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Relevant studies and projects on monuments restorations in Historic Cairo

Report
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Urban Regeneration Project for Historic Cairo
مشروع الاحياء العمراني للقاهرة التاريخية

Relevant studies and projects on monuments restorations in Historic Cairo

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This report collects and analyzes few relevant studies and projects on monuments restoration and urban rehabilitation, implemented or under implementation and planned within the W. H. site and its buffer zone in the last decade by the Ministry of Culture at first, and the Ministry of Antiquities after.

يجمع هذا التقرير ويحلل بعض الدراسات ذات الصلة بمشاريع ترميم الآثار وإعادة إحياء المناطق الحضرية، سواء تم تنفيذها أو لازالت قيد التنفيذ في موقع التراث العالمي ومنطقة الحماية الفاصلة، وذلك في العقد الماضي من قبل وزارة الثقافة أولاً، ثم وزارة الآثار.





Cairo has been a dominant political, cultural, commercial and religious capital throughout history playing a prominent role during Fatimids, reaching its golden age during Mamluks, and sustaining its cosmopolitan significance during Ottoman times. Due to its unique peculiar skyline, it has been known to scholars and historians as “City of the thousand minarets”.

Historic Cairo was inscribed on the World Heritage List in 1979 recognizing its “absolutely unquestionable historical, archaeological and urbanistic importance.” Upon ICOMOS recommendation, the inscription was based on the following criteria:

1. Several of the great monuments of Cairo are incontestable masterpieces;
2. The historic centre of Cairo groups numerous streets and old dwellings and thus maintains, in the heart of the traditional urban fabric, forms of human settlement, which go back to the middle Ages;
3. The historic centre of Cairo constitutes an impressive material witness to the international importance on the political, strategic, intellectual and commercial level of the City during the medieval period.

URHC Goals and Objectives In July 2010, UNESCO-WHC launched the Urban Regeneration Project for Historic Cairo (URHC) in the framework of a larger program of technical assistance to the Egyptian Government concerning the management of the World Heritage Site, focusing on the following objectives:

1. The preparation of a Conservation Plan for Historic Cairo’s “Core and Buffer Zones”, which would include the Management Plan required by the WH Operational Guidelines;
2. The establishment of an institutional framework to undertake and develop a sustainable urban conservation policy, promoting coordination and collaboration amongst different institutions, administrations and agencies concerned with the management of the World Heritage Site;
3. The creation of an appropriate and shared information platform for urban conservation.

To achieve these goals, an interdisciplinary team of local and international consultants are collaborating with the concerned bodies to develop a set of protection measures in order to uphold the site’s Outstanding Universal Value, to prevent further decay of the historic urban fabric and to enhance the socio-economic conditions of Historic Cairo.

Historic Cairo

Cairo, Al Qahira, is one of the main cities in the Middle East. It has a great Architectural and Urban Heritage that made it one of the main cities on the World Heritage List. Since the 10th century, its foundation date, Cairo took its place among the main capitals in the Islamic World. Full of more than 375 listed monuments and value urban fabric, Cairo stands as the richest cultural city in the Islamic world. In 1979, "Islamic Cairo" was listed on the World Heritage List as one of the first cities as a complete site. Since the second half of the 20th century the Islamic monuments suffered from lack of maintenance and control. That led to severe deformation in the city structure and its monuments.

Cairo, History of a Nation

In Egyptian tongue Cairo is equal to Egypt. They use to say "Misr" which is the Arabic name of Egypt, for naming Cairo. This is a sign for its value for the people. Also the Arabic terminology of "Misr" is the capital. Since its foundation in 967 AD Cairo stand as a witness for many major events. Some of them helped in its growth and development. Cairo was for a long years considered as the world trade centre for its centralized location where the European merchants met the eastern goods. That was reflected on the architecture of the city. There for Cairo contains the largest group of Islamic monument buildings all over the world. Actually, in this context, quantity is not the point. The architectural value of the buildings, rather, is the cornerstone because the buildings of Historic Cairo gained the precedence of developing the Islamic architecture throughout the Islamic civilization. Many of these buildings stand as a witness for many significant events changed the history of Egypt as well as the history of mankind.

Transformation of the Image of the City

The city of Cairo started to transformed on the urban level since the French Expedition by Napoleon in the end of the 18th century. He demolished the gates of the Haras to reduce the revolution of the Egyptians who used the *Harahs* as defensive castles. This

By the beginning of the 19th century, and due to the influence of European culture and its architectural styles, the inner courtyards of the traditional introverted Cairo houses started to be disappeared and replaced with extroverted European houses. Mashrabiyyas had been replaced with terraces. Big houses with courts were divided into small plots due to immigration of the elite class of the inhabitants towards the modern extents to the west side of old city replaced with lower class with less plot area for their homes. New small rented flats replaces the old Rab' (traditional dwelling units). These changes massively transformed the old character of the city. Luckily the urban alignment still in most places intact, having the original streets, *Harahs*, *Atfas* and *Zuqaqs* are in most cases having the same names since their foundation.

While Cairo is always the legend of the Islamic Heritage, it was also facing the danger of losing huge part of this value. That danger had many aspects which attacked the city for more than 45 years. We could summarize these aspects in the following:

- Immigration of the elite class of the inhabitants towards the modern extents of Cairo

in the beginning of the last century leaving their value houses empty without care or maintenance.

