmar. The most significant lessons learnt in the Cairo case study is that, not only was the project achieved and the neighborhood rehabilitated without displacing the local population which was deemed to be one of the poorest in the city, the residents were also part of the decision-making and were involved in a participatory approach in the reconstruction, were empowered and encouraged to learn necessary skills that aided them in reconstructing their own homes, as well as helped them find future employment (including many women), and allowed them to take on micro-credits to kick start new projects.

With the conclusion of phase 2, public intervention on the site ends. The retrofitting of the canal and its now unpolluted banks, the upgraded physical infrastructure, the accessible roads and connecting transport networks, the enhanced public squares with diverse landuses, and the supporting community, civic spaces, and new social houses all together lay the ground for future economic incentives.

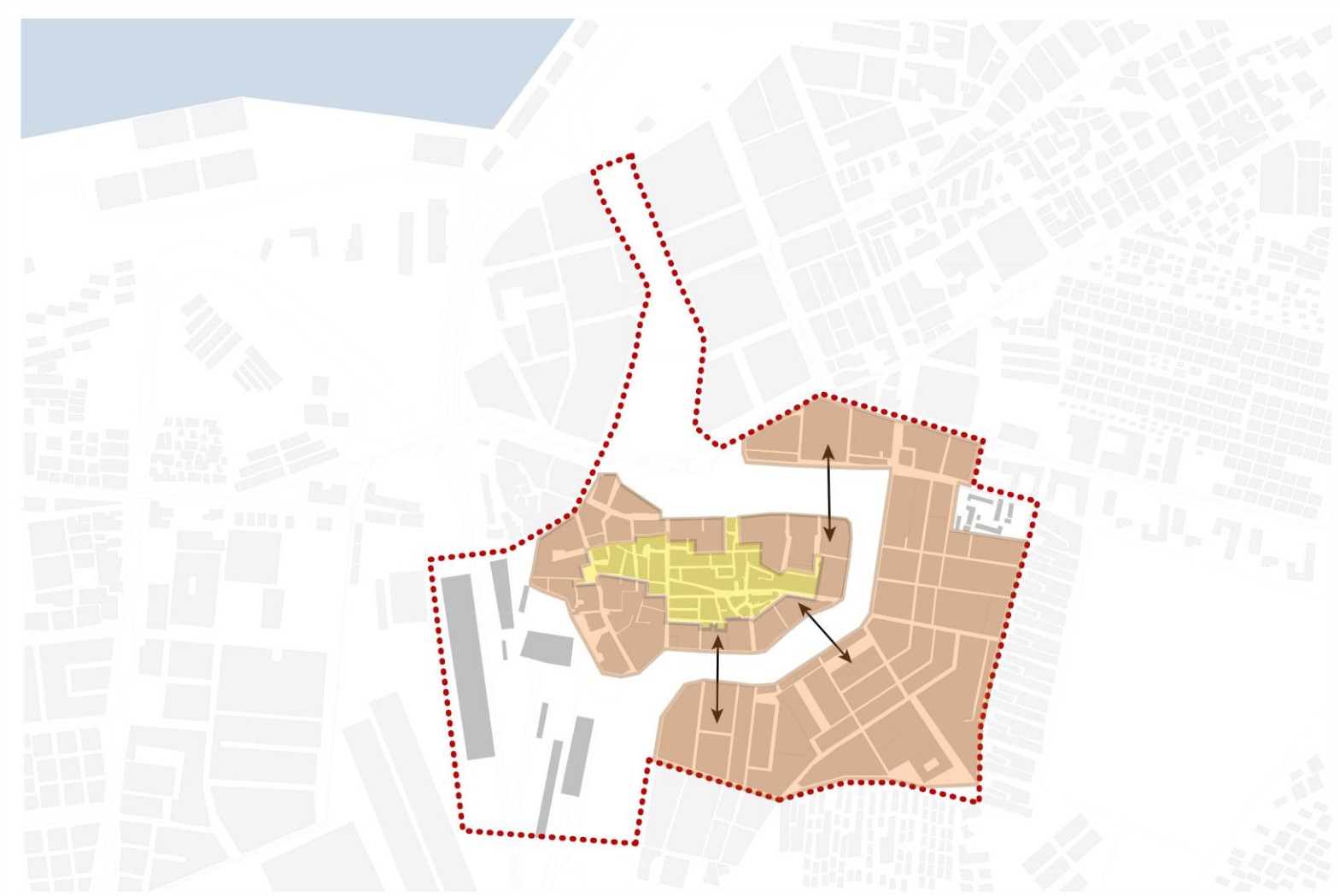


Figure 5.18: Reclaiming industrial townscape and adaptive re-use of factories into social housing

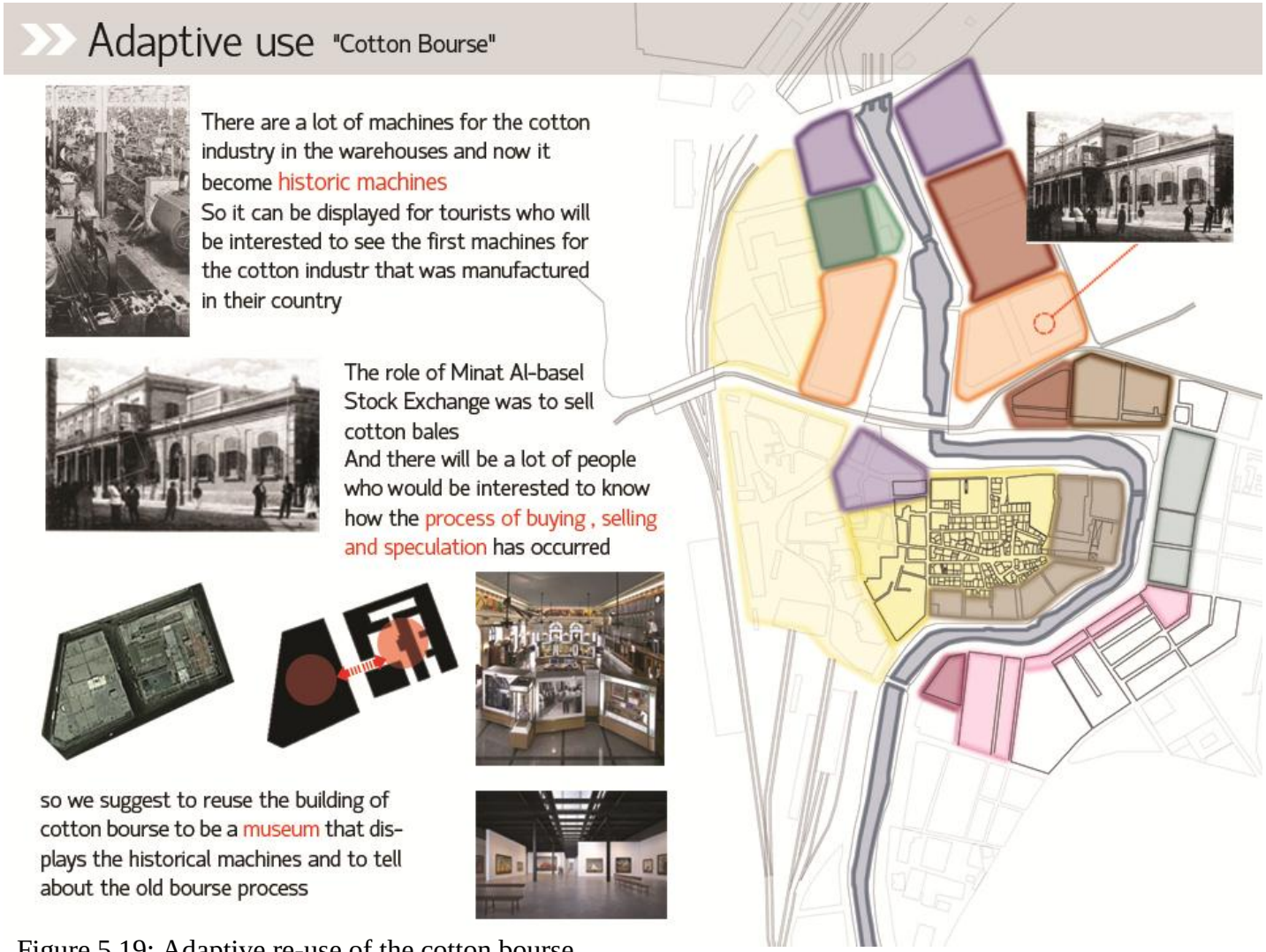


Figure 5.19: Adaptive re-use of the cotton bourse

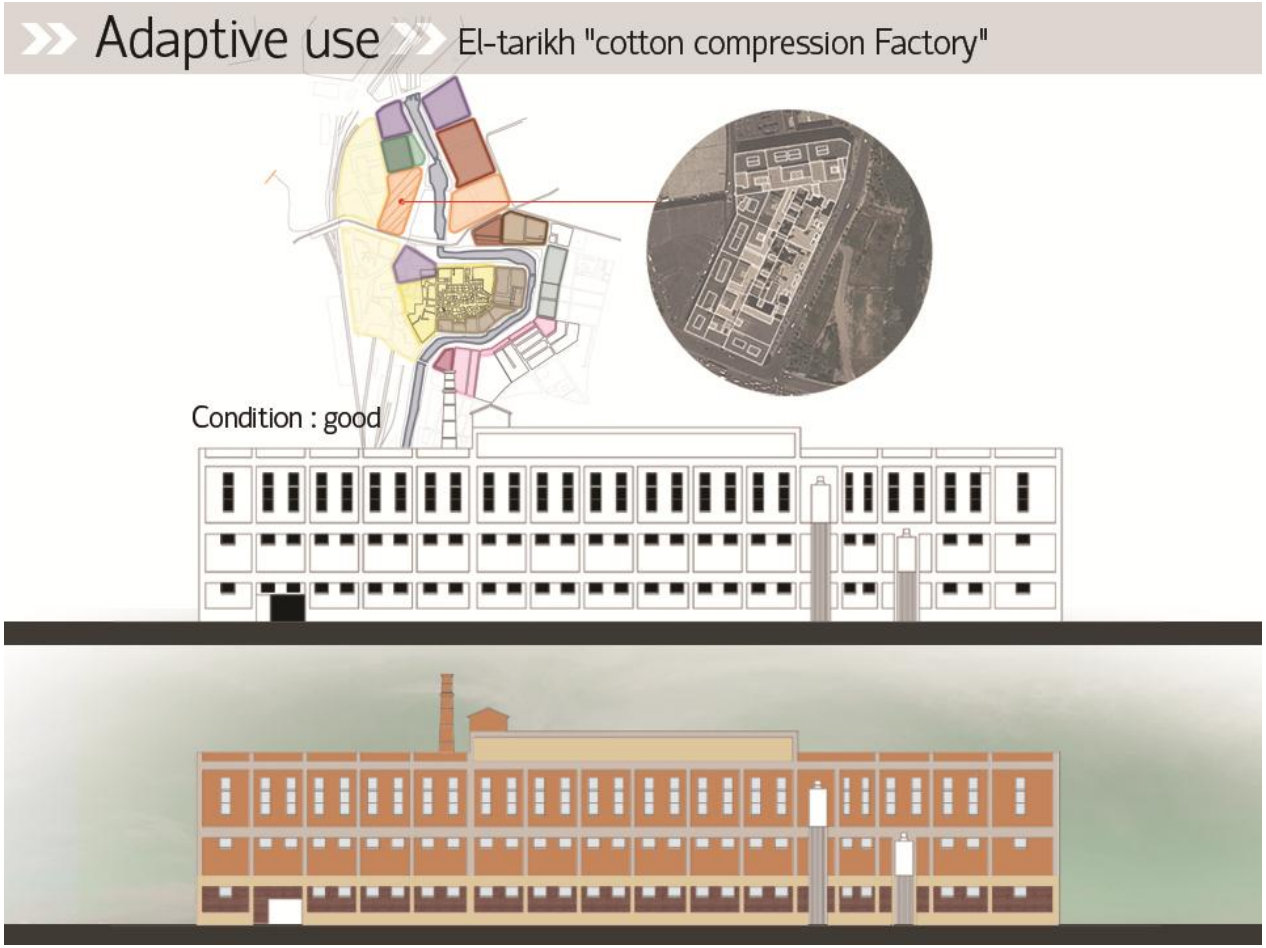


Figure 5.20: Adaptive re-use of the cotton compression factory

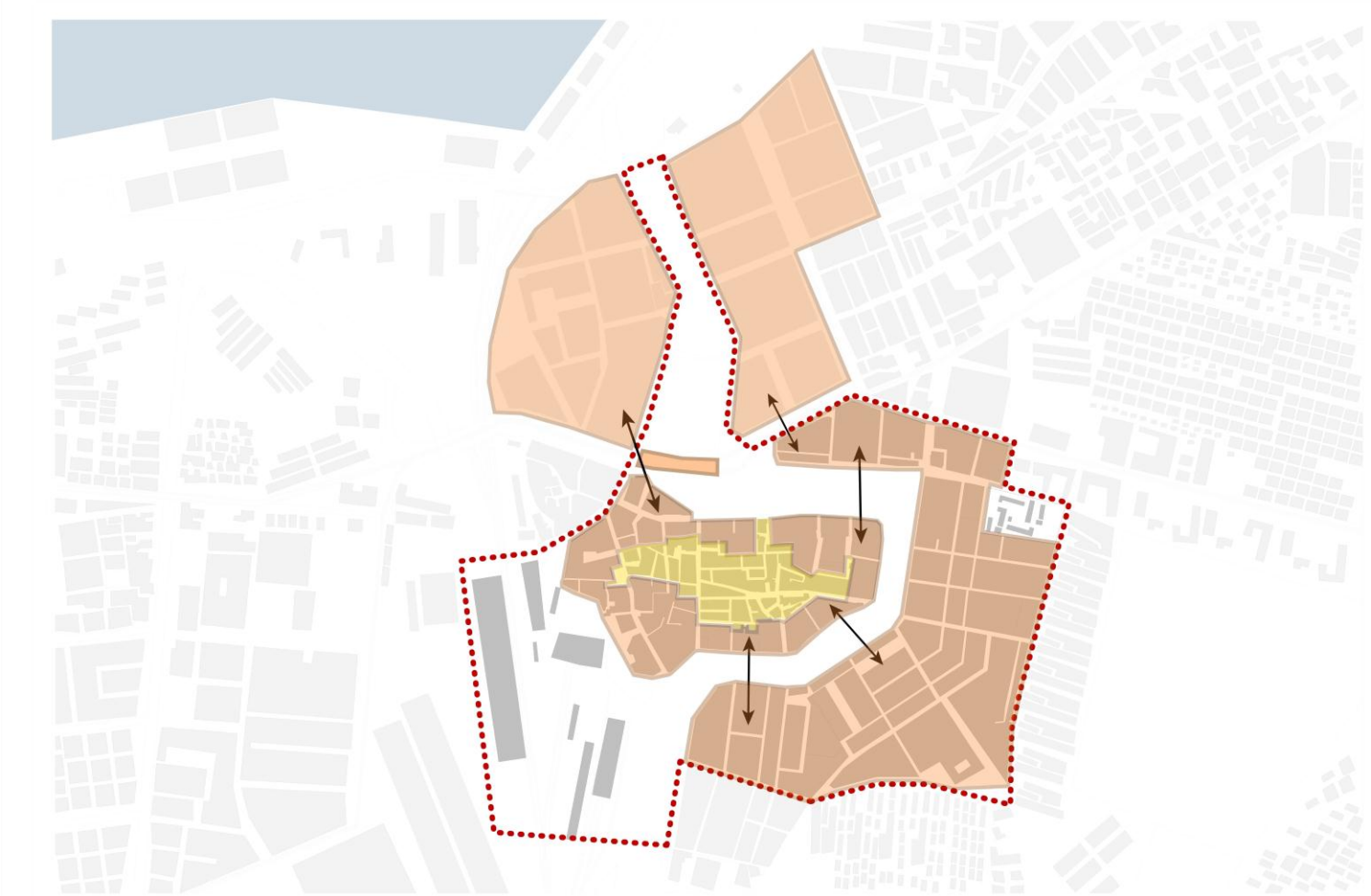


Figure 5.21: Adaptive re-use of factories within intervention boundary into social housing. Industrial townscape reclaimed and communicates with surrounding heritage listed industrial buildings.

3. *Legislative Framework of Phase 1 and Phase 2*

The first two phases of this counter-proposal are envisioned to be financed by the governorate of Alexandria and other international donor agencies coupled with local agencies. Options include the Agha Khan Trust for culture which has previously shown an involvement in the country's heritage preservation and welfare, the World Bank that has also invested in assessing Alexandria's urban status in 2007, and the Swiss Federal Bank which was also an international donor for Darb el Ahmar project. As the neighboring area is already listed as heritage, the Egyptian supreme council of antiquities in collaboration with the governorate of Alexandria is envisioned to contribute to completing at least phase 1. Phase 2 can also be funded from the revenues generated by the effective wastewater management.

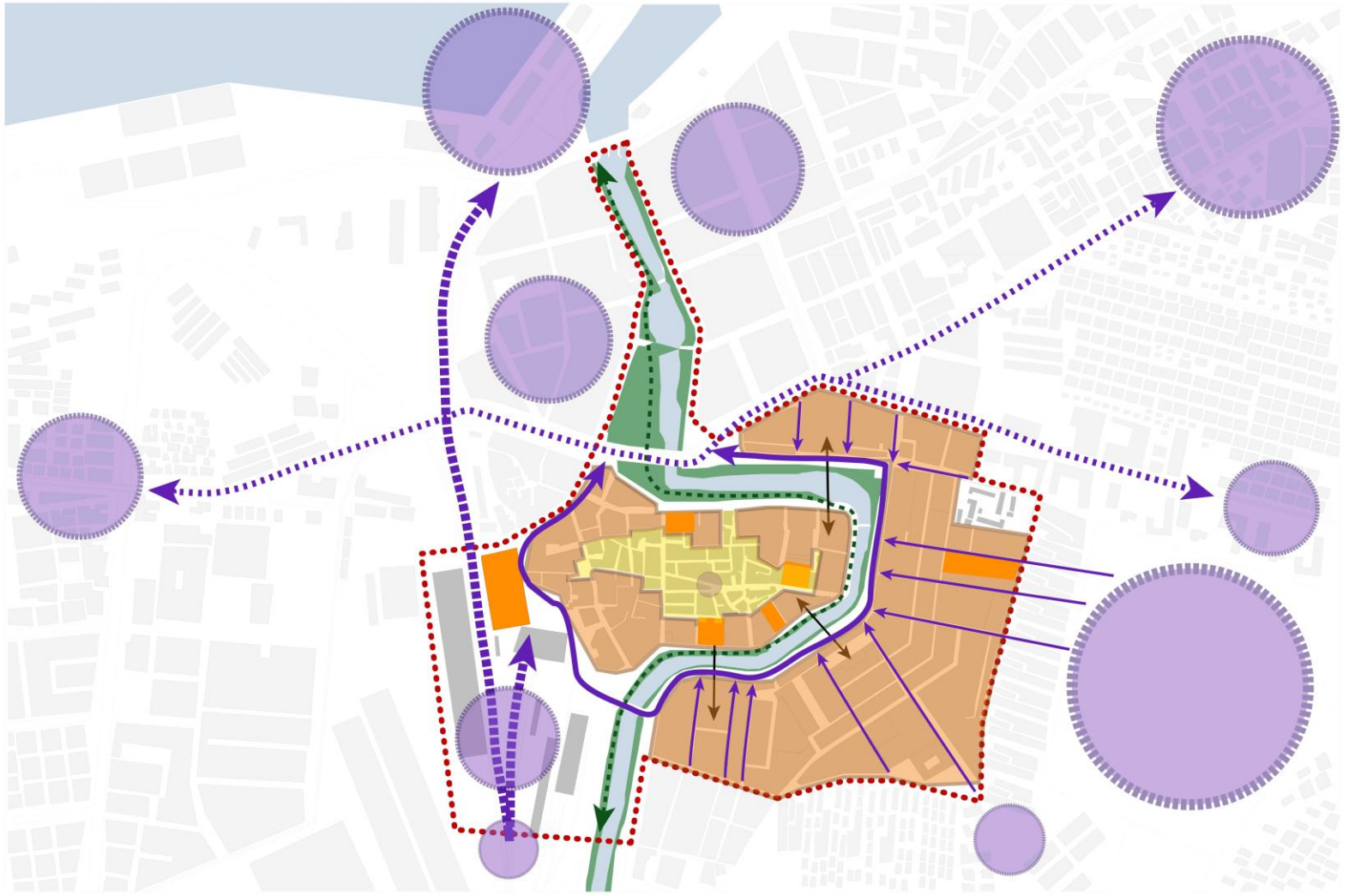


Figure 5.22: Final phasing diagram with all phases included

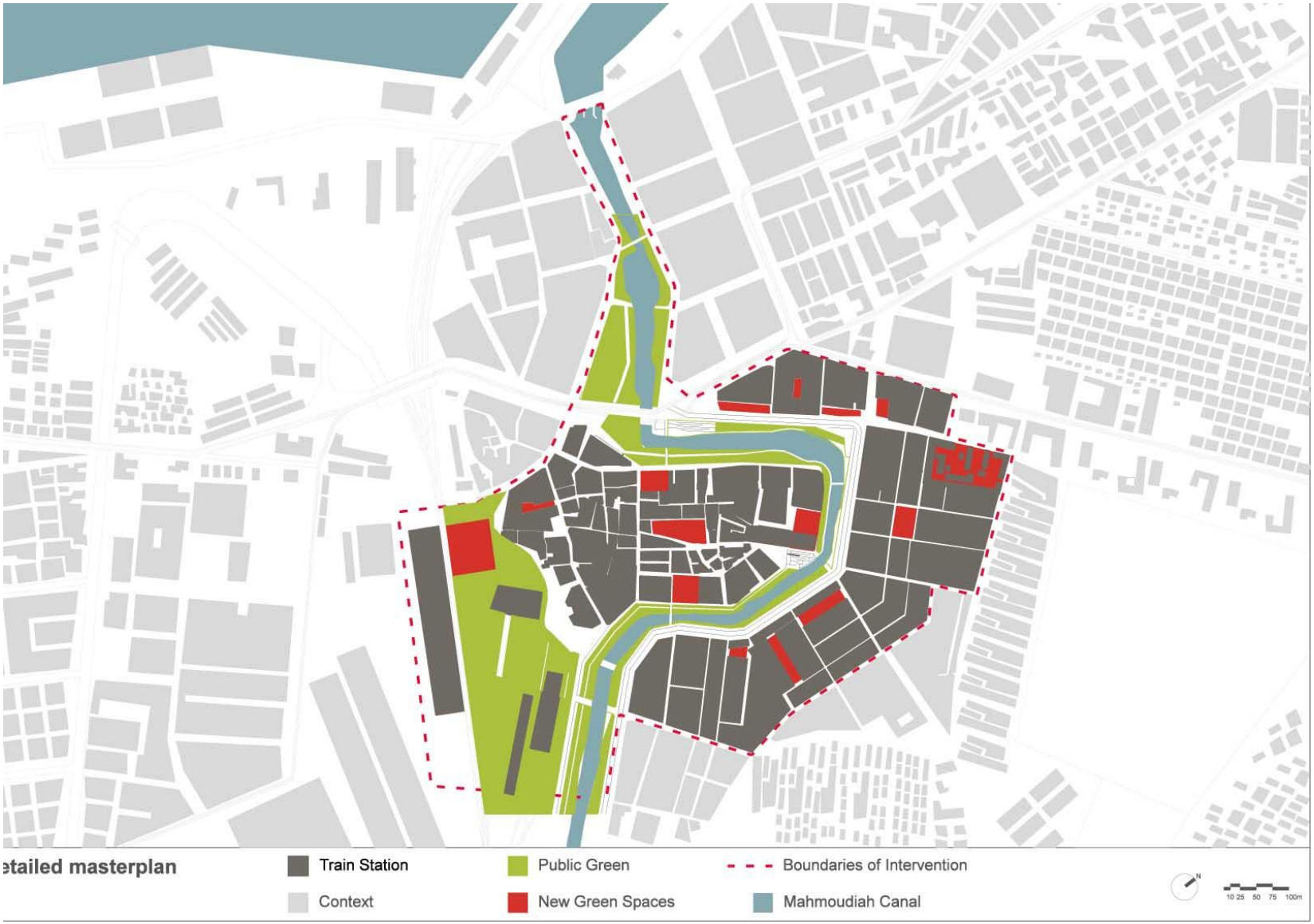


Figure 5.23: Locating new, small-scale public spaces in counter-proposal

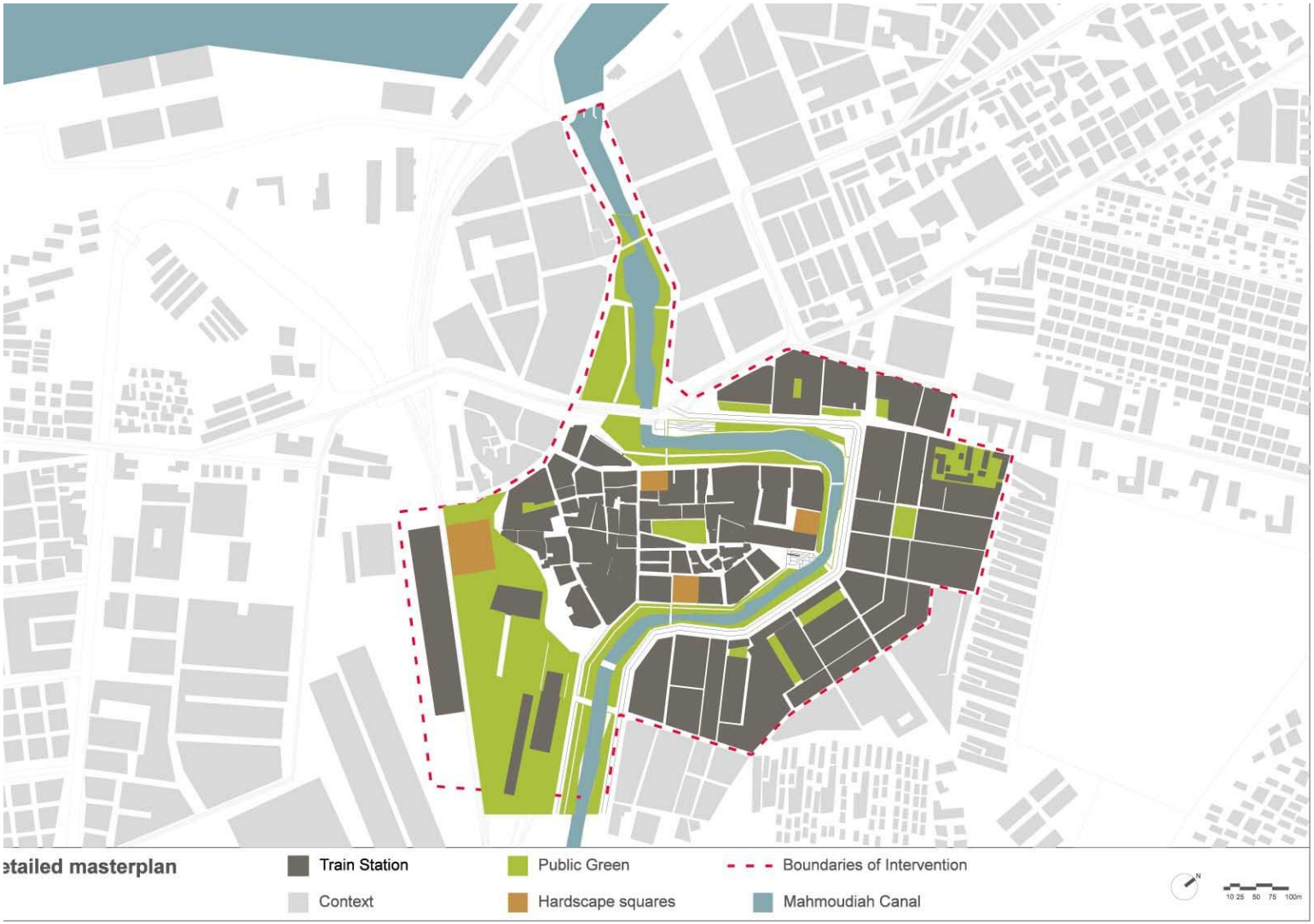


Figure 5.24: Greening versus hardscape squares of new public spaces in counter-proposal

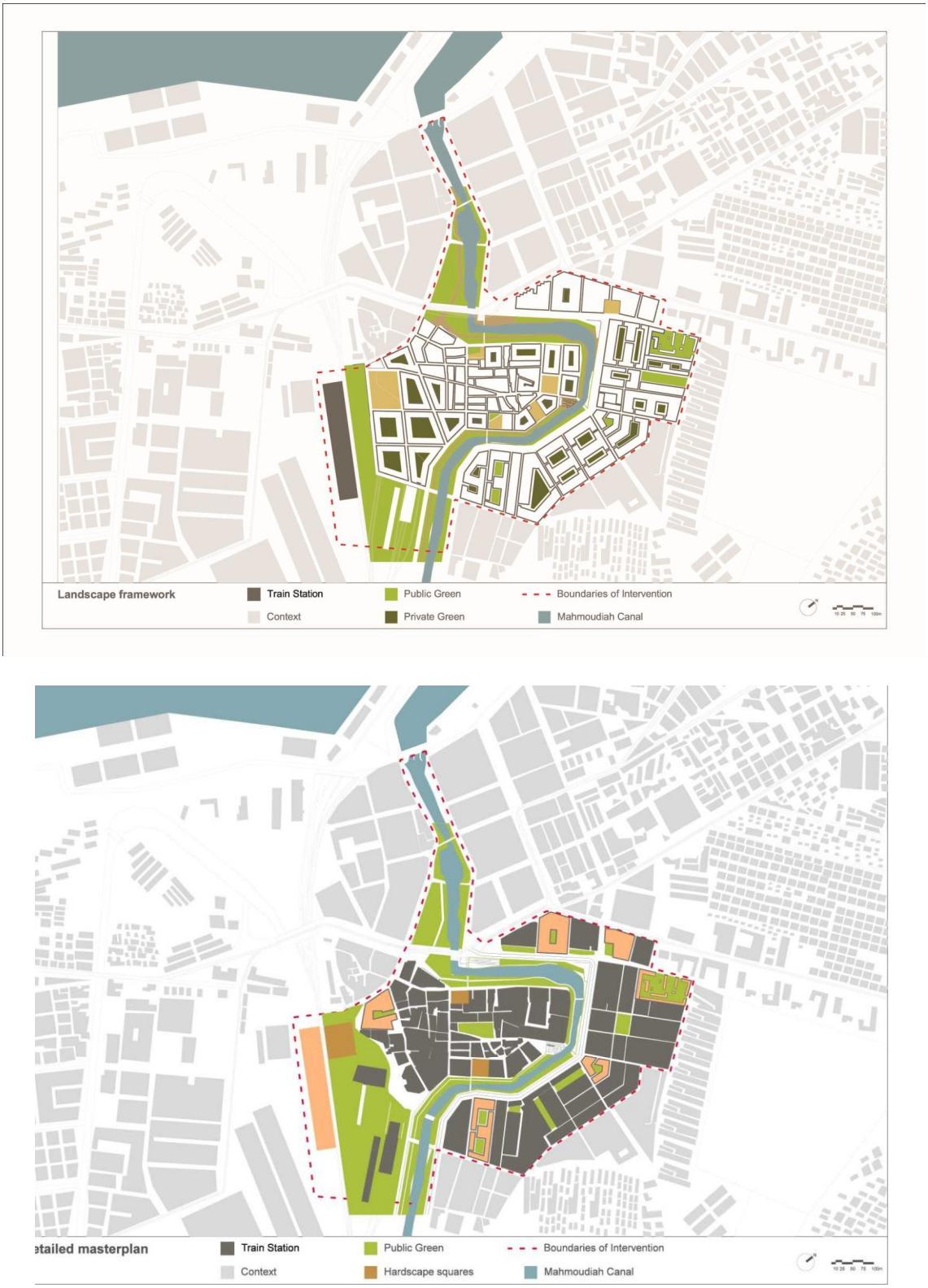


Figure 5.25: Comparison between initial proposal (above) and revisited counter-proposal (below)

The following images provide a zoomed-in view on the two different character areas: 1) along the canal, and 2) between the factories.

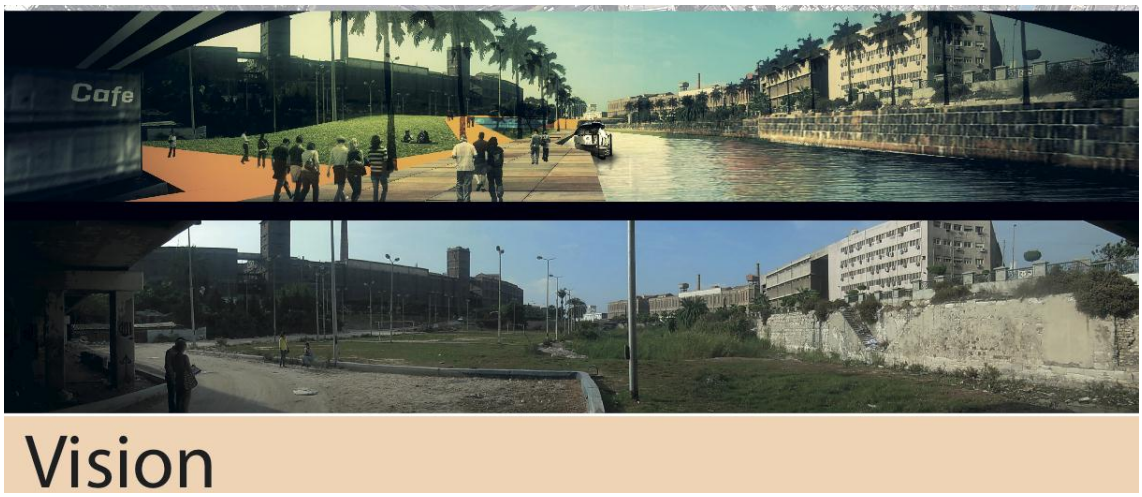


Figure 5.26: Before & after representation in character area along the canal

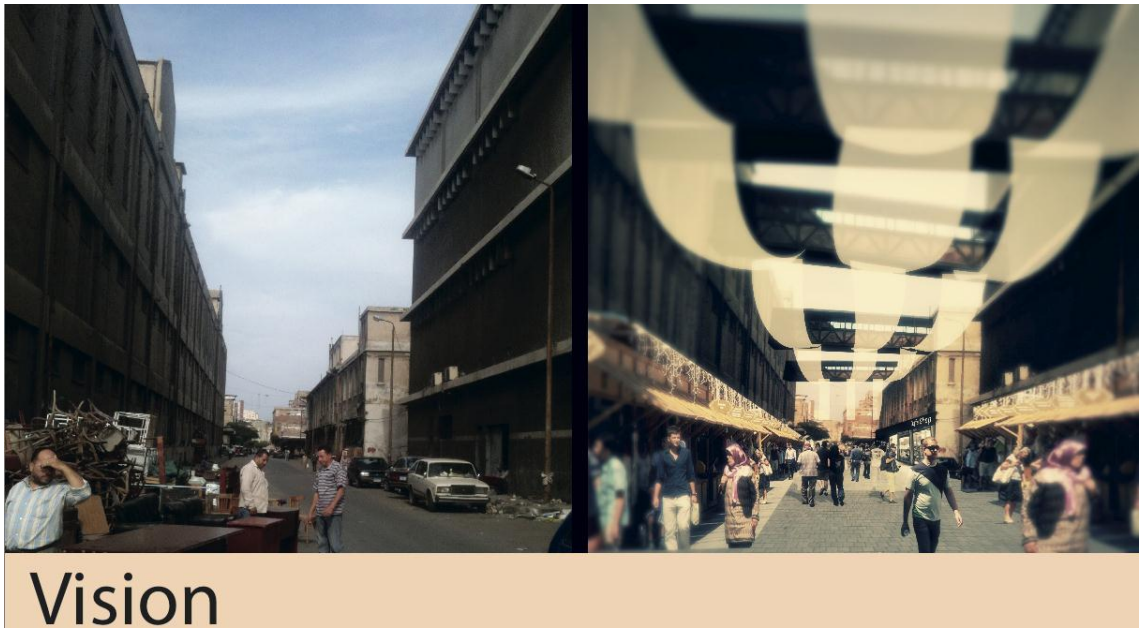


Figure 5.27: Before & after representation in character area between the factories

VI. CONCLUSION

A. Summary

This study has shown that the sustainable urban revitalization of post-industrial landscapes is multifaceted. There are no one-size fits all solution to the reactivation of abandoned port districts. As a matter of fact, the comparative case studies have revealed that creative urban design interventions were born out of the need to adapt past consequences to new contexts. At the same time, urban design provides only one instrument to sustainably revitalize a site, as change of perception and acceptance regarding the space has to be equally developed over time.

In order to better understand general strategies and patterns for effective urban interventions in post-industrial landscapes, the focus of this study has been on Minet el Bassal port-district of Alexandria. First, the thesis looked at the rich fundus of experience and existing theory in the literature on urban revitalization. Second, the study has reflected on an initial urban design intervention for Minet el Basal and third, proposed further design solutions for the area taking into consideration best practices and lessons learnt of comparative case studies.

In essence, this thesis concludes that a holistic and multilayered approach can successfully redefine Minet el Basal through interdisciplinary action that fosters multifunctional and long-term solutions based on economic, social, and environmental objectives. Concrete steps and ideas regarding the sustainable urban revitalization of Minet el Basal have been comprehensively presented in this study.

B. Lessons Learnt

The literature on sustainability argues the need to consider post-industrial landscapes as a resource, and observe their reclamation a proficient tool that contributes to viable development. In fact, leftover sites offer a maintainable opportunity in their re-use, redevelopment and reintegration into the surrounding community, as opposed to the new consumption of undeveloped land.

1. *Multiple Scales of Urban Interventions*

A key lesson learnt of this study concerns the need to reclaim spaces on multiple scales in order to be sustainable. The revised design intervention for example, now introduces larger national projects (e.g. turning the cotton factory into a cotton museum, transforming the heritage listed bank building into a visitor site) and proposes district elements (e.g. linking the existing small businesses in Minet el Bassal to other value chains within the city of Alexandria through micro-financing).

Regarding the social factor of sustainability, comparative cases show that the reclamation of residential districts needs to be complemented with the development of small neighborhood pockets (e.g. in Barcelona and Marseille pleasant and attractive neighbor squares were created as magnets for social interaction, apart from revitalizing larger residential areas). In addition, there needs to be social interventions introducing urban arenas on a national scale (e.g. Olympic stadium and sea front in Barcelona). This was taken into consideration for the updated urban design intervention for Minet el Bassal, which now uses a different urban language to treat neighborhood pockets versus large public squares (e.g. introduction of small civic pockets were created in the residential village to better the quality of life for the local community; in contrast large

social settings were introduced on the outskirts of the site to attract tourists and visitors while preventing a disturbance of the local residential areas).

On the environmental level, the case studies have shown that it is necessary to address the issue of pollution and waste management, and to reuse existing environmental resources (e.g. the brownfield site in Cairo was transformed into a park; the banks of the Marseille river were transformed into an urban park). Making use of this comparative experience for Minet el Bassal, the revised design proposal now adds those missing layers for urban environmental interventions on different scales (e.g. contrasting the revitalized river of the Mahmoudiah Canal with neighborhood-scale green pockets throughout the central core and in the former factory area).

2. ***Phasing Urban Interventions***

Another key lessons learnt concerns the phasing of urban interventions in order to sustainably revitalize abandoned post-industrial landscapes. The literature review and the examined comparative case studies have highlighted that sequencing is a crucial aspect in bringing revitalization projects to success (e.g. in the case of Barcelona, small public squares were addressed first, followed by large scale strategic interventions). It has been proven to be efficient to start with catalyzing small interventions that culminate in major urban design changes that slowly start to transform the tainted face of an unwelcoming area into a new attractive destination.

Accordingly, in the case of Minet el Bassal, a phasing strategy would start with implementing smaller urban civic spaces followed by larger projects (e.g. urban balconies at the Mahmoudiah Canal first, before rehabilitating the former cotton factory museum; activating the micro-credit financing program first to give locals a jumpstart

into bettering their economic situation, before bringing in larger businesses; greening the neighborhood site first, before fostering an environmental urban design change on a city scale).

All those considerations and lessons learnt have been initially left out in the intuitively driven design studio, but are now incorporated in the revised urban design proposal.

C. Open Questions

There are a few open questions emerging from this thesis, which invite further in-depth research for other studies. Among others, an open question remains regarding the unique situation of port-districts. On one side, they provide an immense potential for development and bear opportunities given their access to the sea, trade and tourism. On the other side, many port areas worldwide have been deteriorated facing their abandonment following global change in industry and trade. This shows that the concept of sustainability is fragile, as urban circumstances discontinue and geographical urban advantages can easily become urban burdens. The question is how this factor of time can be practically and conceptually considered in urban design processes, as it provides an 'expiry date' for urban designs putting the idea of sustainability into perspective.

Another open question exists about how to strategize intra-city 'friendly urban competition' between districts, which could enable underdeveloped parts to mutually increase sustainable development. In the case of Minet el Bassal, an urban revitalization could eventually impact, encourage, and spill-over to other districts of Alexandria. How this snow-ball effect could be utilized effectively could be further explored in other studies.

A third open question remains concerning the realism about creating acceptance by the local community of any urban design intervention. Although urban design processes are regularly envisioned to participatory and aim at keeping the social structure alive, it is challenging to ensure that the local community is actually able to remain in the revitalized district and full-heartedly accepts the new urban scheme. The question is whether gentrification is lastly unavoidable, at least partly, in order to ensure

a lasting re-blossoming of abandoned areas beyond the injection of ideal urban changes. These three open questions could be entry-points for future research. And finally, as Carmona mentioned: "It is worth re-stressing the holistic nature of urban design. In any design process, there is a danger of narrowly prioritizing a particular dimension - aesthetic, functional, technical or economic - thus isolating it from its context and from its contribution to the greater whole. Such an approach may appropriately emphasize one aspect of design to the probable detriment of others such as integration of the development into its local context (Carmona, M. 2002)."

D. Final Remarks

Two centuries ago, Mohamamad Ali Pasha saw a worldwide value in the cotton strain and as a result of harvesting it Alexandria became a gateway for colonial investors. When the cotton industry was flourishing in the 19th century, no one was probably anticipating that the most economically rich district and strongest urban magnet across the Mediterranean would be one day one of the poorest and most abandoned places in Alexandria. All this reemphasizes that the proposed urban intervention of this thesis needs to be seen in the context of time.

The comparative case studies in this thesis have shown that limits of transferability of urban solutions arise after a certain concept has been applied in a different context. Often, these limits cannot be fully anticipated due to the fact that, no matter how comparable, different sites simply have different constraints. As a result, urban design visions need to be flexible and cannot be set in stone.

Eventually, history and present development shape urban spaces, as the presented case study in this thesis on the Minet el Bassal district has exemplified. The urban revitalization of abandoned post-industrial landscapes means to re-nurture, re-inject and re-invent the value and benefits an urban space. This is to be done with care and precision in order to last while approaching economic, social and environmental challenges and opportunities.