- Lack of maintenance and repair for the main public buildings due to the transformation of all the country's budget to supporting the army in the wars from the 40's till the 70's of the last century.
- During the 1967 war with Israel many cities in the Suess Canal were evacuated by the army and reinstalled by the government in the historic city where empty places could be found. Also were installed in the Waqf's buildings which most of them were monuments.
- The decay of the infrastructure of the old city.
- The absence of comprehensive management of cultural resources and control.
- In 1992 an earthquake of 6.8 points on Richter scale made many structural deformations to the buildings of the old city including monuments. That earthquake was like an Alarm pointing to the results of the decay of more than forty years of continuous decay.

History in Danger

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*Sultan Hassan and Rifai mosques
seen from Bab el Azab*

Historic Cairo Project, a Start of Saving the City

In 1998, a study was conducted by the UNDP and the Supreme Council for Antiquities under the title Historic Cairo Development Project. This study is considered the launching pad of the current project. The study was submitted to the Egyptian government, which showed great interest in the project which enjoyed the sponsorship and continuous follow-up of the President of the Republic and the First Lady.

A meeting with UNESCO in Cairo, and a follow-up meeting in Paris were held in the

same year. The details of the study and its findings were discussed and it was found that it was necessary to constantly update the study in light of the fast environmental, demographic, urban and cultural changes in the area.

The study was based on all the statistics collected in Cairo by the relevant authorities and organizations of the Egyptian government, mostly put together in the census of 1986.

Therefore, the main orientation was to identify the changes that took place in the area during the period of 12 years from 1986 until 1998.

Equally important was to define, in a clear detailed manner, the condition of the historic buildings in the area and their need for preservation and restoration, together with specifying the extent of risk involved, as the study did not focus on this point.

Based on the above-mentioned discussions, the Ministry of Culture drafted a special paper on the current status at the time to be submitted to the Egyptian government. The paper recommended the necessity of conducting comprehensive surveys of the current status of Historic Cairo and the changes it had undergone as a prelude to the establishment of the Historic Cairo Project, provided that all the authorities acting in Historic Cairo Project are represented in these studies and in the subsequent project. Furthermore, the said project should be conducted according to an integral vision of the area, duly preserving the intangible cultural character of Cairo and protecting it against change. The paper also suggested that a work plan and methodology should be laid down through the collaboration of all relevant authorities. Based on the above-mentioned paper, decree no. 1352 of 1998 was issued by the Prime Minister to form a working group on the ministerial level, with representatives of the following ministries: Al-Awqaf, Construction and Urbanization, Planning, Municipalities, Interior, Transportation, as well as the Cairo Governorate. The Committee was chaired by the Minister of Culture and was entrusted with developing a plan of action and a methodology to conduct comprehensive studies of the Historic Cairo Project, according to the perspectives of the Ministry of Culture, as the authority entrusted with the major part of work in the area.

This methodology culminated into the establishment of the Centre for Studies and Development of Historic Cairo, which is considered one of the centers of special nature affiliated to the office of the Minister of Culture.

This centre is charged with studying, directing and coordinating all the development works of Historic Cairo, and developing its areas and various sites. The centre prepares studies and projects related to the fields of development, planning, design, and urban preservation. It also aims to formulate technical recommendations and devise the policies necessary to support and implement the decisions related to the development of the area.

Moreover, the centre aims to set out general mechanisms for coordination between the relevant administrations and authorities for the development of Cairo.

The centre also aspires to create a comprehensive database of the condition of the listed historic buildings in the area, and the difference between them according to the current usages and functions. Some buildings serve as places for temporary housing, while other

are used for industrial purposes that might, or might not be consistent with the nature of the monument. Other buildings function as premises for economic activities that should be examined to specify whether they cause damage to the monument or threaten it, especially after the fires that damaged al-Musafirkhana and parts of the houses of Radwan Bey at Al-Khiyamiyya.

The Centre also aims to create a database to collect all the information related to Historic Cairo as well as all the documents representing part of the history of the area, and give a complete account of them. Such information and documents will then be classified and organized for easy use in the future.

The condition survey works started by the preparation of data sheet for each building that documented the actual state of the monument. Each sheet contained background information on the monument, its origin and history as well as its ownership status, whether by private persons, or by the Ministry of Awqaf, or the Supreme Council for Antiquities. The sheet also documented the relative need for restoration works, and the extent of risk involved, together with giving a detailed account of the use of the building be it residential or commercial or industrial.

An action plan was prepared in collaboration with the Ministerial Council Information Centre, which facilitated the creation of a database for using the Geographical Information Systems (GIS) to receive the numerous and disparate data, and transform it into a coherent mass of information that would lead to a comprehensive solution to the problem.

The work team of the Historic Cairo Centre which included inspectors of antiquities, conservation architects and property engineers worked to prepare the data for the project that was limited within the following borders:

The northern border: The northern Cairo wall and its two gates.