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	A	B	C	D	E	F	G
1	**Matrix of Generic Urban Design Issues & Specific Site Issues**	**Existing Condition of Minet el Basal [SWOT]**	**Initial Design Intervention**	**Case Study: @ 22 Barcelona**	**Case Study: Cité Euroméditerranée de Marseille**	**Case Study: Azhar Park, Ayyubid wall & Darb el Ahmar in Cairo**	**Revisited Design Intervention**
2	**1. Identity: space morphology, landuse, and townscape**	1. Abandoned industrial landscape 2. Landuse: halted industrial activities 3. Decaying image in three character areas: industrial area, residential core, along canal banks	1. Enhacing industrial identity on all scales 2. Morphing industrial factories to create open spaces 3. Adapting factories to new residential landuses 4. Upgrading townscape identity & legibility: landmarks, pathways, nodes, edges & districts	1. Sustainable reclamation on multiple scales + strong cultural layer 2. Retaining & upgrading industrial buildings to new landuses 3. Symbolic landmark: Caixa Forum **=> Strong focus on culture and image on an international scale lead to => Gentrification**	1. Sustainable reclamation of brownfields. on multiple scales 2. Introducing a strong cultural layer 3. Symbolic industrial landmark: Le Silo **=> Strong focus on star-chitect image along port promenade lead to => Gentrification; balanced with strong social housing policy**	1. Sustainable reclamation of Azhar site 2. Socio-economic catalyst for Darb el Ahmar residents who are empowered & integrated in redevelopment 3.Reclaimed landmark: Ayyubid Wall **=> Strong focus on local empowerment => Economic, social and environmental reviltalization with no gentrification**	1. Sustainable reclamation of industrial site on neighborhood & district scales only: focus on spatial morphology & townscape 2.Reclaimed symbolic & historic landmark: Cotton Factory & Stock Exchange Building => Economic, social and environmental reviltalization on district level with no gentrification
3	**2. Environment: natural features & resources]**	1. Unused Mahmoudiah canal, polluted waters & canal banks	1. Retrofitting and upgrading canal banks & connecting to tourist harbor 2. Introducing pedestrian connections to the city & new tourist harbor	1.Retrofitting sea front for swiming 2. Greening of 114,000 m2 of land	1. Retrofitting Marseille river & greening its banks	1. Reclaiming Cairo's former waste mountain	1.Creating waste water management system: irrigation, cleansing from pollution + introducing new uses such as recreational transport 2. Greening strategy + pedestrian lanes
4	**3. Infrastructure: street network & transport lines**	1. Decaying physical infrastructure 2. Disconnectivity from surrounding 3. Social infrastructure poor, no public amenities such as hospitals or schools	1. Upgrade of physical infrastructure, reclaiming original street network 2. Introducing connectivity with surrounding tourist magnets 3. Upgraded physical infra envisioned to catalyze econ opportunities for social infra 4. Upgrading pedestrian network in harmony with vehicular network	1. Removing train tracks to access sea 2. Enhanced public transport 3. Upgraded & greened 35 km of streets	1. Enhanced accessibility to city centre from Paris via new direct TGV 2. Enhanced inner-city public transport 3. Upgraded & greened street network	1. Enhanced accessibility to & from park 2. Enhanced connectivity between Darb el Ahmar & Azhar park 3. Greening of street network	1. Upgrading & greening of street network 2. Enhacing connectivity within different parts of Minet el Bassal 3. Connecting to public transport system 4. Enhancing accessibility to canal front + reopening sea to public 5. Introducing workshops, training sessions + centers for existing social infra
5	**4. Civic & Public Space: public squares, civic buildings & community-spaces**	1. Lack of civic spaces 2. High density & lack of open spaces	1. Upgrading existing & creating public spaces 2. Creating semi-public spaces within factories.	1. Phase 1: regenerated small-scale public spaces first as socio-economic catalyst 2. Reclaimed forgotten inner courtyards within blocks 3. Introduced 220.000m² of new public facilities & spaces, & for social housing	1. Regenerated public spaces 2. Retroffiting banks of the Marseille canal i	1. biggest urban park in the middle east 2. Rehabilitating Ayyubid wall as cultural & civic monument	1. Different treatment between civic & open spaces 2. Network of public spaces linking neighborhood, district & city scale 3. Introducing public amenities: schools, hospital, police station, cultural centers 4. Introducing rent control + social housing
6	**5. Private Development: constrction funded by private investment**	1. Lack of private development	1. Attractive platform to catalyze private investment & development along canal & in central core	1.Mostly funded by Barcelona City Council, using 1992 Olympic games as leverage	1. Funded by Euroméditerranée Urban Development Agency, French Government, city of Marseille, Local & regional Authorities	1. Agha Khan Trust for Culture donated $ 3 million USD for a park in Cairo	1. Introducing public-private system to upgrade the district + generate revenue: Public for infra & Private for development 2. Upgraded area creates attractive platform for future private investment 3. Controls of private development

Sustainable Urban Revitalization of Post-Industrial Landscapes

The Case Study of: Minet el Bassal in Alexandria, Egypt

Maureen Abi Ghanem
Candidate for a Master in Urban Design

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I. Structure + Methodology

ANALYSIS OF MINET EL BASSAL => BASE FOR INITIAL DESIGN INTERVENTION

- Historic, political & geographic dynamics that led to emergence of Minet el Bassal as industrial district
- Existing Condition, Site Analysis & SWOT Assessment of Minet el Bassal => Initial Proposal
- Thesis Issues, approach, objectives & goals => Thesis Question

ANALYSIS OF LITERATURE REVIEW+CASE STUDIES=>BASE FOR REVISITED DESIGN INTERVENTION

- Dynamics behind emergence of Post-Industrial Landscapes
- Sustainability as a focal concept in urban revitalization studies
- Case Studies: Barcelona, Marseille, Cairo => Matrix

URBAN DESIGN INTERVENTION FOR MINET EL BASSAL

- Initial (studio)+ Revisited (theory) Urban Design Intervention => Comparison

CONCLUSION

- Opportunities & Challenges / Scenario Planning/ Open Questions => Final Remarks

Definition: Post-Industrial Landscapes

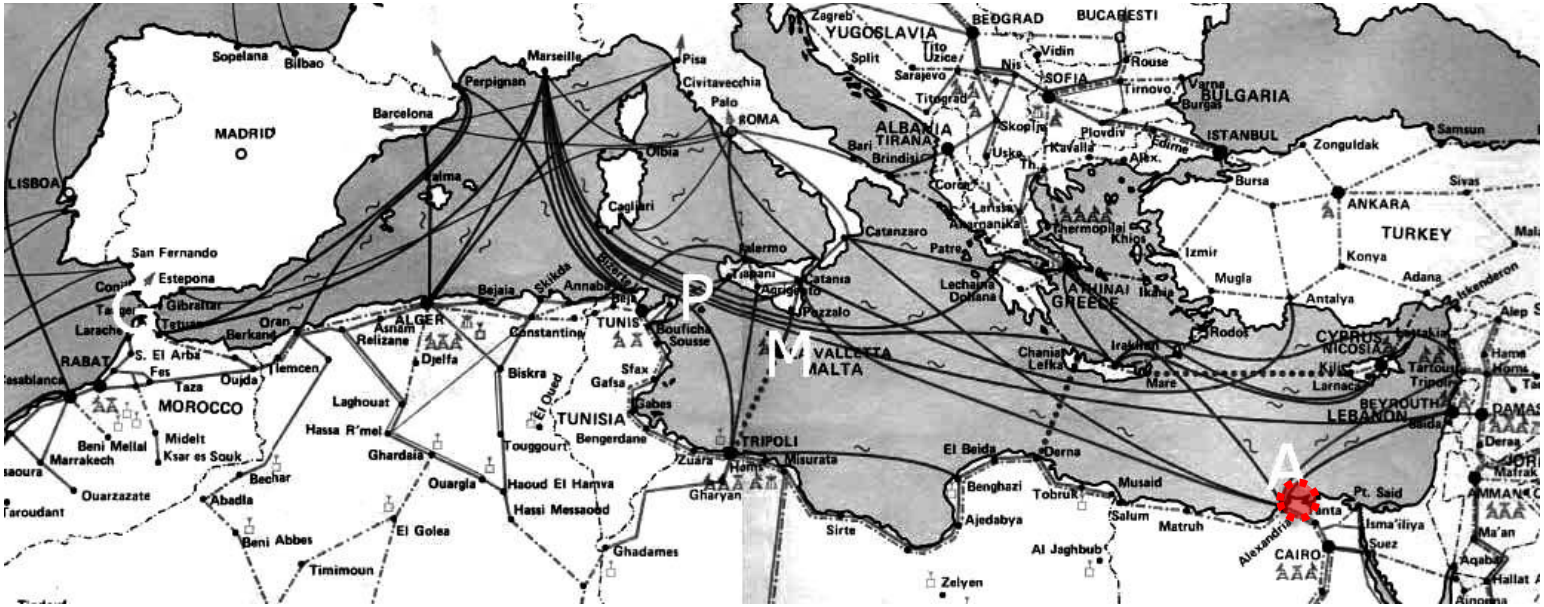
Franco. Borsi defines the industrial landscape as: **"the landscape resultant from a thoughtful and systematic activity of man in the natural or agricultural landscape with the aim of developing industrial activities"**, enabling the recognition of an entire terrain & its buildings as a single element (Borsi, F., 1975).

"Industrial Estate" as defined by U.N.: **"… a planned clustering of industrial enterprises with built-up factory accommodation and services …"**

The classification of a landscape as "industrial" implies a qualitative perception of a territory with its industrial infrastructure, **from a historic, programmatic and cultural perspective** (Tandy, 1979).

1. **Emergence of industrial landscapes rooted in Industrial Revolution**

- From hand production to automated manufacturing[1760 -1870].
- Need to find new consumptions markets. Developing Port-cities (Alexandria) became strategic gateway for colonizing countries & their trade (Ashton, T. S. 1948).


Zagreb
BEOGRAD
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YUGOSLAVIA
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Nis
Vidin
Rouse
SOFIA
Varna
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Titograd
Skopje
Plovdiv
Burgas
ALBANIA
TIRANA
Bari
Brindisi
Uska
Kavalla
Edirne
Alex.
ISTANBUL
Zonguldak
Samsun
Corfu
Bursa
Sivas
ANKARA
Larisa
Thermopilai
Khios
TURKEY
Izmir
Konya
Adana
Mugla
Antalya
Ikaria
GREECE
Rodos
CYPRUS
NICOSIA
Chania
Lefka
Irakleion
Mare
Larnaca
Tartous
Tripoli
BEYROUTH
LEBANON
Sidon
DAMAS
Deras
Homs
Hama
Alep
Iskenderon
Marseille
Perpignan
Barcelona
Pisa
Civitavecchia
Palo
ROMA
Olbia
Cagliari
Palermo
Catanzaro
Patre
Lechaina
Dhafnai
Catania
Augusta
Pozzalo
MADRID
LISBOA
San Fernando
Estepona
Gibraltar
Tetuan
Oran
Berkane
Larache
RABAT
S. El Arba
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Taza
Oujda
Tlemcen
MOROCCO
Midelt
Ksar es Souk
Beni Mellal
Marrakech
Ouarzazate
Taroudant
Bechar
Abadla
Beni Abbes
Timimoun
El Golea
Ghadames
Laghouat
Hassi R'mel
Ghardaia
Ouargla
Haoud El Hamra
Hassi Messaoud
Touggourt
Bengerdane
TUNISIA
Biskra
El Oued
Gafsa
Sfax
Gabes
Zuara
Homs
Gharyan
TRIPOLI
Misurata
Sirte
Ajedabya
El Beida
Derna
Benghazi
Tobruk
Musaid
Salum
Matruh
Al Jaghbub
Zelyen
Alexandria
CAIRO
Pt. Said
Isma'iliya
Suez
Ma'an
Aqaba
Hallat
Annaba
Bejaia
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Djelfa
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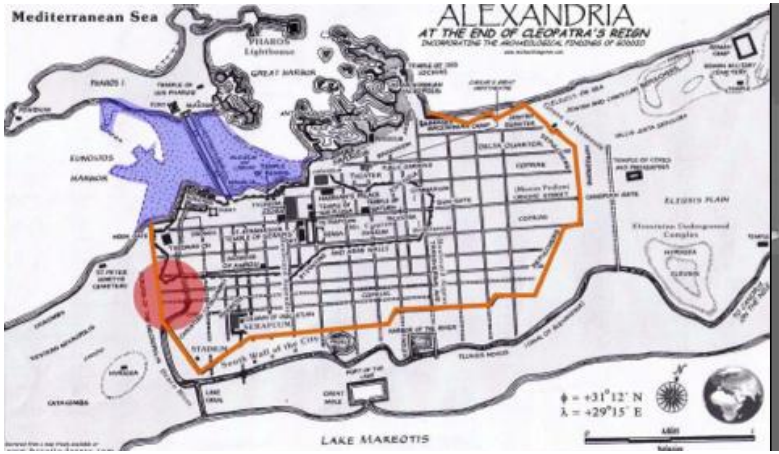
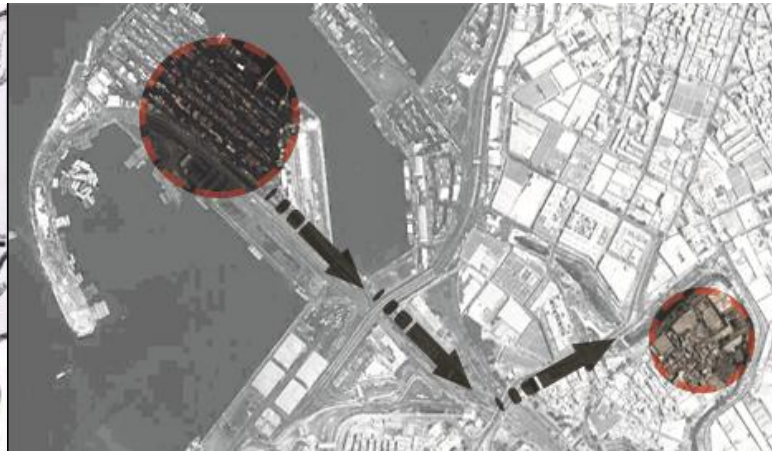
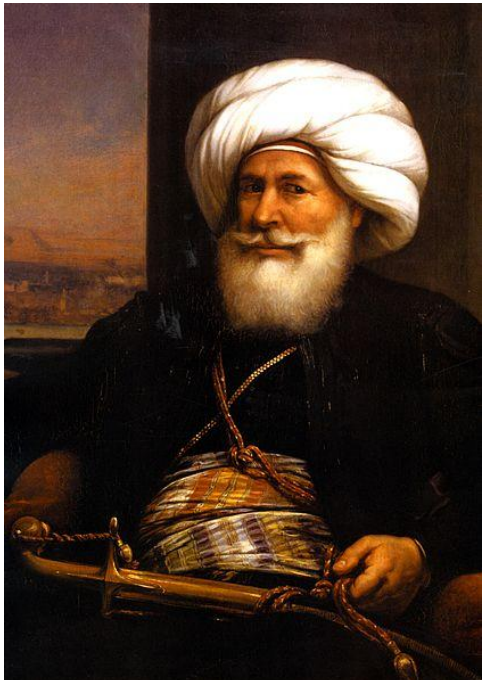

Mediterranean Sea
ALEXANDRIA
AT THE END OF CLEOPATRA'S REIGN
PHAROS
Lighthouse
GREAT HARBOR
EUNOSTOS
HARBOR
ELEUSIS PLAIN
Hypogeum
Underground
Complex
NECROPOLIS
STADIUM
GREAT MOLE
LAKE MAREOTIS
φ = +31°12' N
λ = +29°15' E




Mediterranean Sea
Edko irrigation pump station
Alexandria


BOURSE
بورصة
No. 50. Alexandrie. La Bourse.

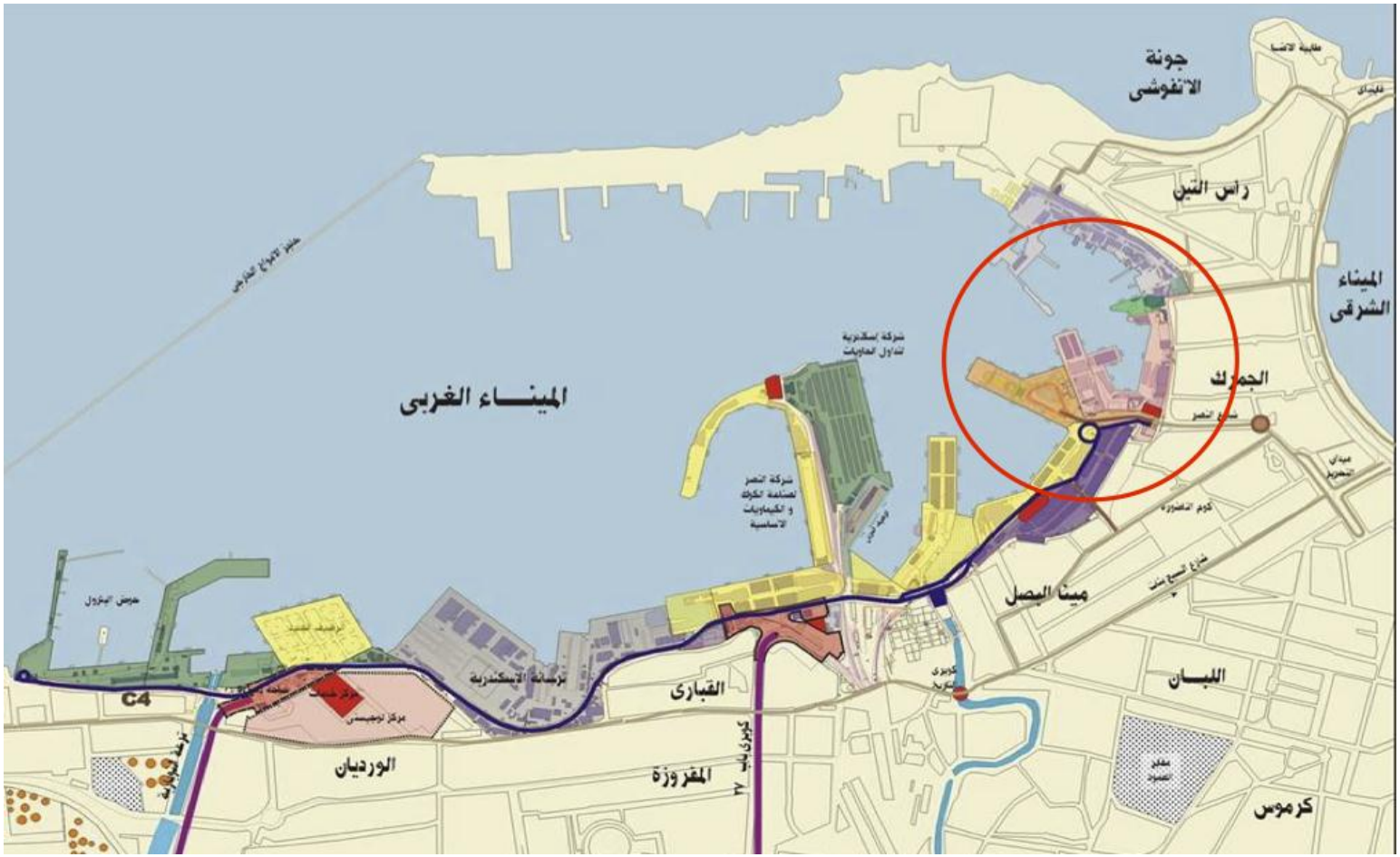


From Industrial to Post-Industrial Landscape

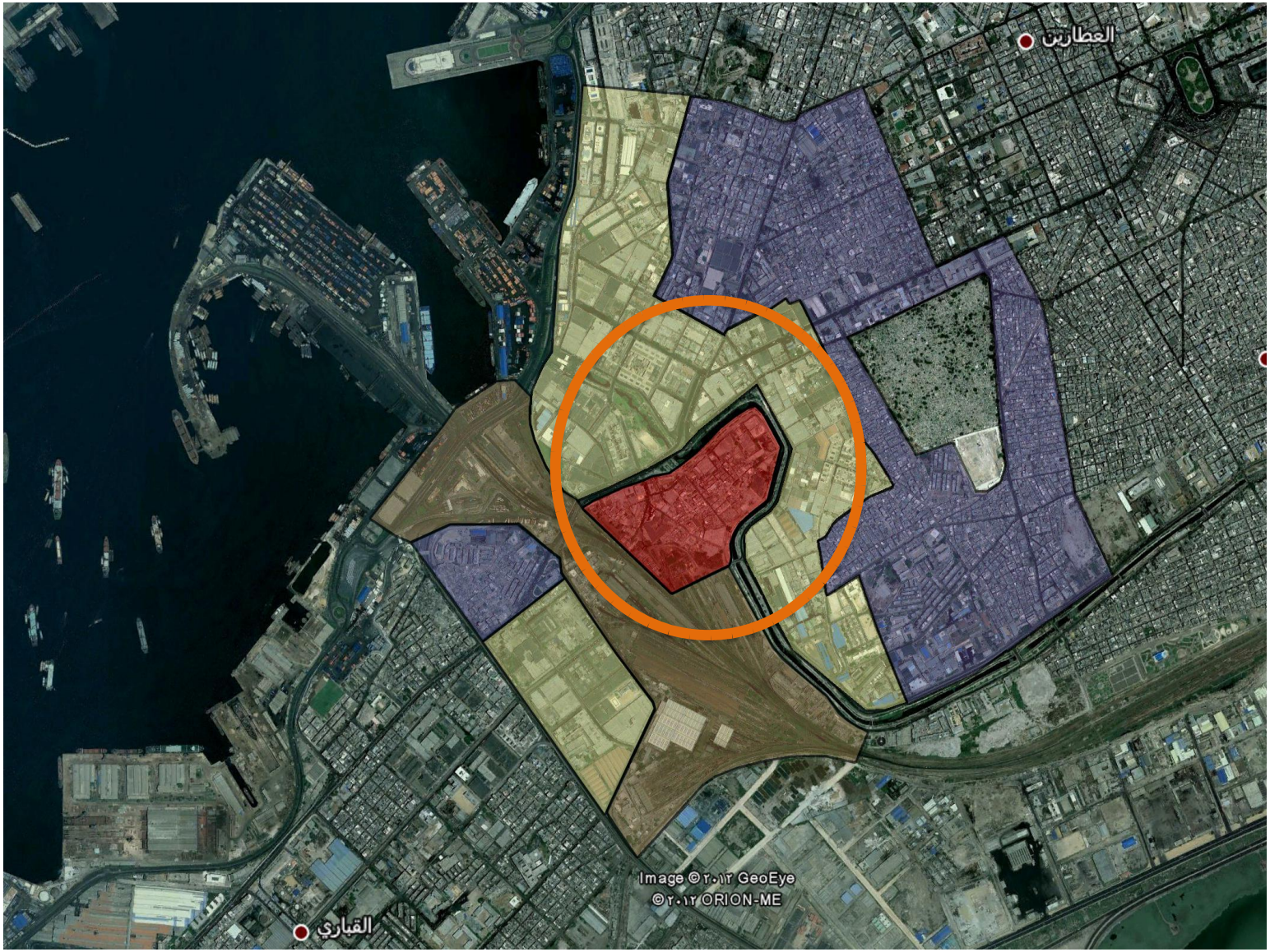
- Changing nature of industries worldwide, restructuring of global economy, moving from economy of production towards economy of knowledge, mechanization of the production process, [relocation of cotton-making from Egypt to China + law # 39 in Alexandria to terminate stock exchange markets] => abandoned industrial landscapes


Qutibay Fortness
Al Jiesh Street
Al Horiah Street
Al Nozha
Al Zira'i Road
Foad street
Al Menshia
Masir Station
from Menshia to west of Alex
Al Sabe Banat Str
Abdul-Mon'em street
Al Khedewi Tawfik street
The Studied Area
Al Sawari Coulmn
Al Nozha Airport
The new Stop
The International road
from west of Alex towards Downtown
Data SIO, NOAA, U.S. Navy, NGA, GEBCO
Image © 2009 GeoEye
May 30, 2009


Semouha Club
Zoo Park
Antoniadis Palace
Nozha Park
Railway Station
Bibliotheca Alexandria
City Center Tahrir Square (el manshetya
El Shalallat Garden
Water Desalination Station
الإسكندرية
Alexandria Stadium
Roman Ampitheatre and Complex
Wabour El Miah
El Hommeyat Hospital
New Harbour
Mahatet Masr
Cairo Station Square
Friday Market
Catacombs Of Kom El Shokafa
Important Point Of Intersection
Egyptian Shooting Club
El Nozha Airport
Factory
Western Harbour
Warehouses
Alexandria International Garden
Canal Transportation Company
Bus Stop
Hospital
Main Entrance For Alex From the Dessert Road
Downtown


جونة الاتفوشى
راس التين
الميناء الشرقى
الجمرك
الميناء الغربى
شركة اسكندرية لتداول الحاويات
شركة النصر لصناعة الكوك و الكيماويات الاساسية
مينا البصل
اللبـــان
كرموس
القبارى
المقرونة
الورديان
ترسانة الاسكندرية
C4
كوبرى ابو ٢٧


Alexandria library
Mina el basal
Mina el dekheila
Data SIO, NOAA, U.S. Navy, NGA, GEBCO
Image © 2012 GeoEye
Image © 2012 DigitalGlobe


العطارين
القباري
Image © ٢٠١٢ GeoEye
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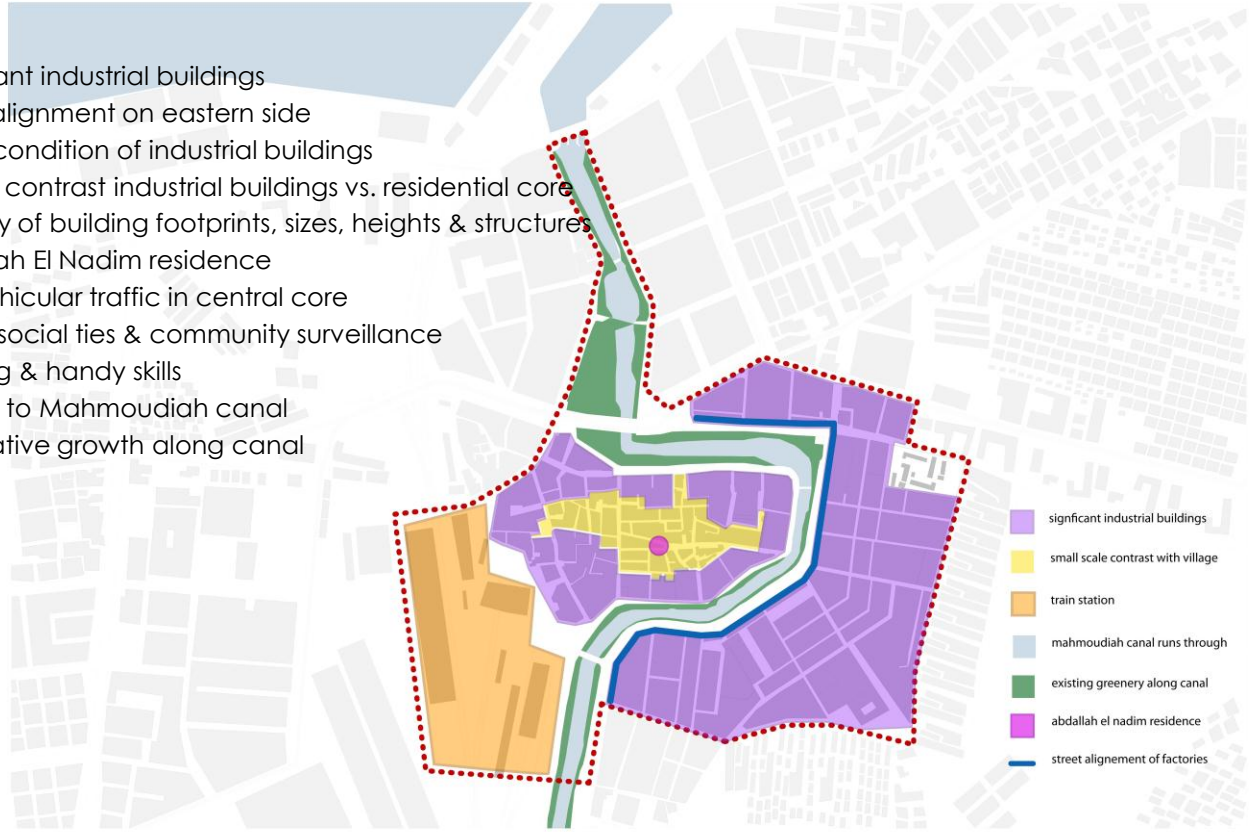
Thesis Question

How can urban design be applied in order to sustainably revitalize the abandoned post-industrial landscape of Minet el Bassal?

SWOT => Strengths within Minet El Bassal

- Important industrial buildings
- Street alignment on eastern side
- Good condition of industrial buildings
- Unique contrast industrial buildings vs. residential core
- Diversity of building footprints, sizes, heights & structures
- Abdallah El Nadim residence
- Low vehicular traffic in central core
- Strong social ties & community surveillance
- Crafting & handy skills
- Access to Mahmoudiah canal
- Vegetative growth along canal



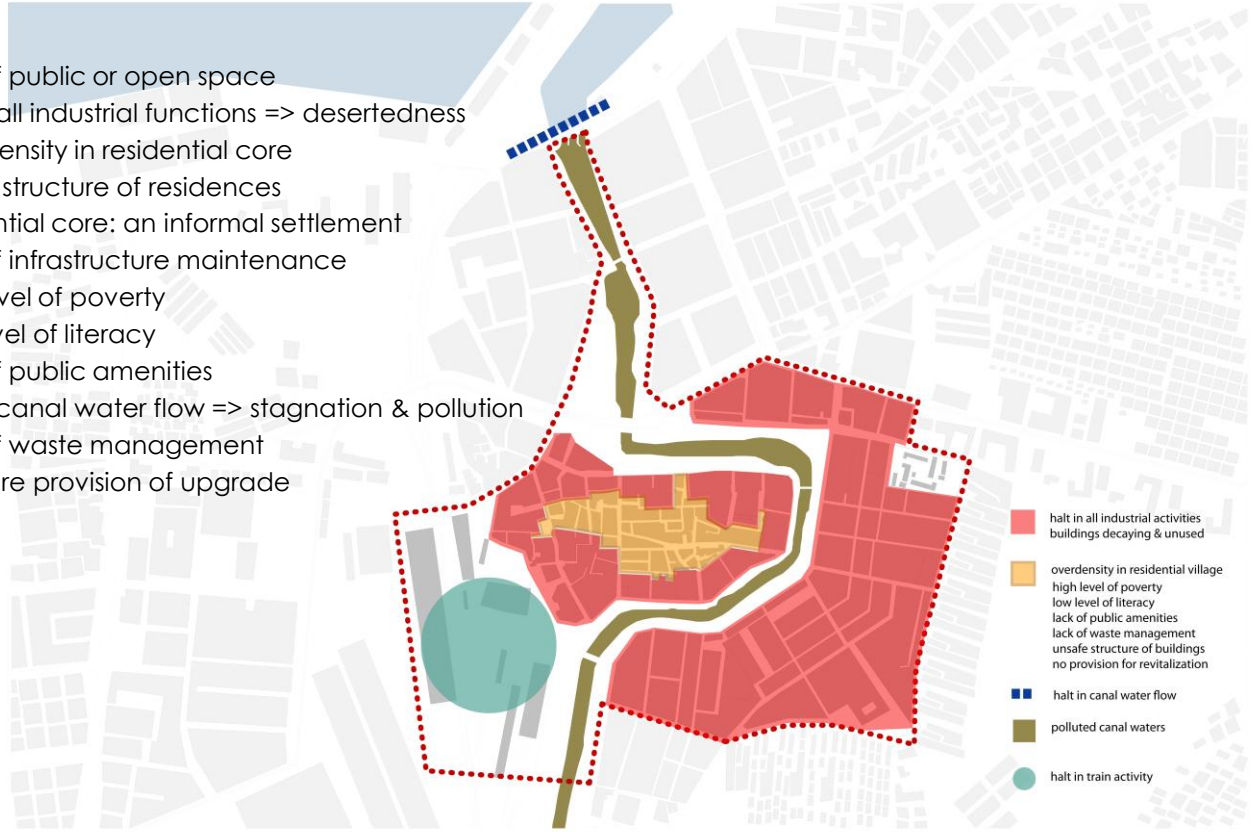

he Canal from a high residential building


msc
msc

Skyline

SWOT => Weaknesses within Minet El Bassal

- Lack of public or open space
- Halt in all industrial functions => desertedness
- Over-density in residential core
- Unsafe structure of residences
- Residential core: an informal settlement
- Lack of infrastructure maintenance
- High level of poverty
- Low level of literacy
- Lack of public amenities
- Halt in canal water flow => stagnation & pollution
- Lack of waste management
- No future provision of upgrade

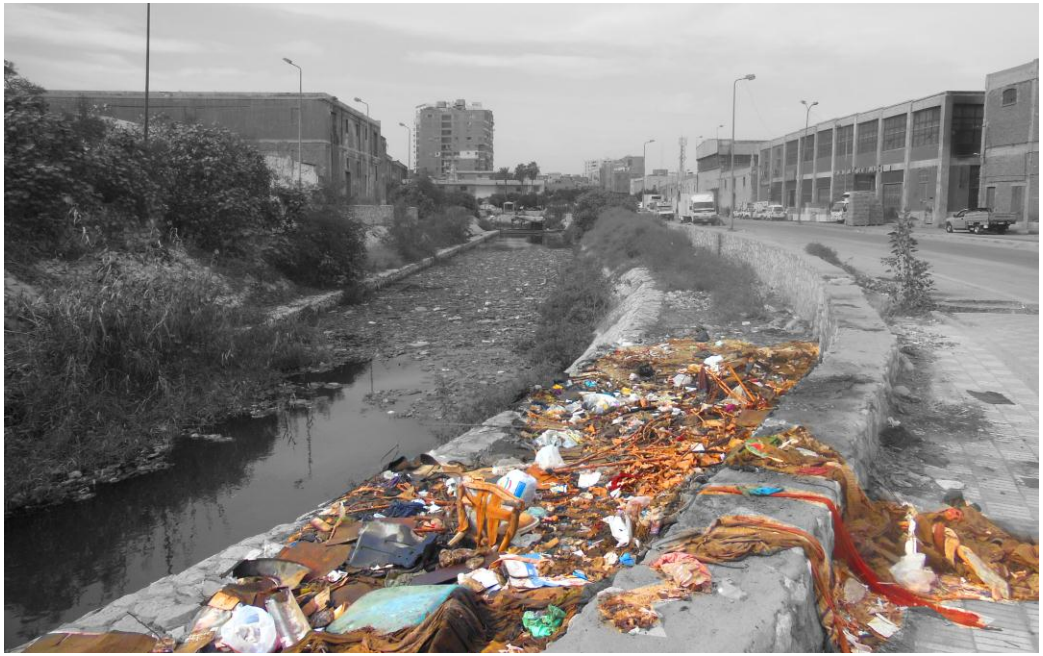






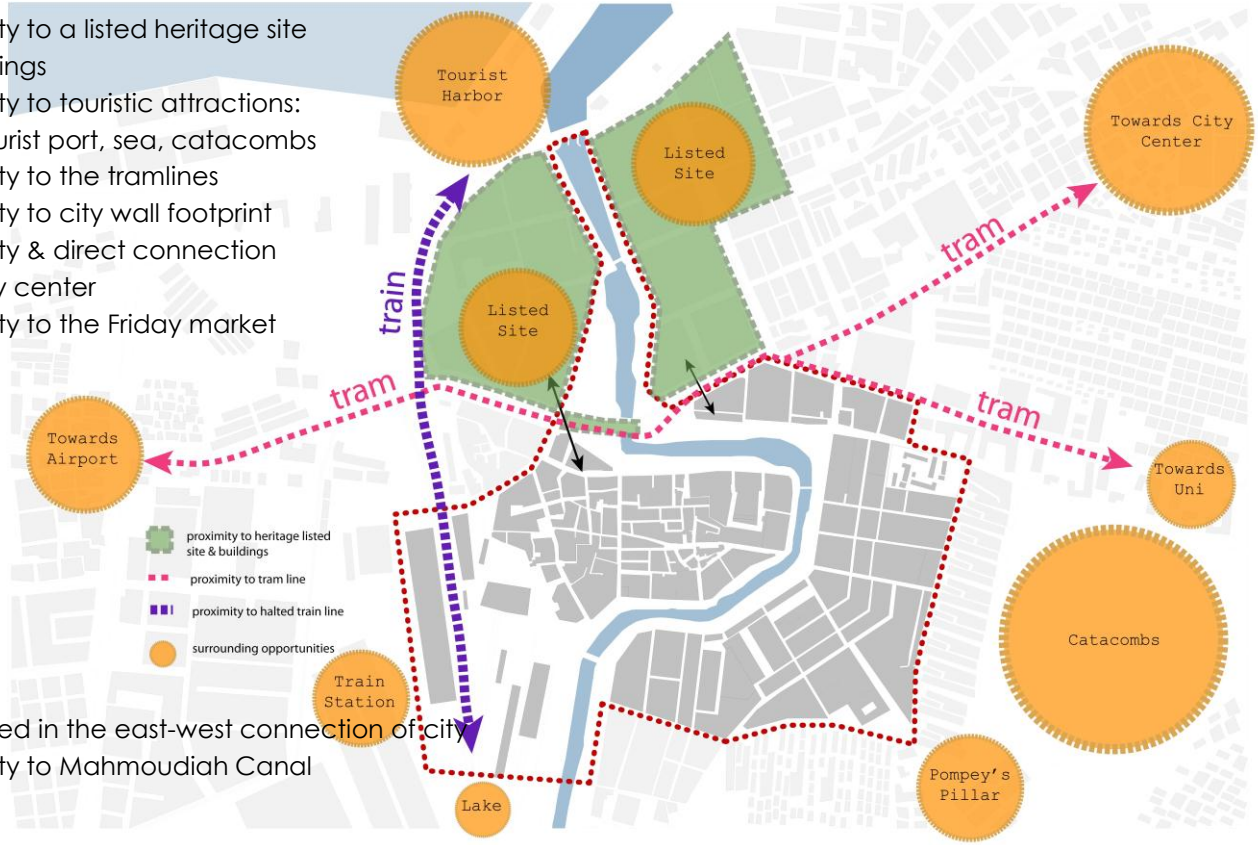






SWOT => Opportunities around Minet el Bassal

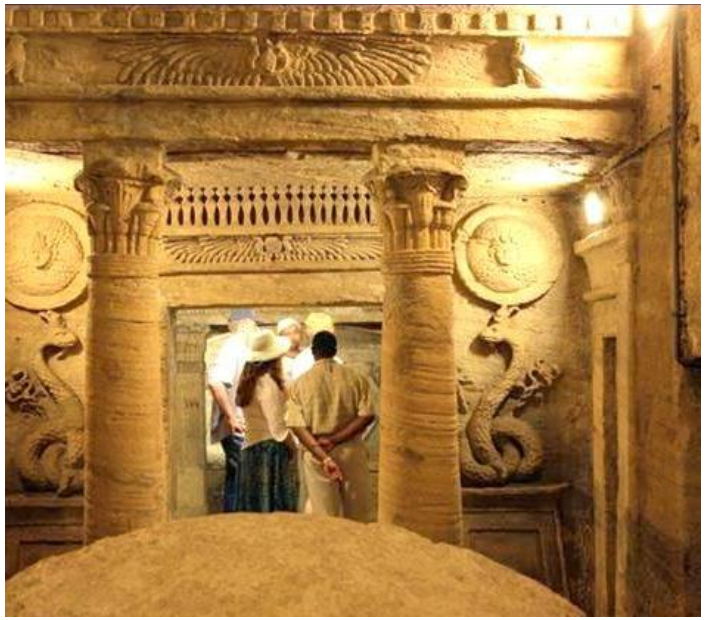
- Proximity to a listed heritage site
- & buildings
- Proximity to touristic attractions:
  => tourist port, sea, catacombs
- Proximity to the tramlines
- Proximity to city wall footprint
- Proximity & direct connection
  to city center
- Proximity to the Friday market



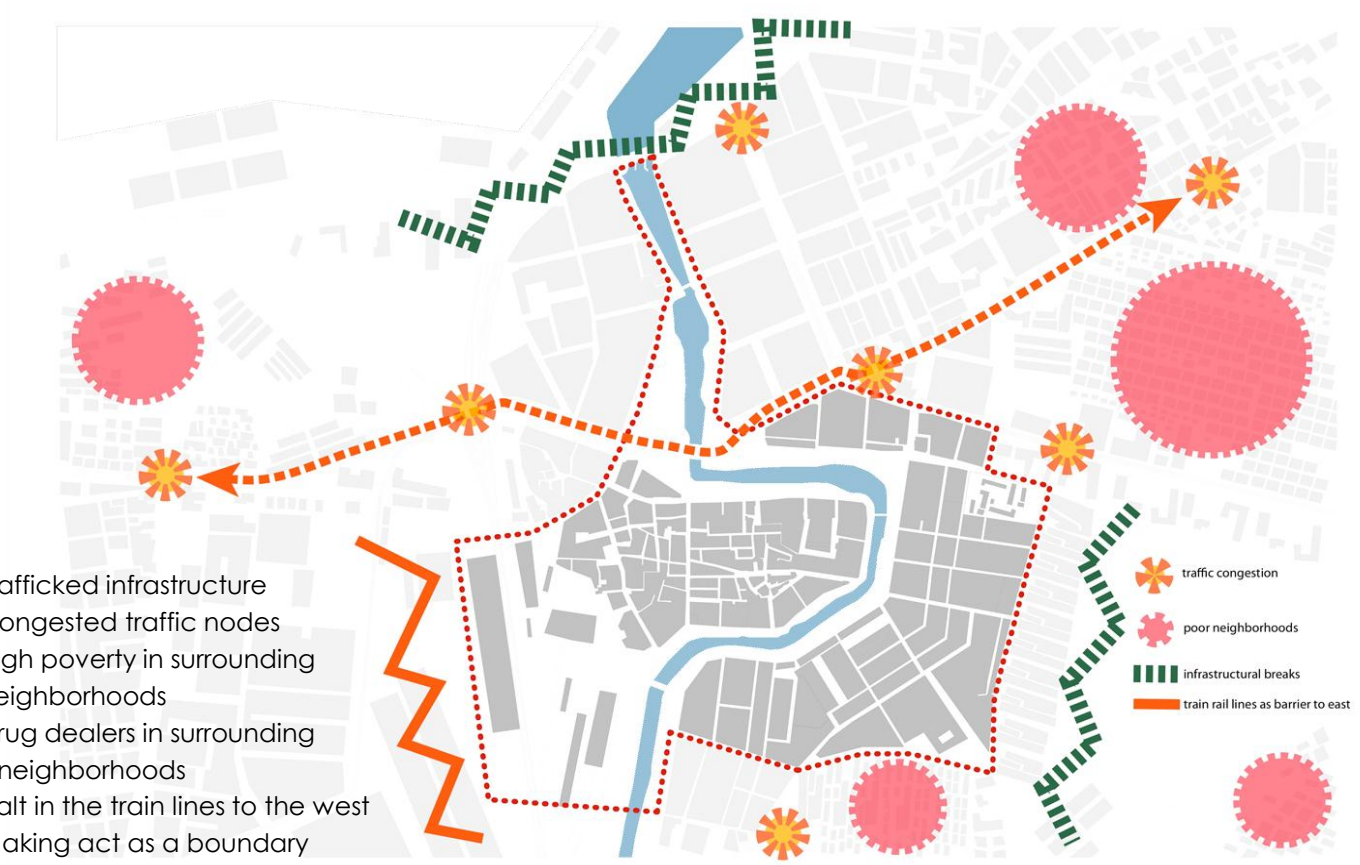
- Centered in the east-west connection of city
- Proximity to Mahmoudiah Canal