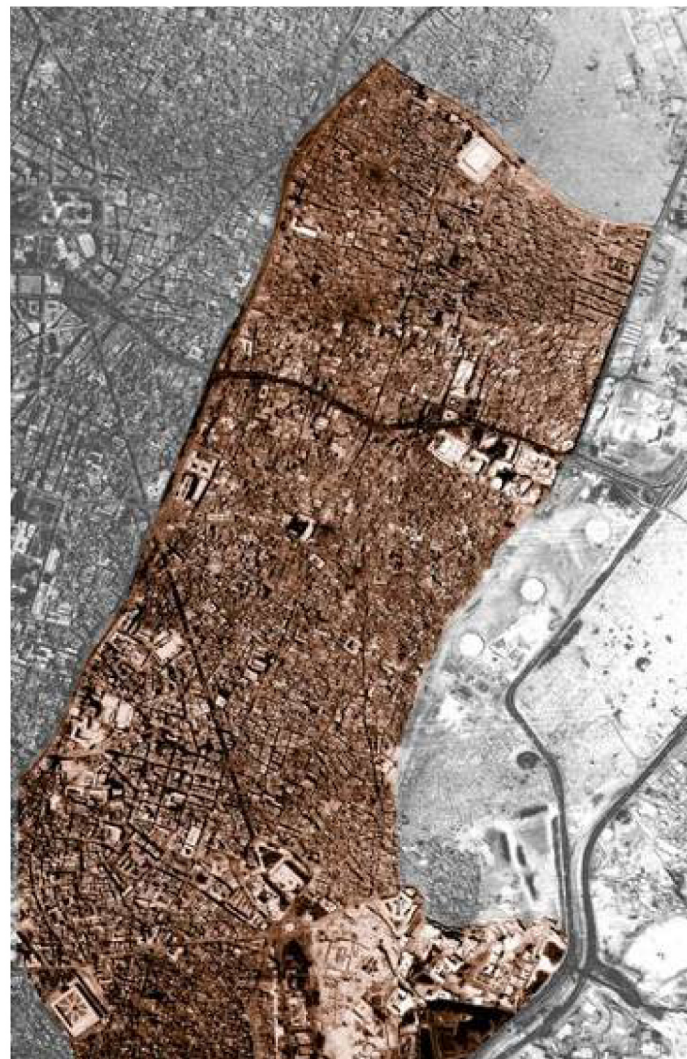
The southern border: Bab Zuwayla and Ahmad Mahir street.

The eastern border: Salah Salim street.

The western border: Port Said street.

Having finalized the demarcation, categorization and analysis of the problem, the results came as follows:

1. The area contains 174 Islamic and Coptic listed monuments. Ten monuments had been restored before embarking on the project; fifteen monuments were undergoing restoration by the Su-



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preme Council of Antiquities, some with the aid of grants given by foreign institutes or Arab funds.

2. 149 monuments were in need of restoration, keeping in mind that the degree of urgency differed from one building to another. A considerable number of these buildings were still under temporary shoring since the earthquake of 1992.

3. The ownership of the monuments is as follows:

- 137 monuments are owned by the Ministry of Wqafs.
- 7 monuments are privately owned.
- 30 buildings are owned by the Supreme Council for Antiquities.

4. 1064 cases of occupation and encroachment on listed monuments, whether by inhabitants or by governmental bodies (residential and commercial) were recorded.

5. An overall categorization of all the activities and functions of the archeological buildings was conducted. The centre also added a new dimension to its job, by counting the significant historic buildings in the area that are not listed as monuments. The number of these buildings is 48, some of which date back to the Ayubid, Mamluk and Ottoman eras as well as the nineteenth century.

The centre also included, within the framework of its duties, a comprehensive survey of the empty plots of land and disused or partially collapsed buildings in this area. These spaces, which pose an environmental threat to the area due to their misuse as garbage and waste dumps, could be re-utilized for functions that service the area and help alleviate its problems. The survey counted a total of 273 plots of empty land and collapsed buildings representing 35% of the built-up area of Historic Cairo.

The centre started by conceiving recommendations for an initial layout of the broad lines of the coming phase, so as to comprise the following key items:

1. Changing the main traffic axes in the area as follows:

- a. The establishment of two tunnels under Al-Azhar street. It is noteworthy that al-Azhar street is a modern road that has artificially split the urban texture of Historic Cairo and totally separated it into two halves.
- b. Demolishing Al-Azhar fly-over and the pedestrian bridge, as well as the iron fences separating northern Cairo from southern Cairo and transforming the area extending from Port Said Street to Al-Azhar and Al-Husain into a pedestrian zone.
- c. The maximization of the role of alternative traffic axes in Cairo, which will act as main axis points to the area such as northern Jamaliya Axis (Jalal Street). The maximization of the role of the southern axis known as Bab Al-Wazir, would also be studied.
- d. Embarking on a study for the establishment of several multi-story garages, which will serve as parking areas for the cars owned by the inhabitants and visitors, and which will eventually serve the tourist activity.

2. Laying down an implementation plan to protect and maintain listed monuments and

historic buildings in the project area, in light of the above-mentioned condition survey.

3. The preparation of special studies to coordinate all the development work in Historic Cairo, the upgrade of the urban fabric, and the restoration of its historic buildings and the formulation of the technical recommendations and policies necessary to support the decisions related to the development and the upgrading of the area.

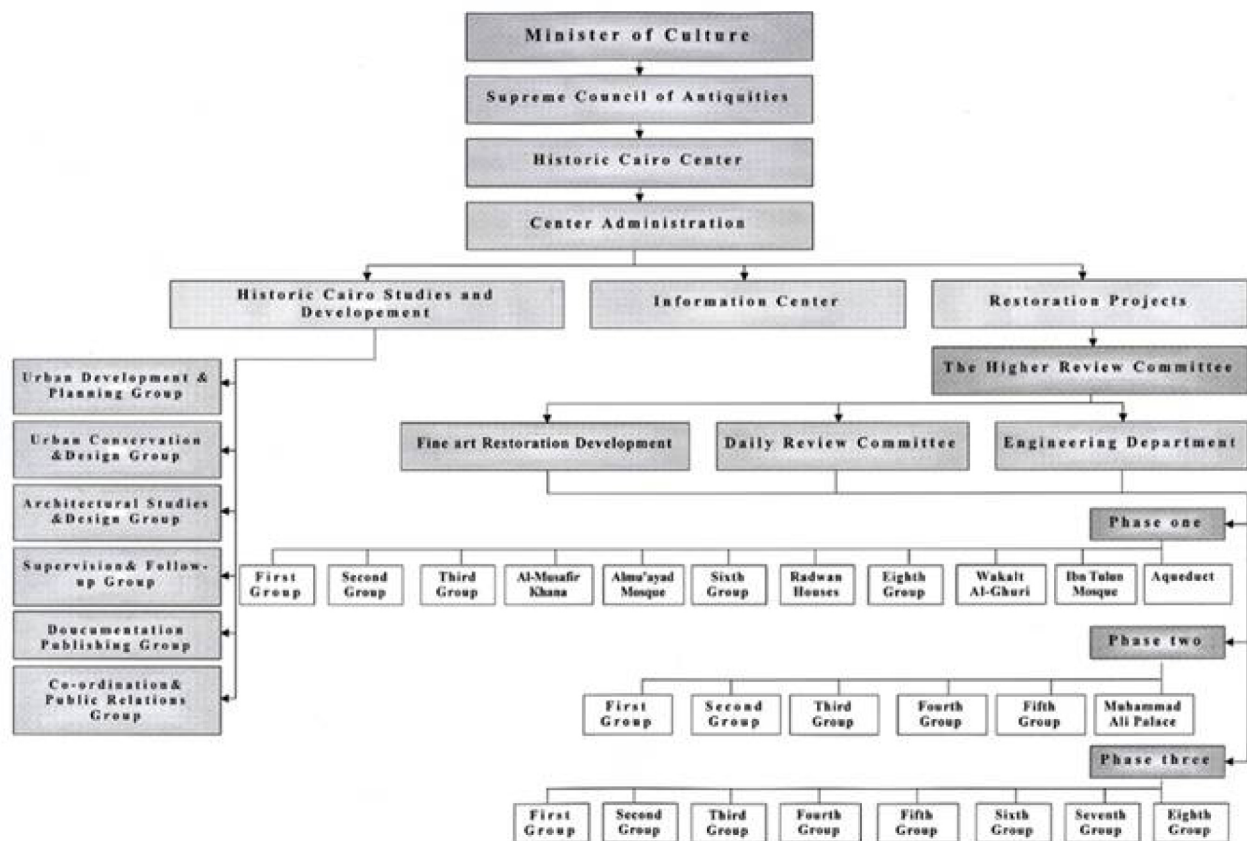
4. The preparation of special studies on utilities and infrastructure, and their effect on the historic fabric, in addition to devising alternative plans for their upgrade.

The recommendations mentioned above were presented to the President of the Republic in the meeting headed by his Excellency, with the participation of all the ministries and authorities in charge of this mission. The following conclusions were reached:

1. The Ministry of Culture will devise executive plans as regards the items two and three of the above recommendations.

2. The Ministries of Transportation, Urbanization and the Cairo Governorate will lay down executive plans for item one .

3. The Ministry of Urbanization together with the Cairo Governorate and the Executive Organization for the Cairo Utility will set out executive plans for item four.



Administrative Structure of Historic Cairo



أثر يحتاج ترميم

أثر تحت الترميم

أثر تم ترميمه

مبانى أثرية يجب الحفاظ عليها

المرحلة الأولى للترميم

المرحلة الثانية للترميم

المرحلة الثالثة للترميم

المرحلة الرابعة للترميم

Historic Cairo Risk Map

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Implementation Plan for the Safeguarding and Maintenance of Monuments:

The Centre started by laying down an implementation plan to safeguard and maintain the listed monuments in the project area, as part of the National Project of Historic Cairo. The basic items of the plan follow.

1. Saving the listed monuments of the city from deterioration.
2. Applying the concept of holistic area conservation rather than the individual restoration of one building.
3. Dividing the work into a number of phases according to the status and needs of the monuments according to the following order:

Phase One: 47 monuments located in the archaeological zones of al-Ghuri, ad-Darb al-Ahmar, al-Azhar and al-Husain.

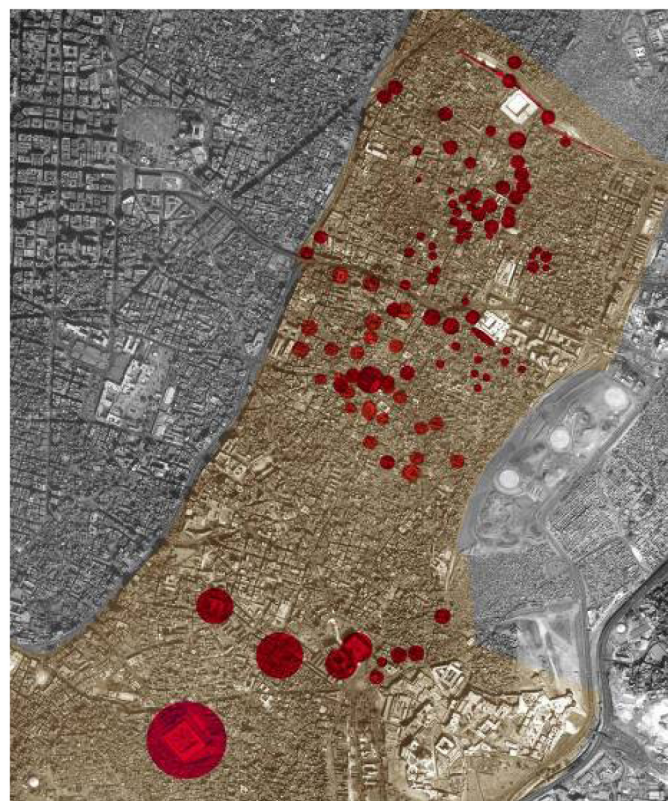
Phase Two: 25 monuments located in the archaeological zones of al-Nahhasin and Bayt al-Qadi.