1

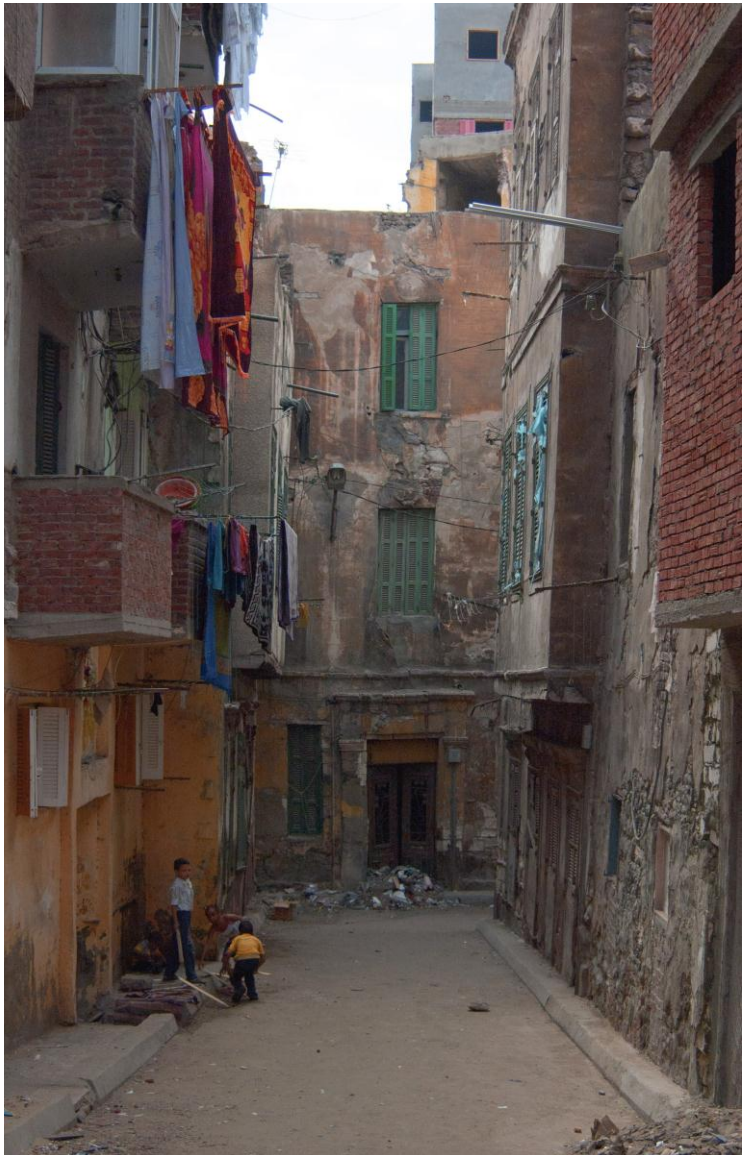
2

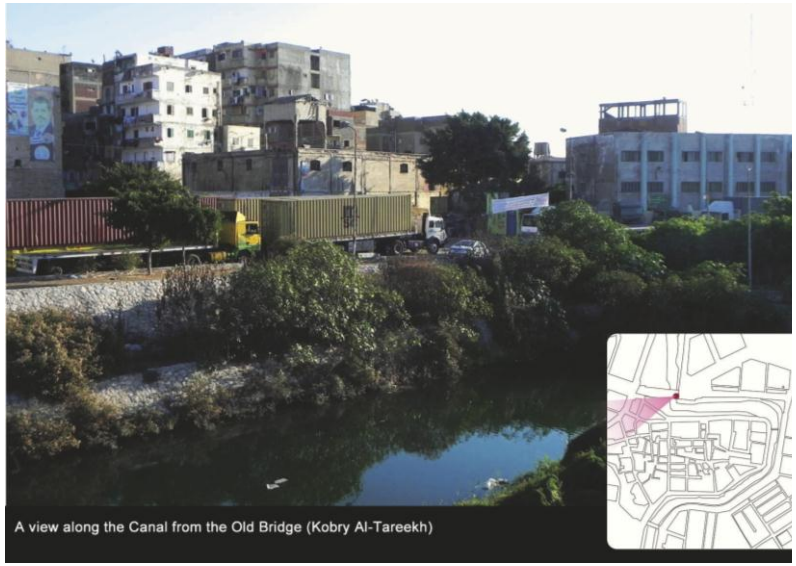


SWOT => Threats around Minet el Bassal

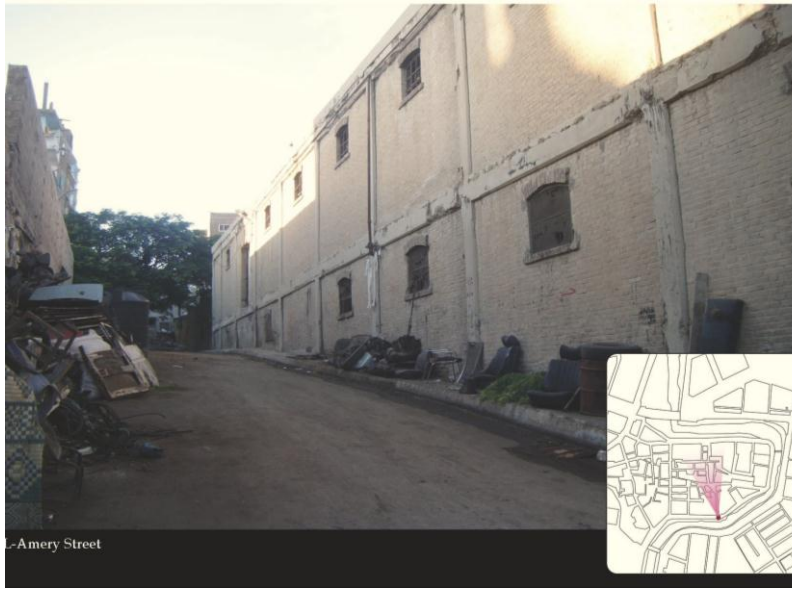


- Trafficked infrastructure
- Congested traffic nodes
- High poverty in surrounding
- neighborhoods
- Drug dealers in surrounding neighborhoods
- Halt in the train lines to the west
- making act as a boundary
- Surrounding waste & pollution





A view along the Canal from the Old Bridge (Kobry Al-Tareekh)



L-Amery Street

II. Literature Review: Sustainable Urban Revitalization

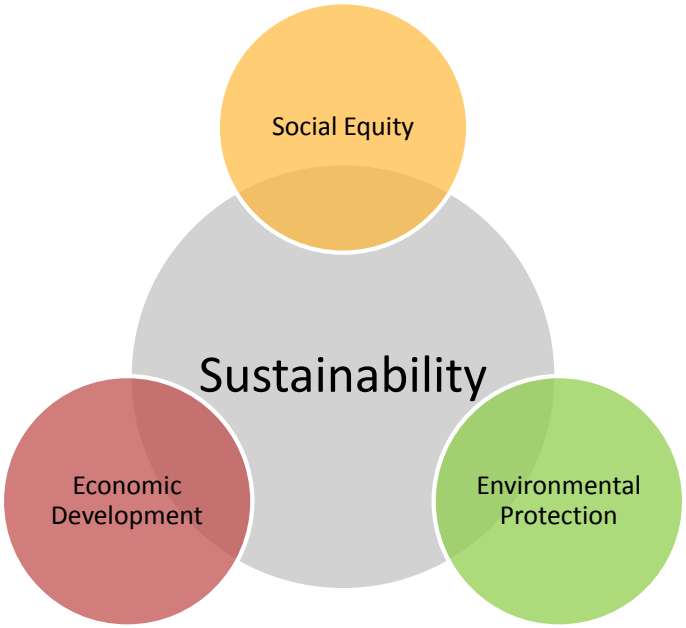
"Sustainable development is development which meets the needs of the present without compromising the ability of future generations to meet their own needs". (World Commission on Environment and Development, 1987). The 3 pillars are:

- **Economically sustainable system:** must be able to continuously produce services & goods, to maintain manageable levels of government & debt, & to avoid sectorial imbalances that can damage agricultural & industrial productions.

- **Environmentally sustainable system:** must maintain a stable resource base, avoiding overexploitation of renewable resources or environmental functions, including the maintenance of biodiversity, atmospheric stability, & other ecosystem functions.

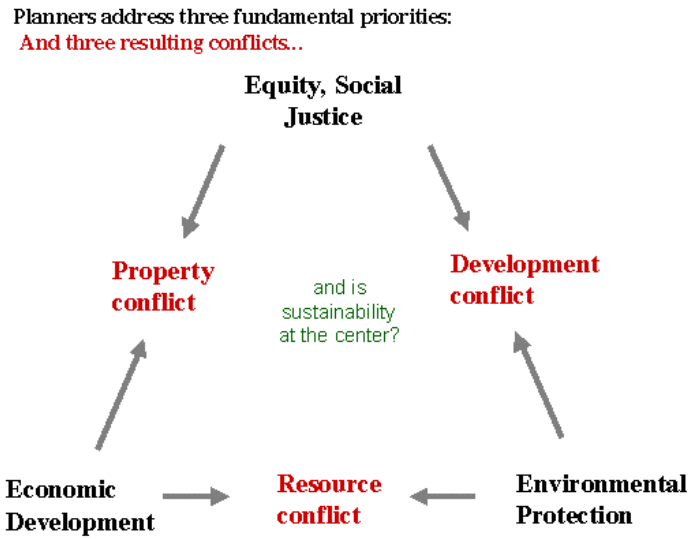
- **Socially sustainable system:** must achieve fairness in distribution & opportunity, adequate provision of social services, including health & education, gender equity, political accountability & participation.

Tensions of Sustainability



(World Commission on Environment and Development, 1987).

vs.



The triangle of conflicting goals for planning, & the three associated conflicts. (Campbell, S. 1996)

Case Study of: [@22 Barcelona]

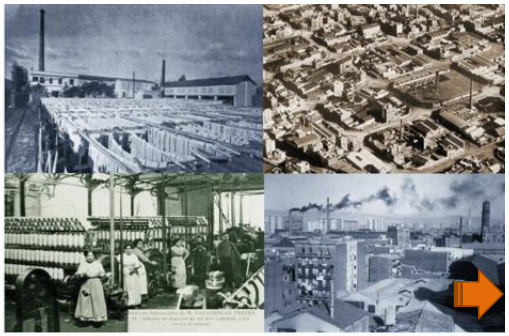


Fig. 1: Barcelona was referred to as the "Catalan Manchester" between 1860 and 1960 due to its heavy industrial activity, retrieved via www.22barcelona.com

Industrial Era

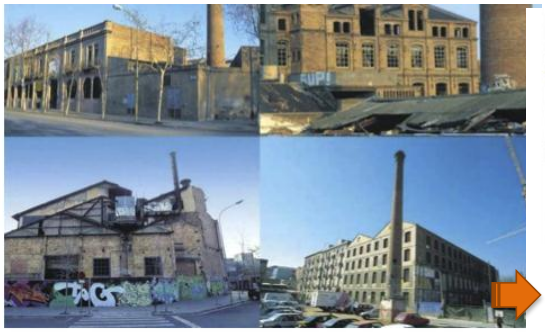


Fig. 2: Between 1960 and 1990, Barcelona's industrial district Poblenou was suffering from extreme degradation and obsolescence, retrieved via www.22barcelona.com

Post-Industrial Landscapes

Fig. 9: The 3 different phases of urban renewal in the Barcelona Model, retrieved via www.22barcelona.com

Revitalization Scheme

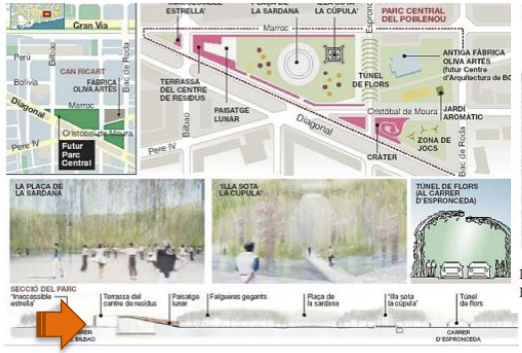


Fig. 11: An example of public space: The Poble Nou Park by Jean Nouvel offers different public sections of different scales, retrieved via www.architecturetoday.co.uk

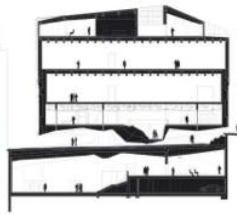


Fig. 6: A reference example of adaptive reuse of an old industrial building into a cultural center, th Forum in Barcelona with an addition on top, retrieved via www.herzogdemeuron.com

Phase 1: small-scale public places & adaptive re-use

Phase 2: large-scale interventions

Case Study of: [Marseille Euroméditerranée] "Catching up with Barcelona"

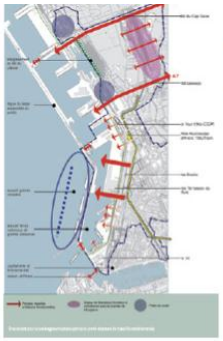
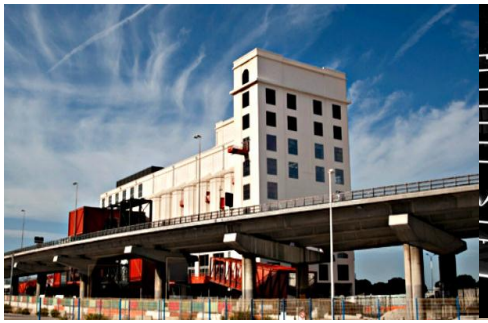
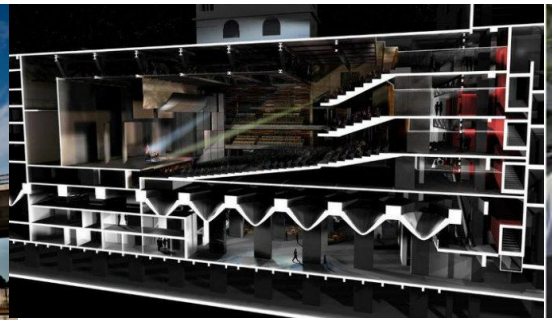


Fig. 10: Strategy & Synthesis maps retrieved via: http://www.eurometerranee.fr

Industrial Era → **Post-Industrial Landscapes** → **Revitalization Scheme**





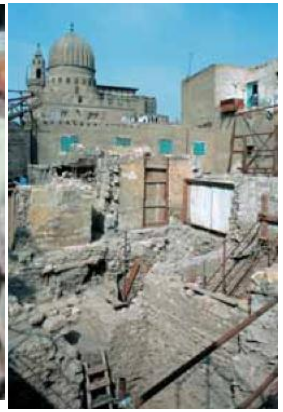
Focus on adaptive re-use & housing

Focus on Eco Cite & 30ha of green

Case Study of:
[Azhar Park & Darb el Ahmar in Cairo]

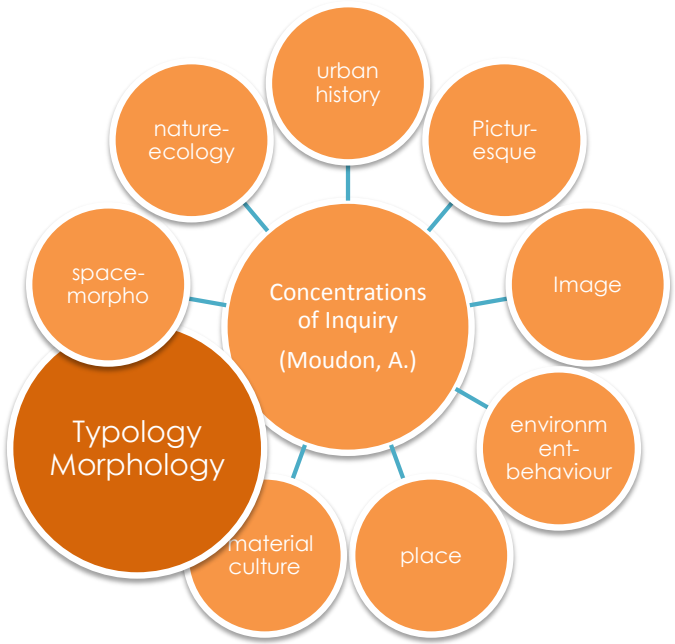
A late 19th-century view of Cairo's rubbish dump, to the right, the 12th-century Ayyubid city walls and the Darb al-Ahmar district, also restored in this project

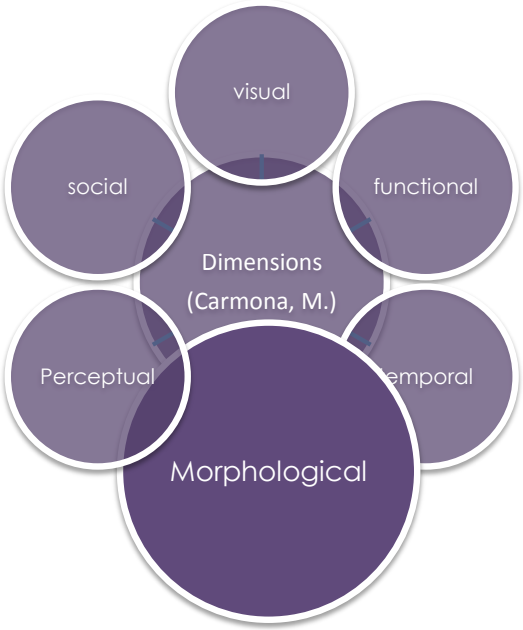
Industrial Era → **Post-Industrial Landscapes** → **Revitalization Scheme**



Phase 1: small-scale public places & adaptive re-use → **Phase 2: large-scale interventions**

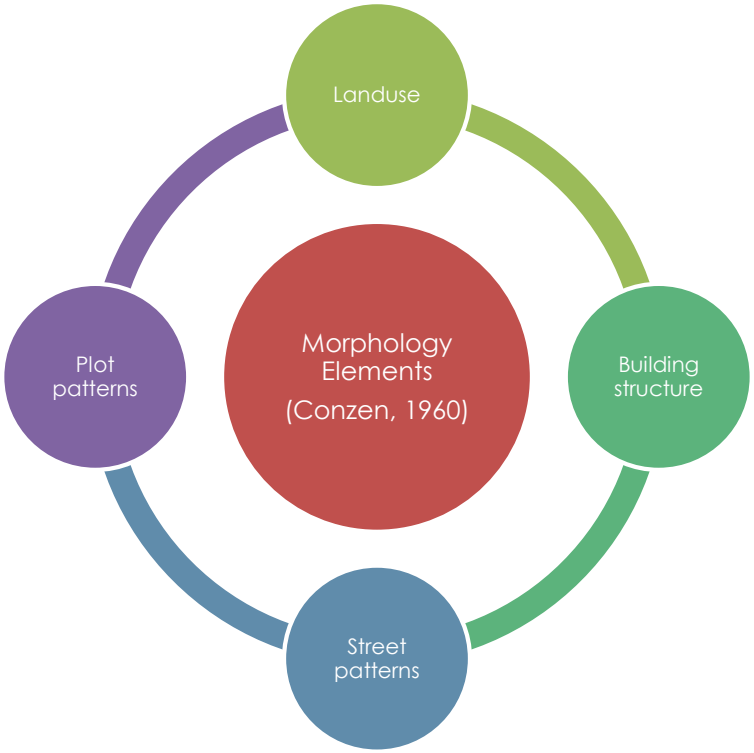
Initial design intervention approach: Typology-Morphology as focal lens for sustainable revitalization



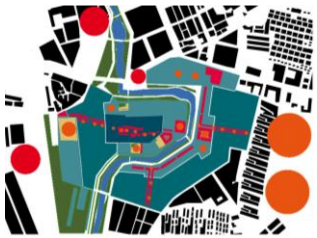


Concentrations of inquiries (Moudon, A.) & Dimensions of Urban Design (Carmona, M.)