Phase Three: 44 monuments located in the archaeological zones of al-Jamaliyya and al-Khurunfish.

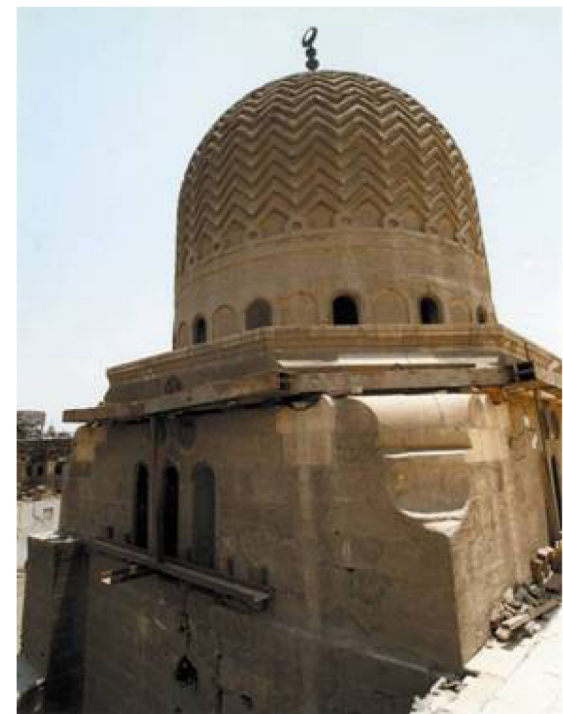
Phase Four: 33 monuments located in the archaeological zones of Bab Zuwayla and Bab al-Wazir.

Work was launched, and it was necessary to take a number of key preparatory steps prior to embarking on such massive restoration projects:

1. Conducting a comprehensive historic study on the monument, starting from the waqfiyya, or endowment deed, passing by the changes that it underwent through time. Then comes the survey of all previous restoration works which took place in the building. Documents and photographs are also collected, as well as the relevant information and drawings from the bulletins and records of the Comité de Conservation, travelers' accounts, drawings and photographs, in addition to the documentation of the French Expedition.
2. Conducting a condition survey that studies, all signs of architectural, structural and environmental deterioration, as well as all damage to the decorative elements. These signs and mechanisms of decay were the basis on which the general framework and philosophy of the restoration was prepared, by engineering offices specializing in conservation.



Locations for HC projects



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3. Qualifying a number of specialized consultant offices, as well as engineering and research centres at Egyptian universities to work in this field. Nine consultant offices and a scientific centre were qualified, out of 47 applicants, through a nationwide competition launched in Egypt.

4. Qualifying a number of contracting companies with previous experience in conservation to work in the project. Out of 52 competing companies, 8 major companies qualified, five of which were actually operating in the field of conservation, while the other three had no prior experience in conservation, but had the material and technical assets necessary for developing a suitable workforce.

5. Selecting a scientific committee involving the various types of expertise required in the field of conservation from the Egyptian universities and the Supreme Council for Antiquities. This committee was to assume the scientific responsibility of reviewing the restoration projects prepared by the consultant and following up on the execution works on site. It comprises more than 20 experts and professors in the field of archaeology, architectural history and conservation.

6. Devising an action plan in accordance with the guidelines laid out in the international documents and conventions on conservation. This plan would deal with the methodology and the broad lines of the conservation philosophy.

The implementation of each conservation project is divided into two main phases, namely the documentation phase followed by the execution phase :

The Documentation Phase

I. Surveying Works

1. General Site Survey Works:

- a. Survey of main building levels and their relationship to the street.
- b. Survey of the borders of the monument and the buildings adjacent to it.

2. Survey of Building:

- a. Specifying the orientation of the different spaces of the building.
- b. Creating a geodetic grid and linking it to known street survey points.

3. Monitoring:

- a. Monitoring the inclination of columns, walls as well as other structural elements.
- b. Monitoring the development of existing cracks.

II. Architectural Drawings and Condition Survey:

- a. Preparing drawings of all necessary plans, sections and façades showing current condition and signs of deterioration.
- b. Survey and documentation of all decorative and architectural details

III. Soil Mechanics and Foundation Analysis:

- a. Conducting the necessary studies on the properties and mechanics of the soil
- b. Studying the subsurface water flow and its effects on the foundations.
- c. In the case of soil or foundation failure, solutions for the consolidation of foundations are devised.

IV. Studies of Structural Stability:

- a. Load Analysis of Building.
- b. Submitting a plan for the structural monitoring of the monument and suggesting the most appropriate consolidation and stabilization plan in case of structural failure.

V. Analytical Studies of Building Materials

- a. Survey and scientific analysis of the historic building materials used in Cairo and their components.
- b. Analysis of the mechanical properties of historic building materials.
- c. Documenting causes and mechanisms of decay and signs of deterioration of the building materials.