Sustainability framed in Typology-Morphology Studies



III. Design Intervention



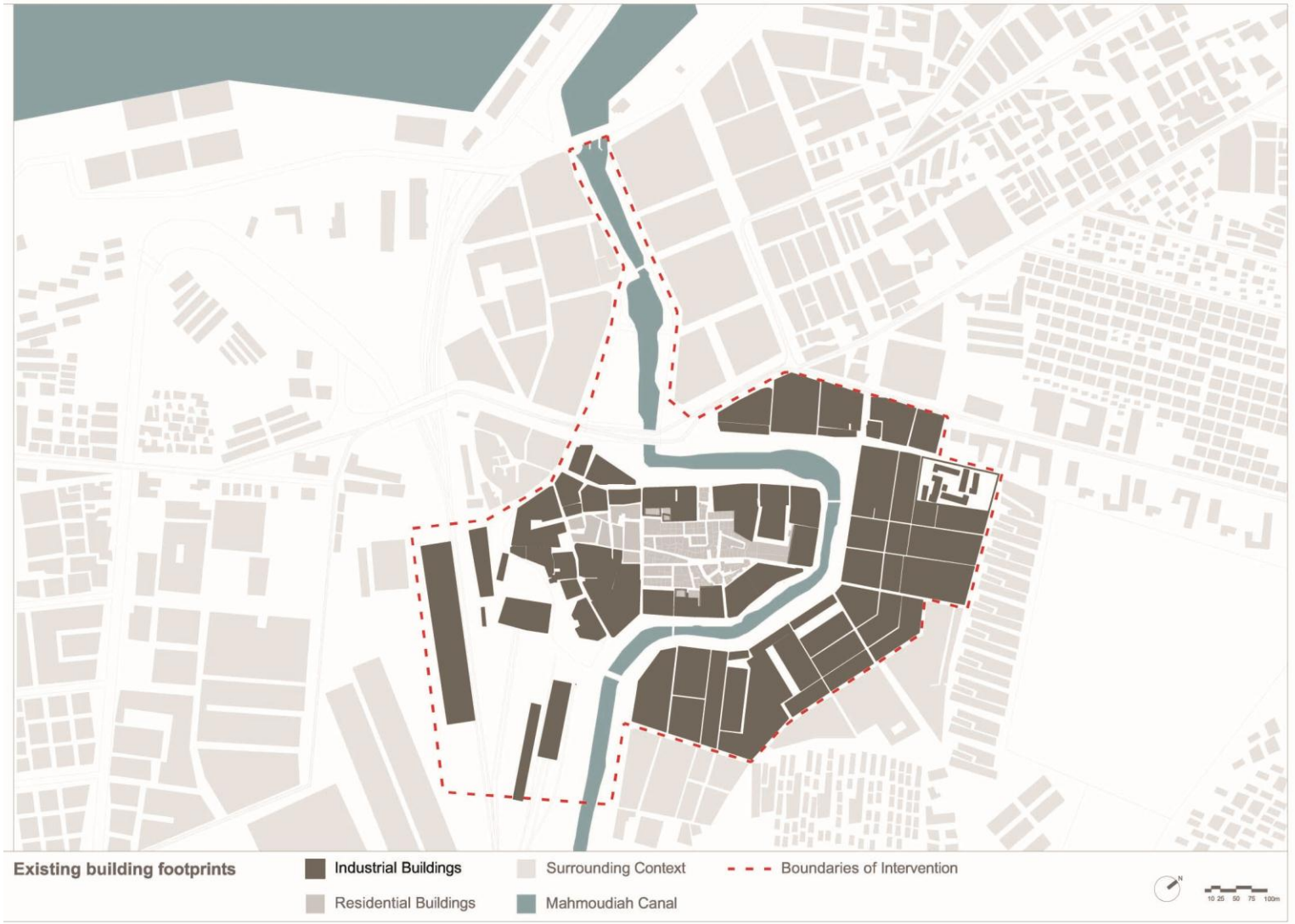
Identity: Safeguarding the industrial identity by preserving morphological contrast between factory' typology & residential core

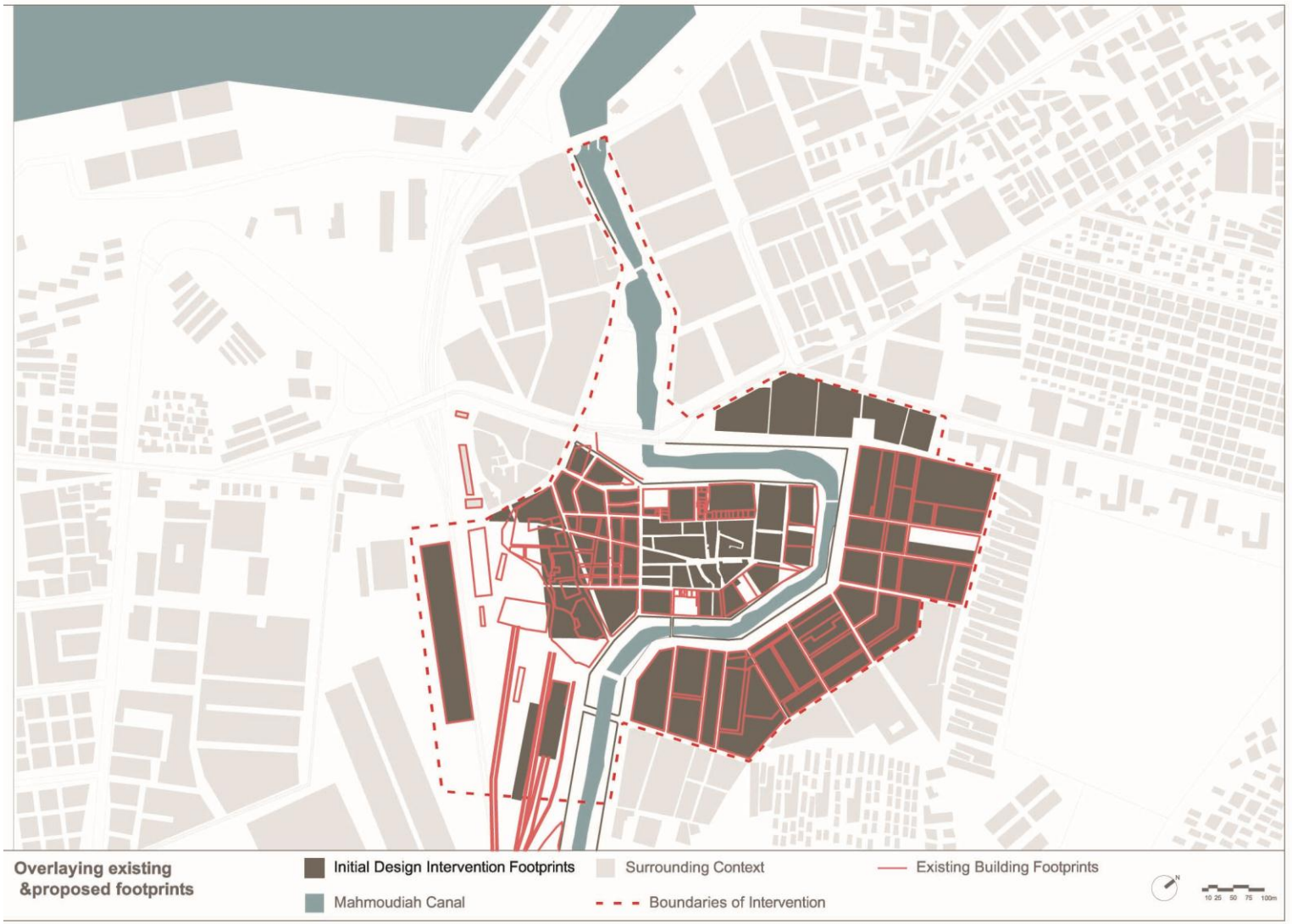
Civic Spaces: Upgrading public spaces on outskirts of residential core

Private Development: creating economic incentives to connect to surrounding magnets + strong cultural frontage

Environment: Retrofitting the Mahmoudiah Canal & its banks into an urban park

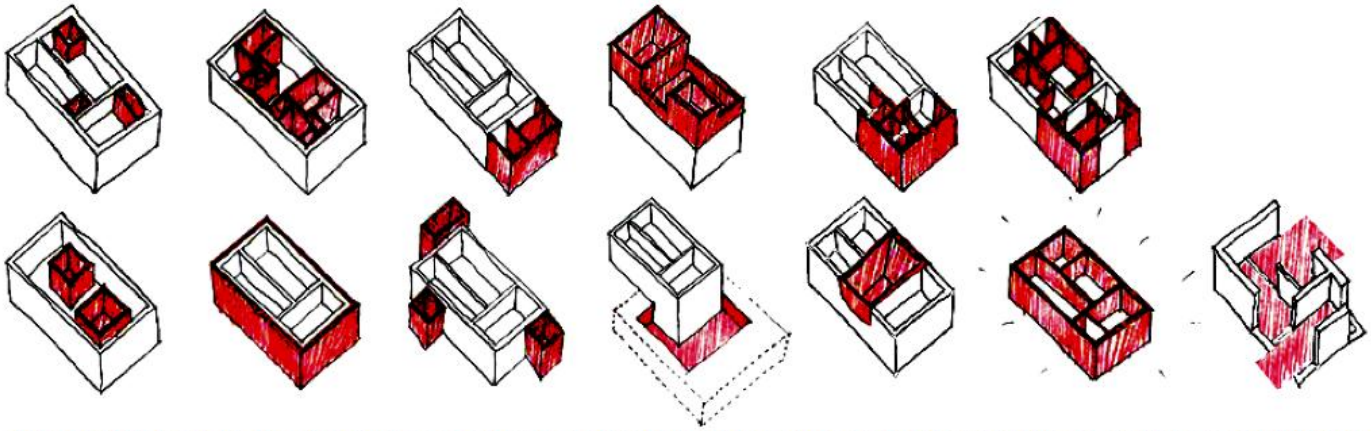
Infrastructure: reclaiming the original street network & upgrading the infrastructure


Existing building footprints
Industrial Buildings
Residential Buildings
Surrounding Context
Mahmoudiah Canal
Boundaries of Intervention
N
10 25 50 75 100m

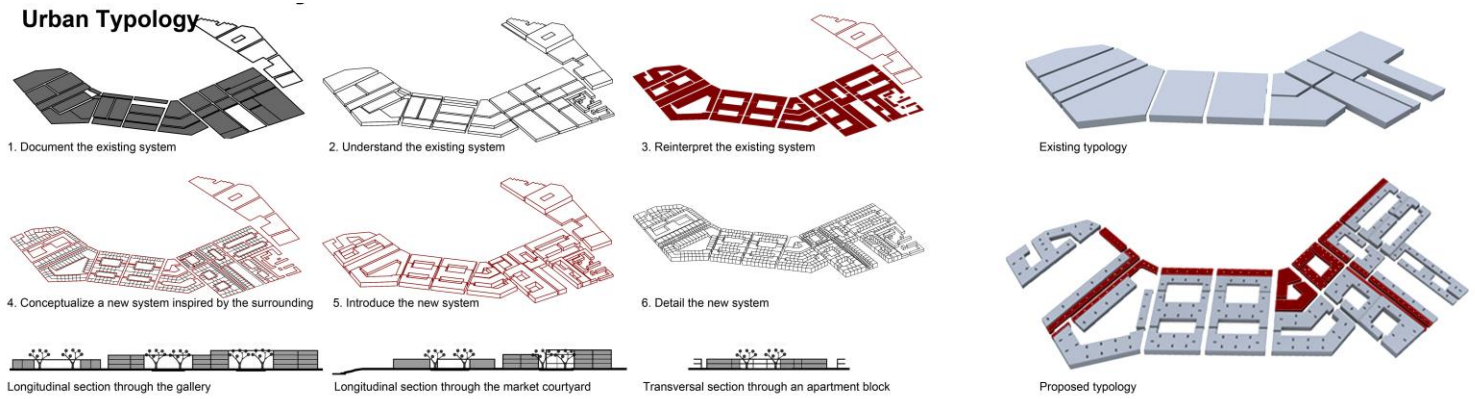

Overlaying existing
&proposed footprints
Initial Design Intervention Footprints
Surrounding Context
Existing Building Footprints
Mahmoudiah Canal
Boundaries of Intervention
N
10 25 50 75 100m

Study of street network & Nolli map

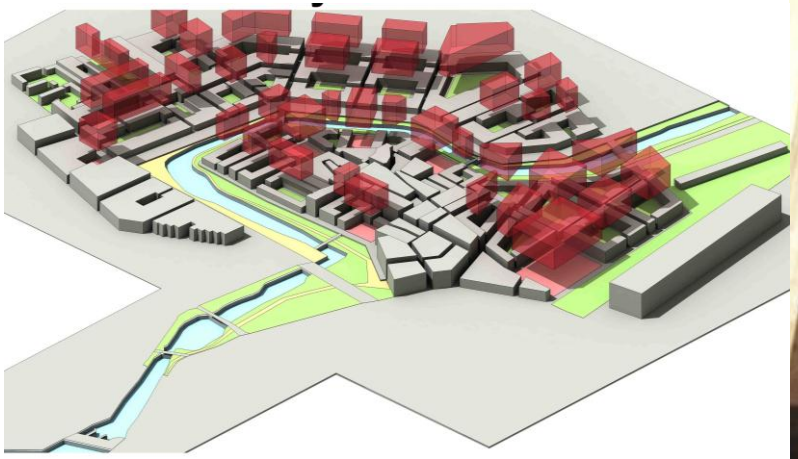
Typological investigation

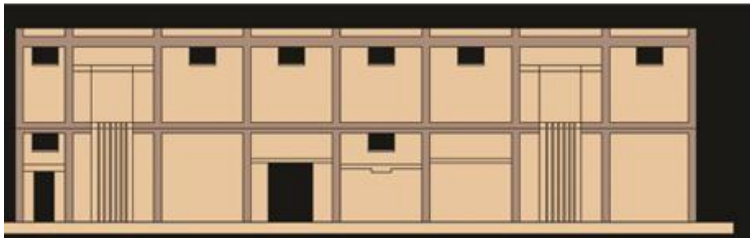


implants/ box in the box/ cocoon/ extrusion/ periphery/ topping/ negative/ prostheses/ filling/ copy/ flow



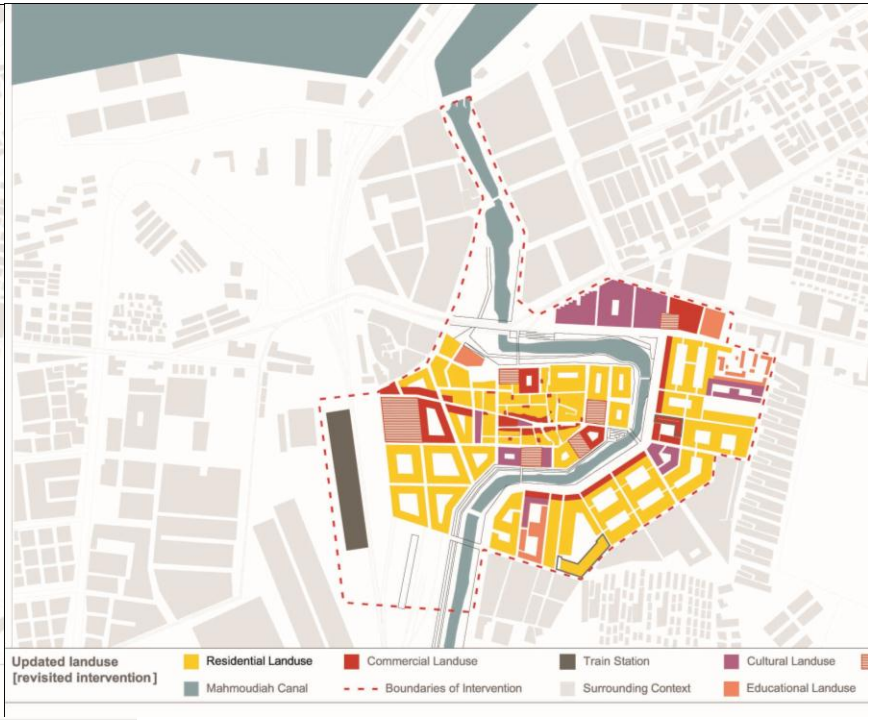
Building in existing structures

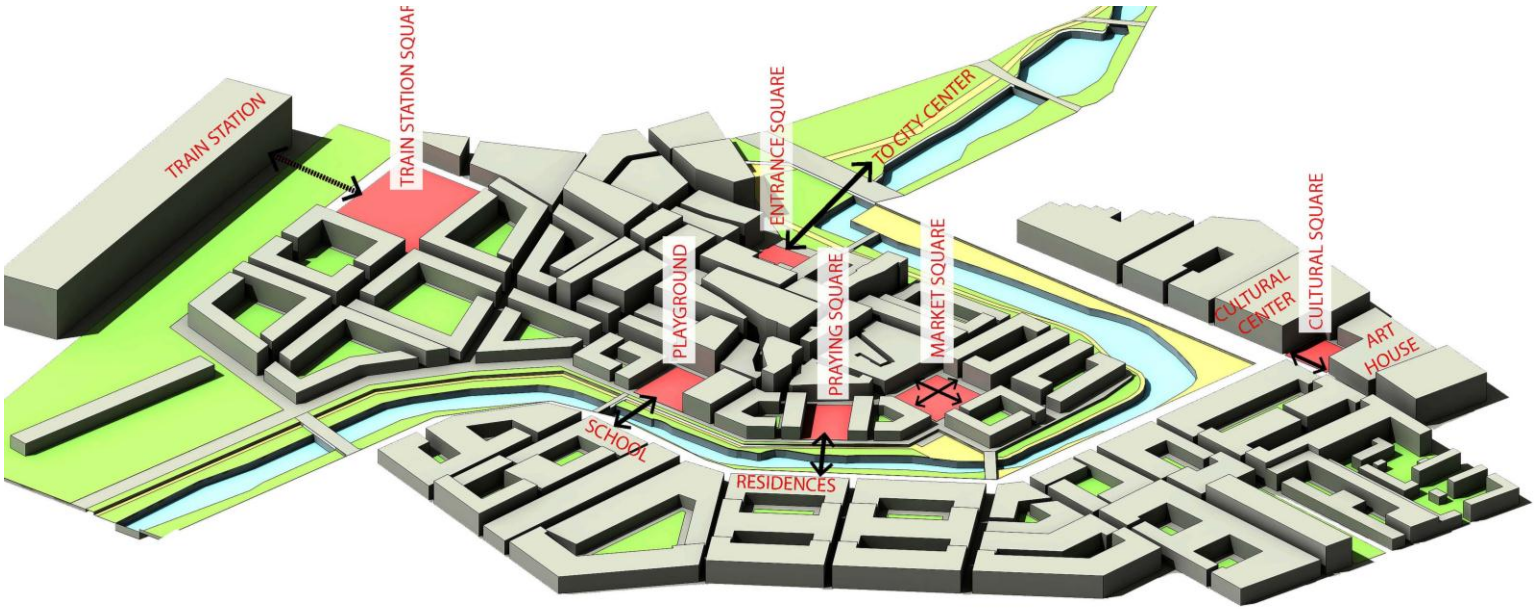


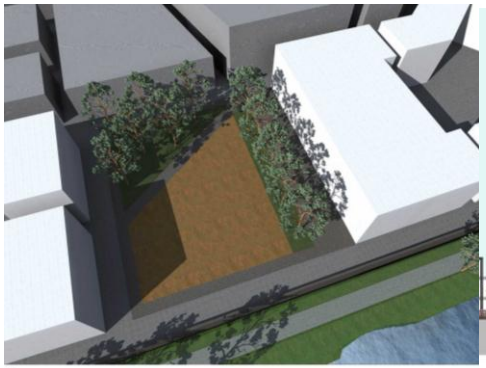



1. BUILDING FIELDS (PUBLIC-PRIVATE PLAN)
Proposed building typology
Building with new Typology
Surrounding Context
Public Squares
Mahmoudiah Canal
Boundaries of Intervention
N
10 25 50 75 100m

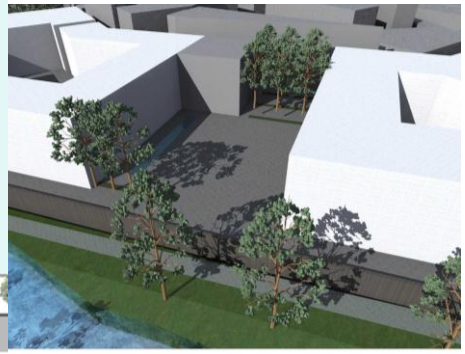
Projected landuse







Playground Square



Mosque Square


Landscape framework
Train Station
Context
Public Green
Private Green
Boundaries of Intervention
Mahmoudiah Canal
N
10 25 50 75 100m

Comparative Matrix

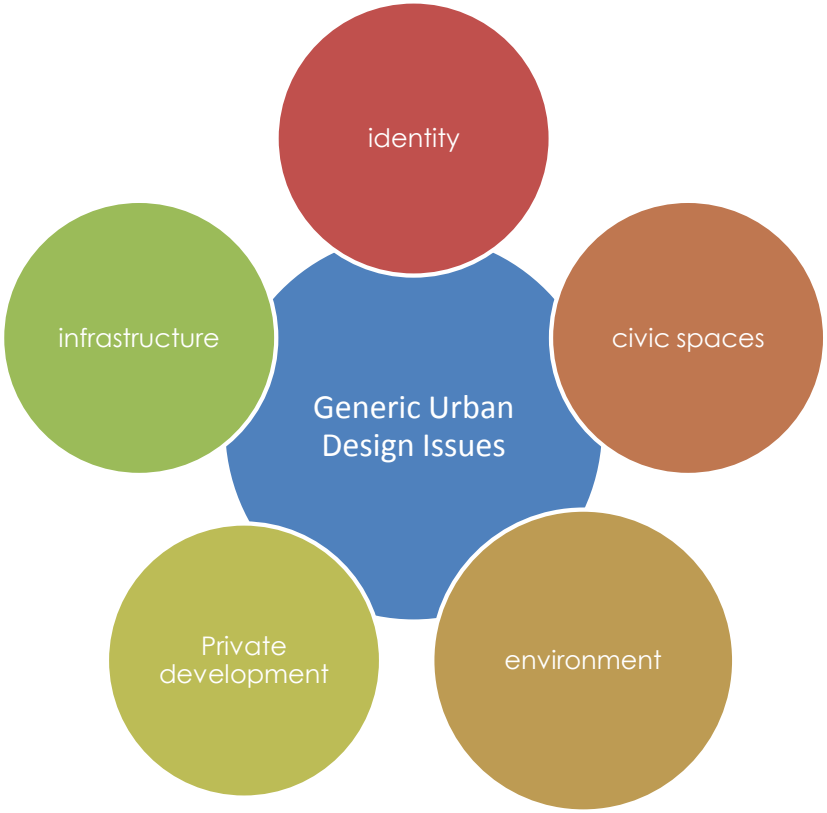
	A	B	C	D	E	F	G
1	**Matrix of Generic Urban Design Issues & Specific Site Issues**	**Existing Condition of Minet el Basal [SWOT]**	**Initial Design Intervention**	**Case Study: @ 22 Barcelona**	**Case Study: Cité Euroméditerranée de Marseille**	**Case Study: Azhar Park, Ayyubid wall & Darb el Ahmar in Cairo**	**Revisited Design Intervention**
2	**1. Identity: space morphology, landuse, and townscape**	1. Abandoned industrial landscape 2. Landuse: halted industrial activities 3. Decaying image in three character areas: industrial area, residential core, along canal banks	1. Enhacing industrial identity on all scales 2. Morphing industrial factories to create open spaces 3. Adapting factories to new residential landuses 4. Upgrading townscape identity & legibility: landmarks, pathways, nodes, edges & districts	1. Sustainable reclamation on multiple scales + strong cultural layer 2. Retaining & upgrading industrial buildings to new landuses 3. Symbolic landmark: Caixa Forum **=> Strong focus on culture and image on an international scale lead to => Gentrification**	1. Sustainable reclamation of brownfields. on multiple scales 2. Introducing a strong cultural layer 3. Symbolic industrial landmark: Le Silo **=> Strong focus on star-chitect image along port promenade lead to => Gentrification; balanced with strong social housing policy**	1. Sustainable reclamation of Azhar site 2. Socio-economic catalyst for Darb el Ahmar residents who are empowered & integrated in redevelopment 3.Reclaimed landmark: Ayyubid Wall **=> Strong focus on local empowerment => Economic, social and environmental revitalization with no gentrification**	1. Sustainable reclamation of industrial site on neighborhood & district scales only: focus on spatial morphology & townscape 2.Reclaimed symbolic & historic landmark: Cotton Factory & Stock Exchange Building **=> Economic, social and environmental revitalization on district level with no gentrification**
3	**2. Environment: natural features & resources]**	1. Unused Mahmoudiah canal, polluted waters & canal banks	1. Retrofitting and upgrading canal banks & connecting to tourist harbor 2. Introducing pedestrian connections to the city & new tourist harbor	1.Retrofitting sea front for swiming 2. Greening of 114,000 m2 of land	1. Retrofitting Marseille river & greening its banks	1. Reclaiming Cairo's former waste mountain	1.Creating waste water management system: irrigation, cleansing from pollution + introducing new uses such as recreational transport 2. Greening strategy + pedestrian lanes
4	**3. Infrastructure: street network & transport lines**	1. Decaying physical infrastructure 2. Disconnectivity from surrounding 3. Social infrastructure poor, no public amenities such as hospitals or schools	1. Upgrade of physical infrastructure, reclaiming original street network 2. Introducing connectivity with surrounding tourist magnets 3. Upgraded physical infra envisioned to catalyze econ opportunities for social infra 4. Upgrading pedestrian network in harmony with vehicular network	1. Removing train tracks to access sea 2. Enhanced public transport 3. Upgraded & greened 35 km of streets	1. Enhanced accessibility to city centre from Paris via new direct TGV 2. Enhanced inner-city public transport 3. Upgraded & greened street network	1. Enhanced accessibility to & from park 2. Enhanced connectivity between Darb el Ahmar & Azhar park 3. Greening of street network	1. Upgrading & greening of street network 2. Enhacing connectivity within different parts of Minet el Bassal 3. Connecting to public transport system 4. Enhancing accessibility to canal front + reopening sea to public 5. Introducing workshops, training sessions + centers for existing social infra
5	**4. Civic & Public Space: public squares, civic buildings & community-spaces**	1. Lack of civic spaces 2. High density & lack of open spaces	1. Upgrading existing & creating public spaces 2. Creating semi-public spaces within factories.	1. Phase 1: regenerated small-scale public spaces first as socio-economic catalyst 2. Reclaimed forgotten inner courtyards within blocks 3. Introduced 220.000m² of new public facilities & spaces, & for social housing	1. Regenerated public spaces 2. Retroffiting banks of the Marseille canal i	1. biggest urban park in the middle east 2. Rehabilitating Ayyubid wall as cultural & civic monument	1. Different treatment between civic & open spaces 2. Network of public spaces linking neighborhood, district & city scale 3. Introducing public amenities: schools, hospital, police station, cultural centers 4. Introducing rent control + social housing
6	**5. Private Development: constrction funded by private investment**	1. Lack of private development	1. Attractive platform to catalyze private investment & development along canal & in central core	1.Mostly funded by Barcelona City Council, using 1992 Olympic games as leverage	1. Funded by Euroméditerranée Urban Development Agency, French Government, city of Marseille, Local & regional Authorities	1. Agha Khan Trust for Culture donated $ 3 million USD for a park in Cairo	1. Introducing public-private system to upgrade the district + generate revenue: Public for infra & Private for development 2. Upgraded area creates attractive platform for future private investment

Thesis Question & Argument

How can urban design be applied in order to sustainably revitalize the abandoned post-industrial landscape of Minet el Bassal?

Thesis Argument: Necessity to adopt a comprehensive framework, integrate interventions at multiple scales, & think through phasing as a strategic element.

Revisited design intervention approach: Comprehensive approach for sustainable revitalization



Revisited Design Intervention: Phasing @ multiple scales

Phase 1: Upgrading the public infrastructure of the site in 3 sub-phases

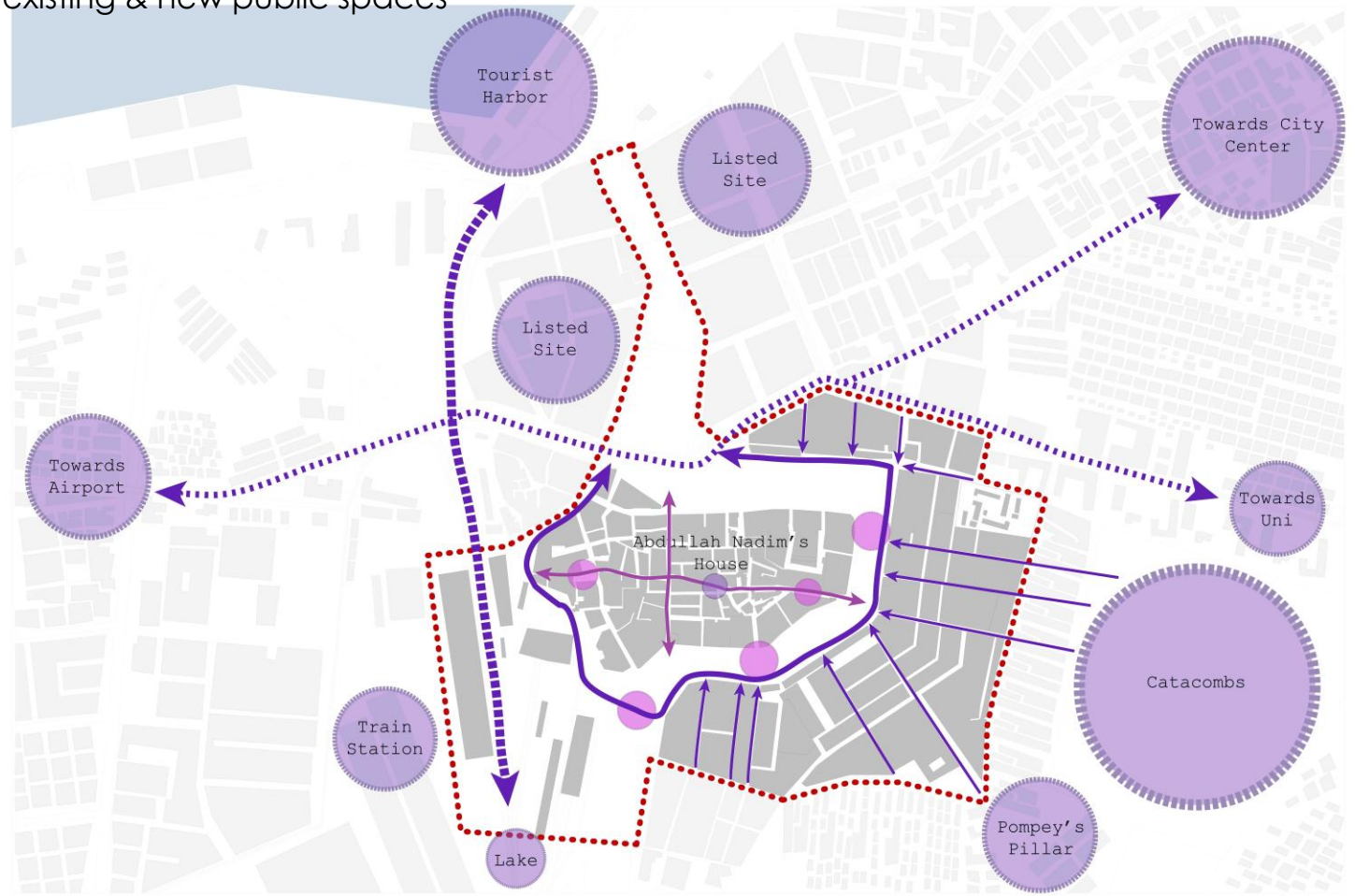
- Sub-phase 1.1: Upgrading street network & connecting to public transport **[Infrastructure] +** Improving existing & new civic spaces **[Public Spaces]**
- Sub-phase 1.2: Retrofitting the Mahmoudiah canal. **[Environment]**
- Sub-phase 1.3: Adaptive re-use of 6 industrial buildings into community services **[Civic Spaces]**

Phase 2: Responding to housing shortage in Minet el Bassal

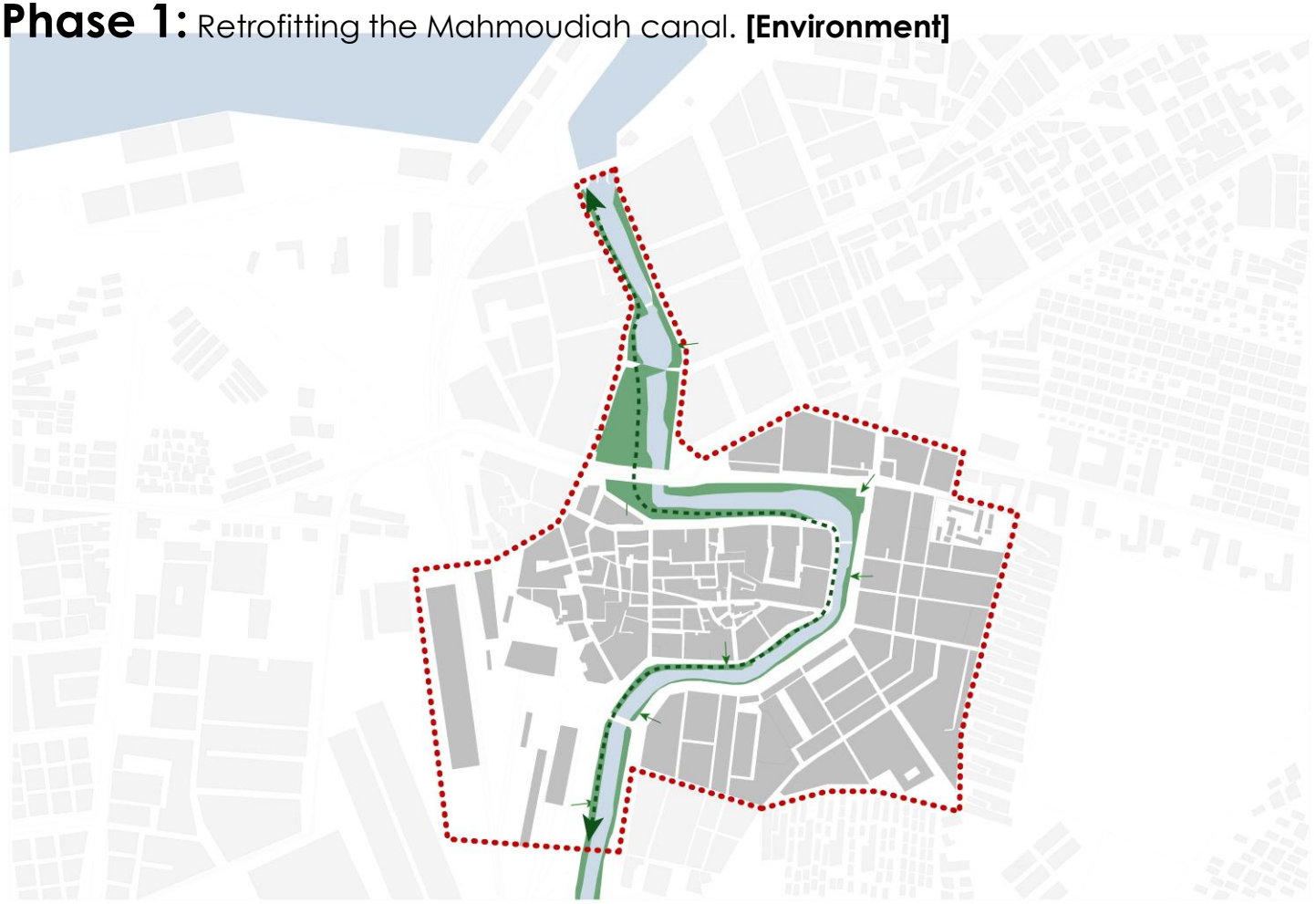
- Adaptive re-use to transform remaining factories into social housing complexes + including local participation in housing rehab (inspired by Darb el Ahmar)

Phase 3: Setting urban design guidelines & controls for future private development

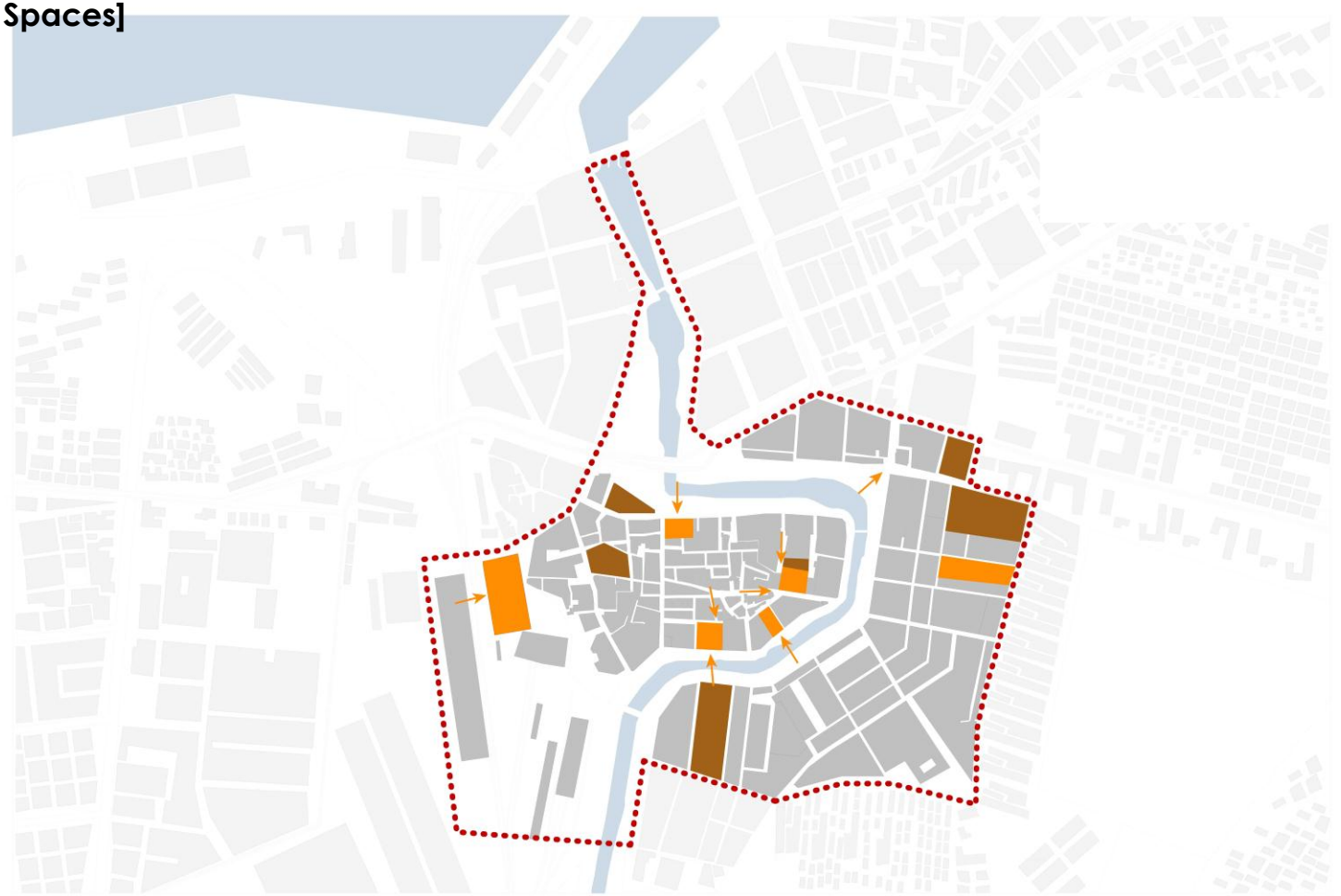
Phase 1: Upgrading street network, connecting to public transport **+** Improving existing & new public spaces



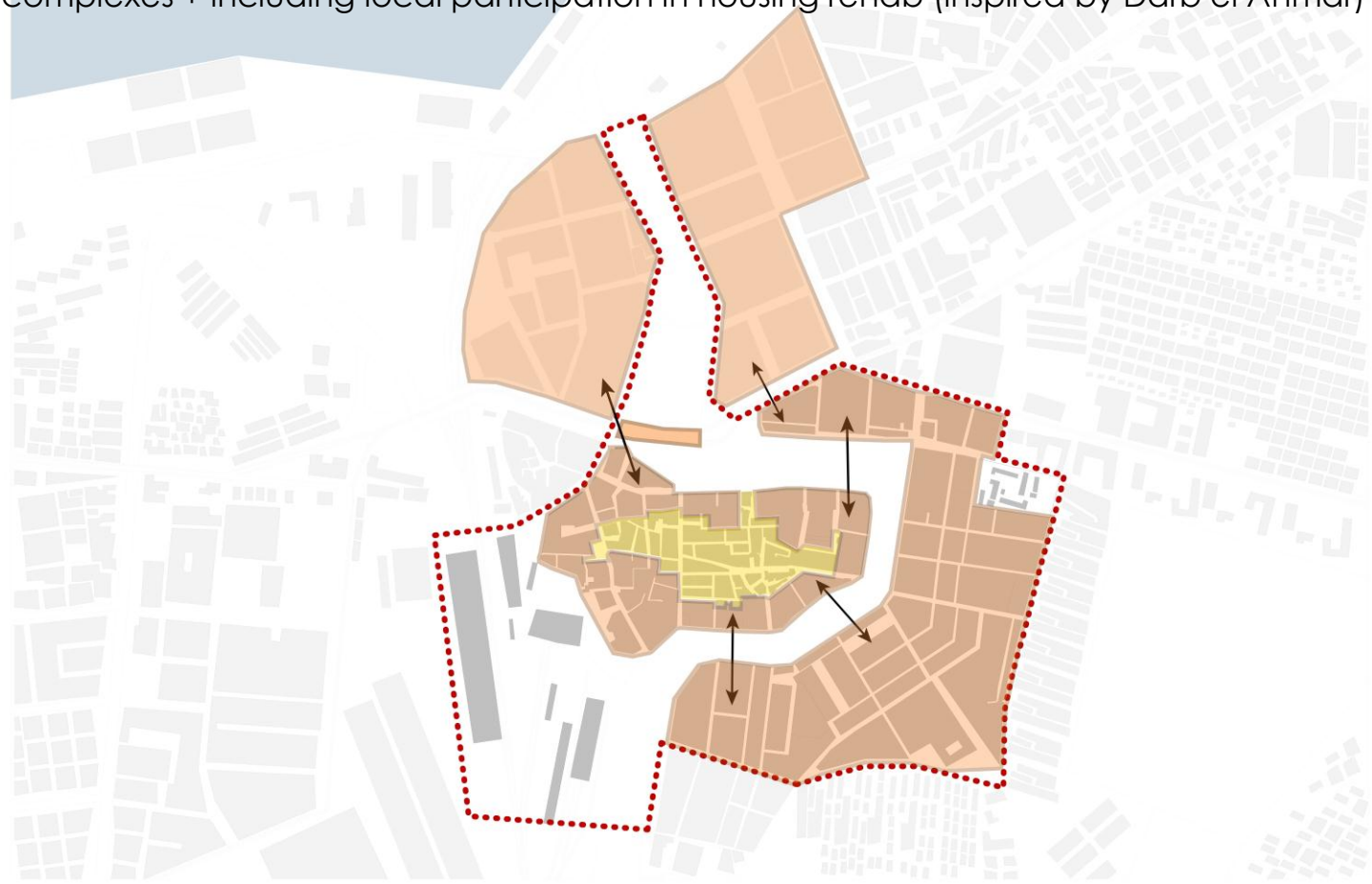
Phase 1: Retrofitting the Mahmoudiah canal. **[Environment]**