VI. Photographic Documentation

Comprehensive documentation of all facades and their decorative elements.

VII. Further Studies

- a. Preparing the general conservation policy and detailed work-plan and schedule according to the findings of the above-mentioned studies
- b. Studies to upgrade potable water supply and wastewater and drainage lines.
- c. Studies on upgrade of electricity lines and preparation of a detailed lighting scheme.
- d. Studies for fine restoration works for all decorative elements.

The Execution Phase

The implementation steps of the restoration projects are based on a number of guidelines and executive mechanisms. This is to ensure the execution and follow-up of the projects within the framework of the provisions of the international covenants and accords concerned with the conservation of cultural heritage and in concurrence with local laws and regulations and with the executive framework of the Historic Cairo Development Project.

Preparation of the Tendering Documents and Specifications

- 1. Preparing the general specifications and requirements for the restoration works and materials.
- 2. Preparing the bills of quantities of the work items in detail.
- 3. Preparing the engineering documents of the architectural restoration works according to architectural and archeological practice and usage as per the needs, taking care that all the specifications and drawings are completely clear to the bidders.

4. Estimating the provisional cost of the project before tendering it in a closed envelope, together with the price of the tender document.
5. Follow-up and clarification of ambiguities that may arise before, after or during work.
6. The supervision staff for each conservation project will consist of a project manager with expertise in the field of restoration in addition to an architect, a civil engineer, an SCA inspector and a restoration professional, in addition to any other specialization required by the project.

Tender of Restoration Projects

1. Restoration projects have been tendered following projects that were developed by consultant offices and duly revised. The projects were placed for tender to companies that were selected through a local competition. The technical and financial proposals submitted by the companies are evaluated with priority given to the technical aspect. Then the implementing agency, or the company which will execute the project, is announced.
2. After handing over the site to the company, and before actually starting execution, the following takes place:
3. The implementing staff of the company together with its subcontractors specialized in the field of restoration are approved subject to a review of their past experience.
4. Approval of the consultancy office supporting the executing company.
5. The company reviews the project with its consultant and supervisors to ensure the understanding by the company and all the supervising authorities of the project; and to execute the restoration process duly prepared by the project consultant.
6. The company updates the existing documentation of the historic building, according to the data and information that come to light during verification inspection works.
7. Having finalized the study of the project and authenticated its current status, an action plan is prepared according to the philosophy and methodology of the project as recommended by the committees of the scientific committee.
8. Documentation and registration of all the data and instruments related to the project are updated regularly, thus representing a register of all the restoration and maintenance processes that took place. Then a comprehensive record is produced about the maintenance and restoration works of the historic building, since the date of its construction until the restoration works are finalized.
9. Data is collected on a daily basis and fed into a database, which serves as the official database about the historic building, and as the main reference for the work undertaken on the building.

The Executive Plan for Developing the Traffic Axes in Cairo

Having conducted a study to change the traffic flow in al-Azhar Street; and having devised an integrated project, the following points were discovered:

1. The zone needed two traffic tunnels for vehicles:

The first starting from Salah Salim Street and ending at Opera Square.

The second starting from Opera Square and ending at Salah Salim Street.

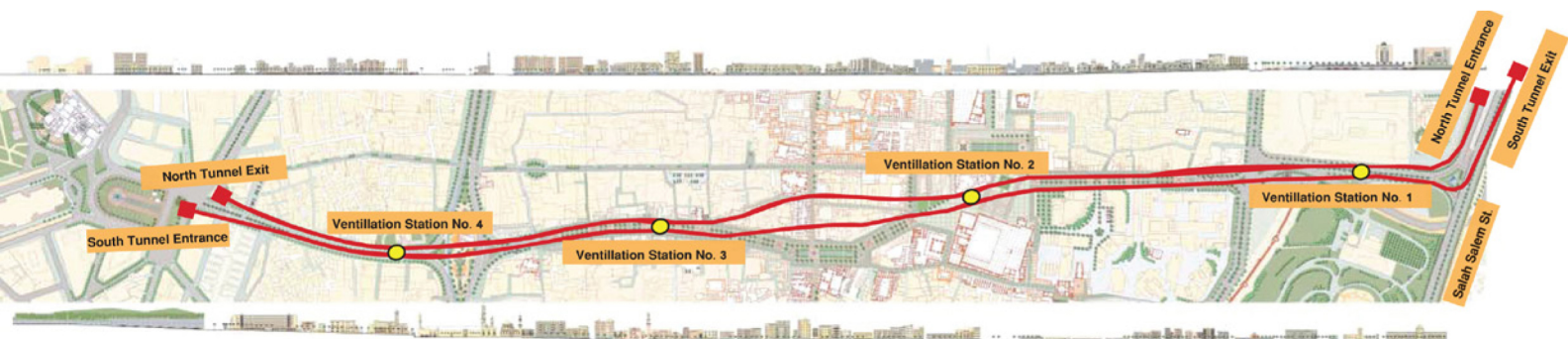
2. The tunnels would need to be 25 meters underground. The width of each tunnel would be 6 meters, while the length of each would be 2.6 km.

3. All precautions would need to be taken when designing, executing and laying down the alternative emergency plans to ensure the safety of the tunnels' operation processes after inauguration.

4. Redesigning the traffic axes in the down-town area for adequate traffic flow out of the tunnel, heading to Tahrir Square and into the tunnel heading to Salah Salim.

Work on al-Azhar tunnels started early in 1999 under the supervision of the Ministry of Transportation and the Cairo Governorate.