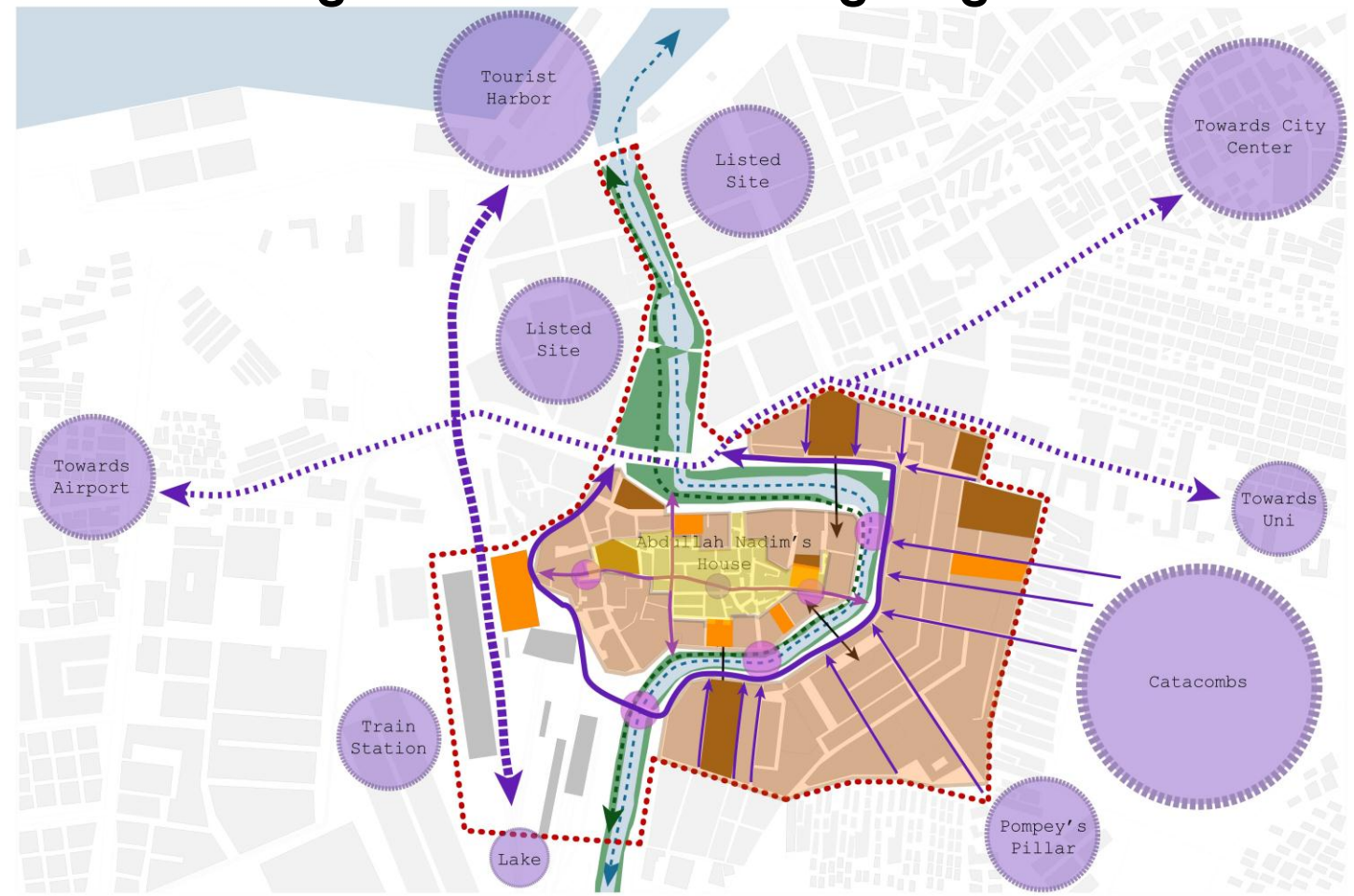
Phase 1: Adaptive re-use of 6 industrial buildings into community services **[Civic Spaces]**



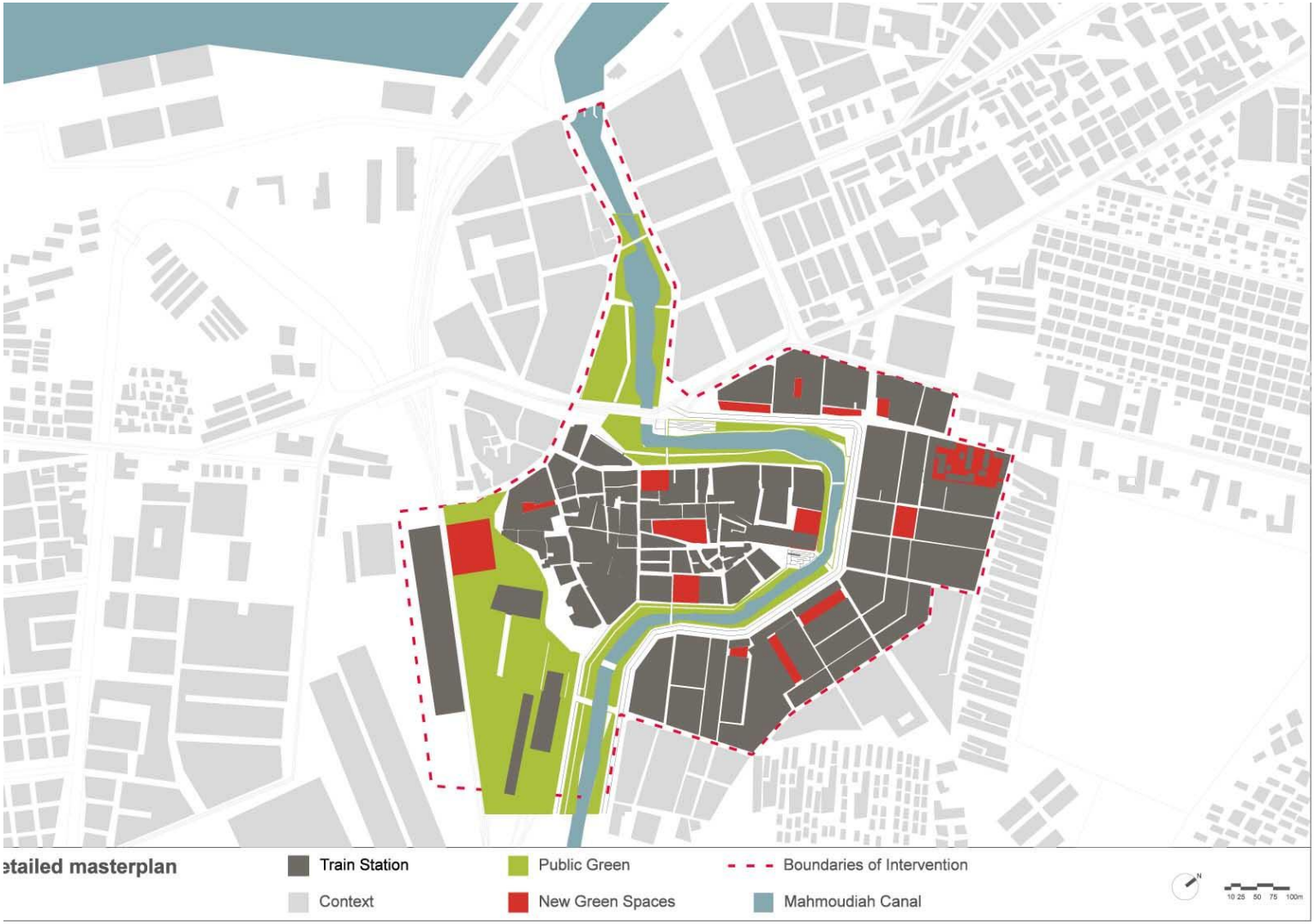
Phase 2: Adaptive re-use to transform remaining factories into social housing complexes + including local participation in housing rehab (inspired by Darb el Ahmar)

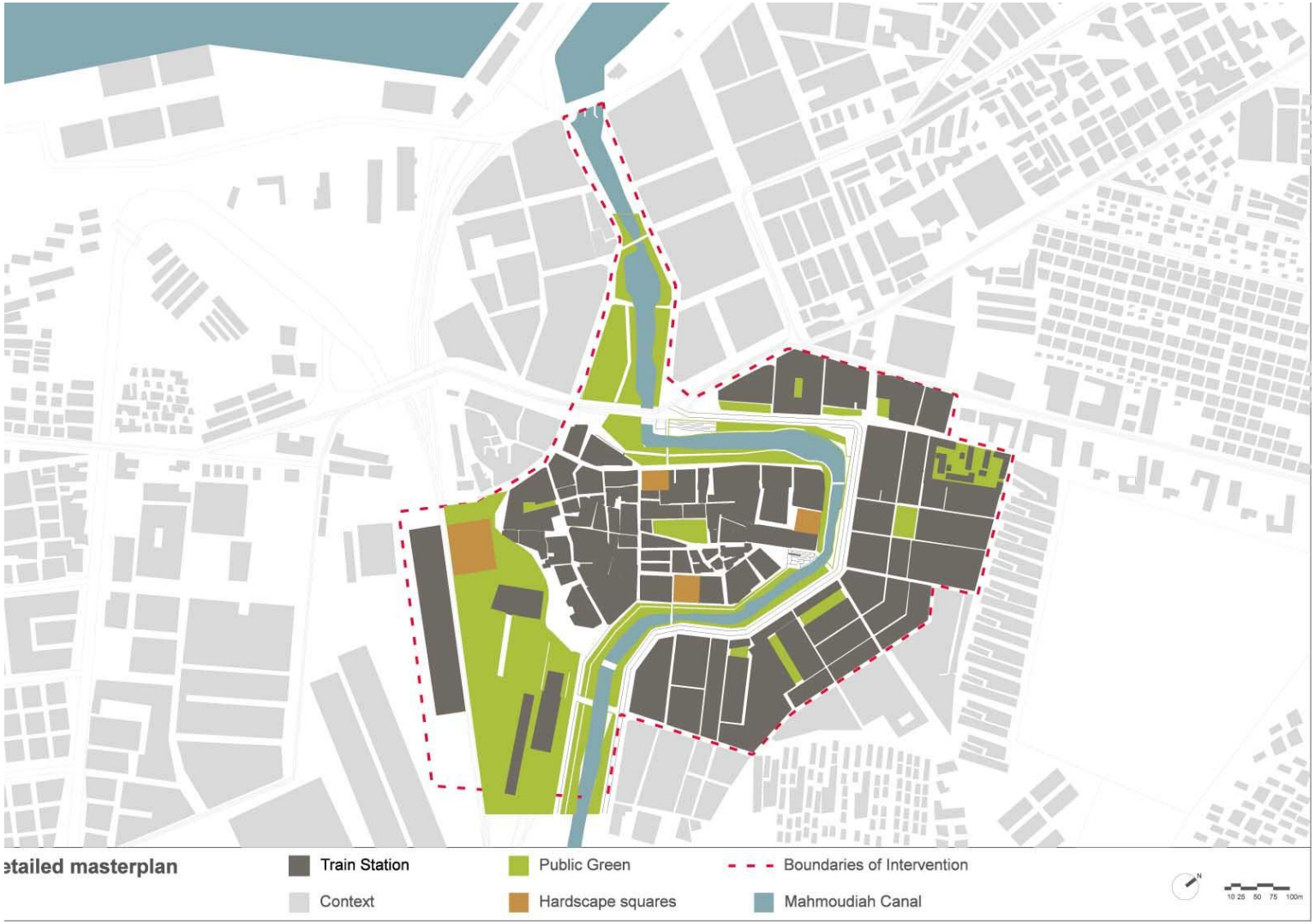


Revisited Design Intervention: Phasing Diagram

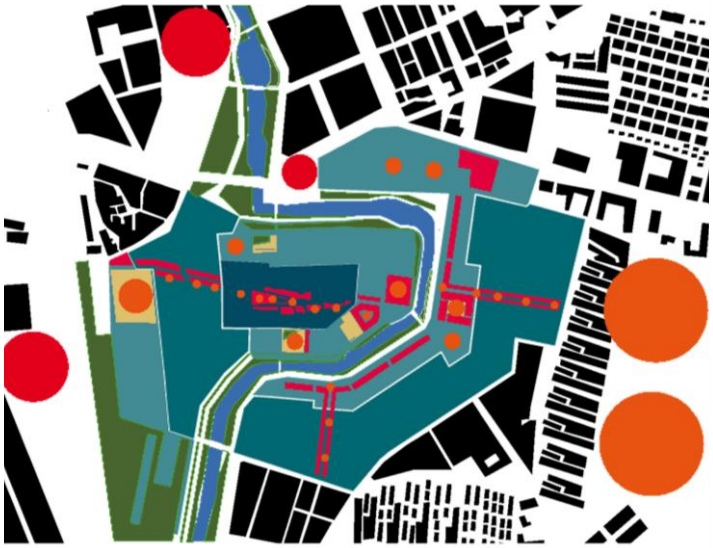


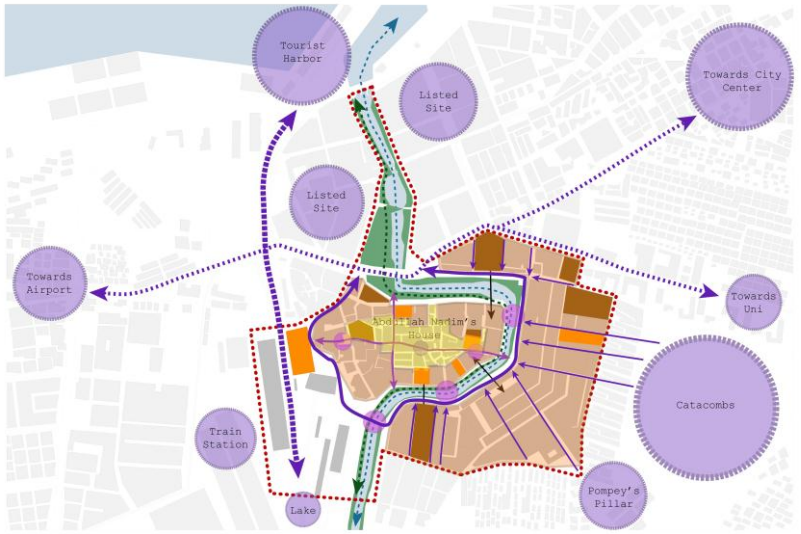

Overlaying existing
&proposed footprints
Initial Design Intervention Footprints
Surrounding Context
Existing Building Footprints
Mahmoudiah Canal
Boundaries of Intervention
Potential for public squares
N
10 25 50 75 100m


etailed masterplan
Train Station
Public Green
Boundaries of Intervention
Context
New Green Spaces
Mahmoudiah Canal
N
10 25 50 75 100m

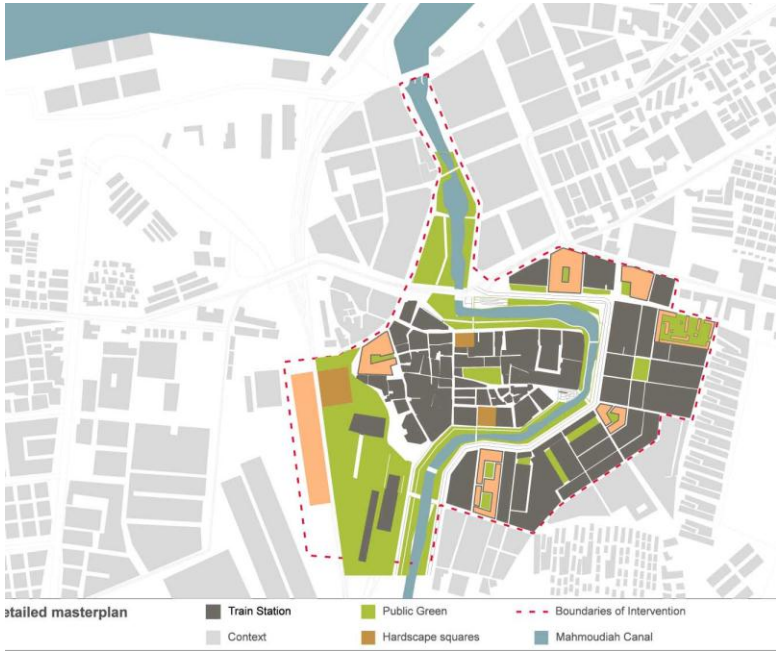

etailed masterplan
Train Station
Public Green
Boundaries of Intervention
Context
Hardscape squares
Mahmoudiah Canal
N
10 25 50 75 100m


etailed masterplan
Train Station
Public Green
Boundaries of Intervention
Context
Hardscape squares
Mahmoudiah Canal
N
10 25 50 75 100m

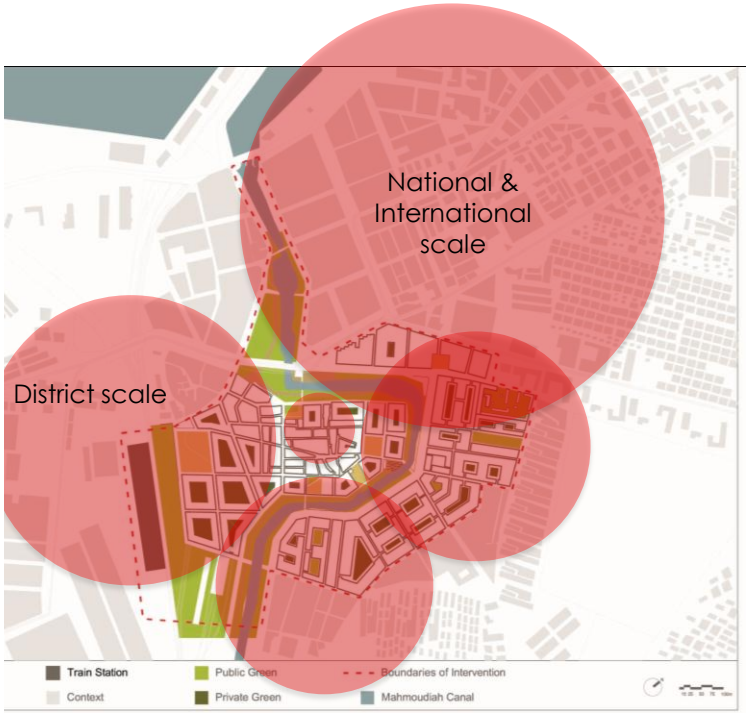


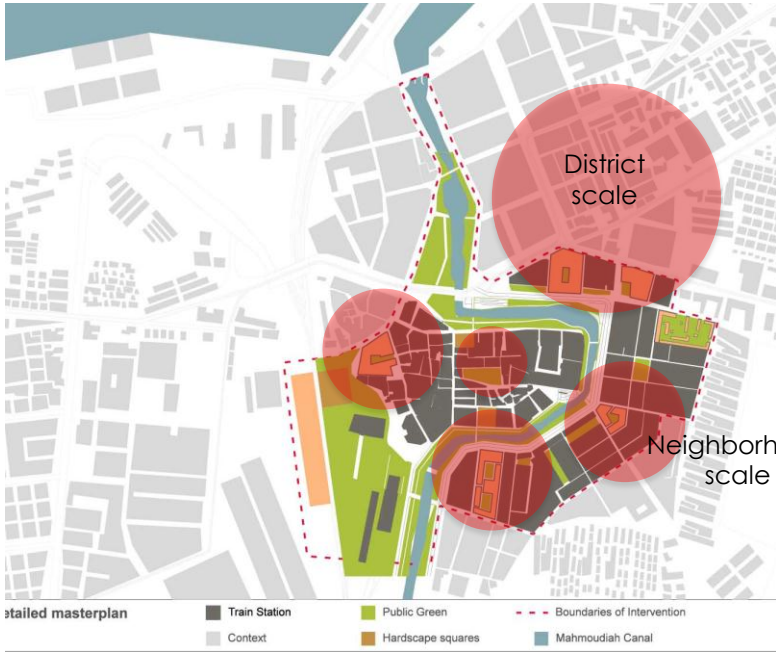


Initial intervention concept vs. revisited intervention concept



Initial intervention vs. revisited intervention





Initial intervention vs. revisited intervention

Before & after images of Minet el Bassal in character area along the canal

Before & After images of Minet el Bassal in character area between the factories

V. Financial Framework

Project envisioned to be financed by:

- Governorate of Alexandria,
- Egyptian Supreme Council of Antiquities
- International donor agencies: Agha Khan Trust for Culture (Donor for Azhar Park),
- World Bank (Assessed Alexandria's urban status in 2007)
- Swiss Federal Bank (Donor for Darb el Ahmar).

- Phase 2: can also be funded from the revenues generated by the effective wastewater management & maintenance fee of the Mahmoudiah Park

- Phase 3: financed by private sector but abiding byt public agency's urban design guidelines and building controls.

VI. Conclusion

- This thesis explored urban design solutions geared towards sustainably upgrading, revitalizing, re-integrating & re-positioning Minet el Bassal within its larger context in Alexandria, taking into consideration economic, social & environmental incentives.

- The thesis argues for the necessity to **integrate interventions at multiple scales, thinking through phasing as a strategic element** of the intervention.

- It confirms **the necessity for a comprehensive approach when addressing an urban problematic**, in line with contemporary urban design thinking (Moudon, A. 1992; Carmona).

- **3 Open Question**
- 1. How can the concept of time be practically integrated in urban design processes, as realities change faster than physical spaces?
- 2. How to strategize intra-city 'friendly urban competition' between districts, to catalyze & similarly encourage neighboring underdeveloped parts ?
- 3. Lastly, is gentrification bad, and if so, is it completely unavoidable?


Al Ibrahimiyyah
Ras at Tin
Alexandria
Al Attarin
Karmus
Izbat
Al Qabbari
Nagaa El-Arab

Thank you