- All security precautions, follow-up as well as the support of all listed monuments and historic buildings, under which al-Azhar tunnels are built, were taken.
- Al-Azhar tunnels were built and inaugurated in October 2001 with a cost exceeding one billion Egyptian pounds.
- More than four and a half months after the inauguration and operating of al-Azhar tunnels, it was demonstrated that both function adequately in terms of traffic flow. Moreover, the time spent to reach Salah Salim from the Opera Square and vice versa has been significantly reduced, as it takes 4 minutes instead of 25 minutes.
- At the end of February 2002, it was decided that al-Azhar Street should be pedestrianized, and that work should embark on removing al-Azhar Bridge, after building alternative traffic axes to serve both the extant activities and the community. In the meantime, a comprehensive vision would be prepared to redesign the area, especially al-Azhar Street, extending from the Opera Square to Salah Salim Street.



■ Azhar Tunnels Path

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The Executive Plan for the Upgrade of Key Buildings in Historic Cairo

The Ministry of Urbanization and Utilities, in collaboration with the Ministry of Culture, is currently conducting a general study on subsurface water, not only in Historic Cairo, but also within the surrounding areas, in order to identify the size of the problem and the possibility of developing comprehensive solutions for the area in its entirety, instead of dealing with it piecemeal. The same applies to utility networks in Historic Cairo. Following is a summary of the preliminary studies that the project has undertaken:

The Executive Plan and the Comprehensive Framework of the Historic Cairo Development and Upgrading Studies:

This study aims to develop a set of policies and planning and design guidelines necessary to deal with the area, within a general framework for urban upgrading, which accurately determines the set of parameters required for the development processes and their relevant procedures (execution, demolition, new construction, restoration, rehabilitation, public shop licenses, workshops, services, markets, boards, colors, etc.)

The study involved field surveys of valuable historic areas in addition to reviewing the historic value of such areas while referring to previous projects concerned with the revival of Historic Cairo. The ultimate aim was to determine the appropriate method of upgrading the environment of this area. All previous projects and surveys were reviewed and a set of policies formulated; these can be summarized as follows:

- Putting into effect the declaration of Historic Cairo as a heritage site.
- Creating an updated database of Historic Cairo, depending on the geographical information systems (GIS) technology.
- Developing management policies and mechanisms for implementation.
- Urban development regulations.
- Raising cultural awareness.
- Preserving valuable buildings and studying buildings and sites of historic value.
- The principle of public participation.
- Re-use of monuments
- Restoration of houses with the participation of inhabitants.

An Nasir Muhammad Madrassa

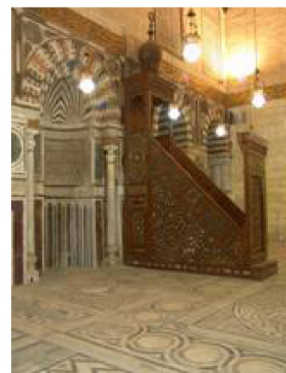
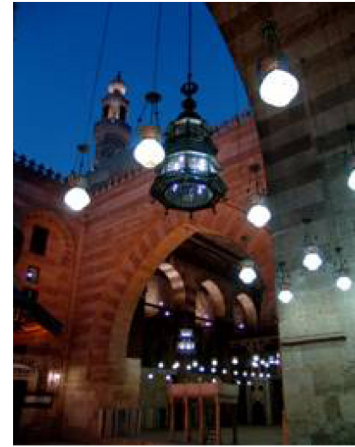
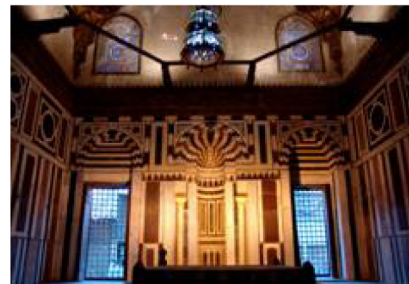
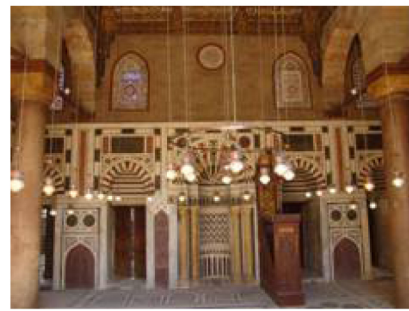
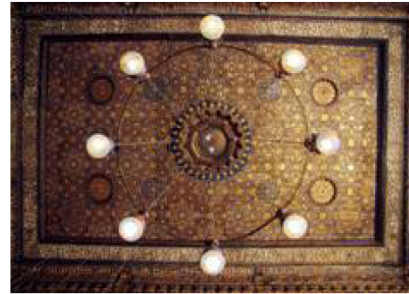


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The Khanqah of Barquq



The Ashrafiyya Madrasa



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The Infrastructure of the Historic City

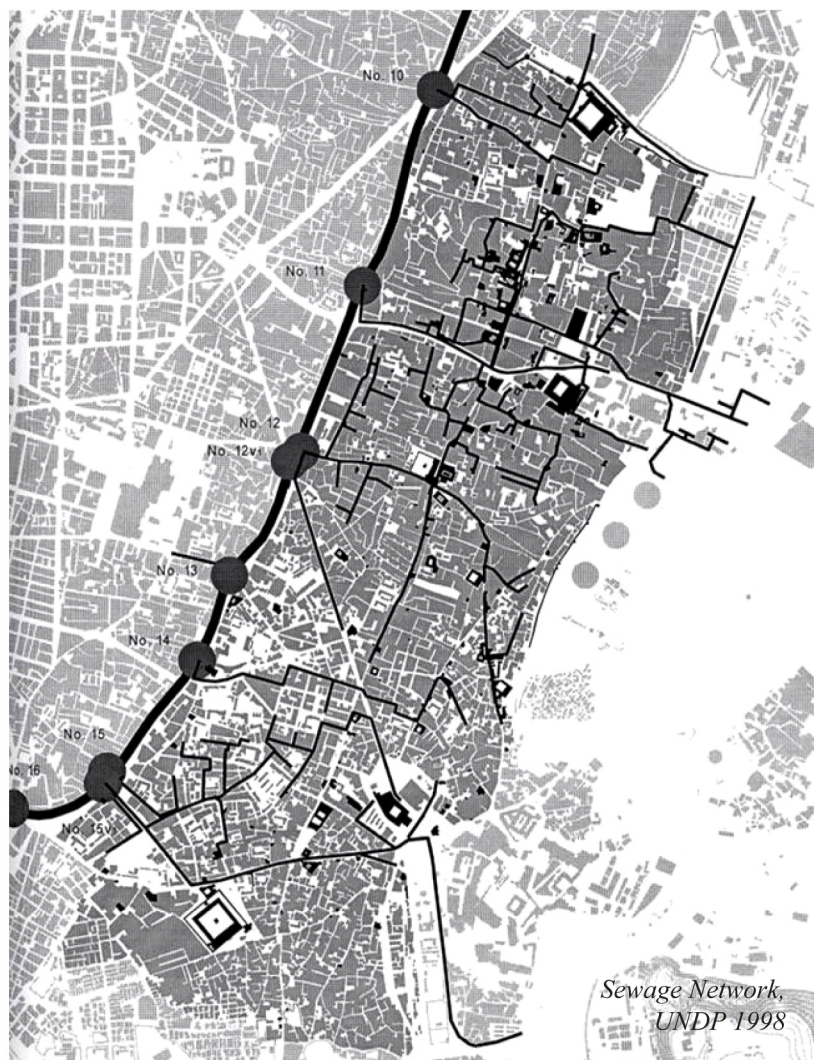
The surface area of Historic Cairo is 4.2 square km. This is the first area in the Arab Republic of Egypt, where the infrastructure (water networks, sanitary drainage networks, electricity networks, and telephone networks) have been extended. For more than 120 years, no maintenance or rehabilitation was undertaken on the infrastructure of the historic city. This is all the more relevant in light of the significant increase in commercial and industrial activities and their impact on the community working in the city.

Many chemical materials are used in industries, and these directly leak into the utilities networks. This has adversely affected the general state of the historic city – over flowing pipes and blocked drains were commonplace, especially during the last five years. Such impacts have adversely affected the general condition of all of the buildings in the historic city.

Therefore, the Egyptian government was required to give special priority to the treatment of such problems. The government undertook the studies necessary to affect a comprehensive change of all the infrastructure of Historic Cairo. Works is actually in action by changing the utility networks in the north side of the city.



*Water Supply Network,
UNDP 1998*



*Sewage Network,
UNDP 1998*

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Figure 1 is a line graph showing the variation of the normalized velocity profile u^+ (y-axis, ranging from 0 to 100) versus the normalized distance y^+ (x-axis, ranging from 0 to 1.0). The graph displays multiple curves for different values of the parameter β , ranging from 0.0 to 1.0. The curves are labeled with their corresponding β values. As β increases, the velocity profile becomes flatter, and the maximum velocity decreases. The curves for $\beta = 0.0$ and $\beta = 0.1$ are the highest, while the curves for $\beta = 0.9$ and $\beta = 1.0$ are the lowest.

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The Social Dimension of Historical Cairo

A number of difficulties emerged when dealing with the inhabitants of the monuments and the buildings adjacent to them, mostly due to a collective memory that viewed the conservation and restoration of monuments as a potential source of trouble and hardship for the community. In the past, each restoration project conducted in the old city entailed the demolition of encroachments on the monument without consideration to the repercussions on the occupiers of these encroachments who only lived in these old and decrepit buildings as a last resort. The Historic Cairo Project was keen on laying down a general policy of safeguarding the livelihoods of these people while protecting the monument. Accordingly, the people and users of the shops contingent to the monument started to accept the project, as they came to the realization that it worked to maintain the sustainability of their activities, provided they did not infringe on the monument. In the meantime merchants were asked to commit to not changing or modifying the features of the monument, after their shops were restored for them for free. Therefore, all merchants now have newly refurbished shops which satisfy their requirements and do not cause damage to the monument.

Most visitors consider the shops an original part of the monument and a vital component of the amazing spatial and visual experience that is Historic Cairo. Undermining this component is to undermine the history of the place as it is engraved in the minds of the people. As for the limited number of people residing inside the monuments, they were moved to hygienic modern apartments in a neighboring area. The total number of cases of encroachment in the project exceeded 1200 cases.

In the meantime, efforts were exerted to develop and renew the utilities network, a step that will be of benefit to all as it will result in the improvement of the environment and will encourage the continued habitation and use of Historic Cairo.

Mosques have been restored to their former glory and services extended to worshipers and mosque attendants have been improved. These services included the installation of new water closets and ablution taps (maida'a). All procedures necessary to ensure the comfort of worshipers and prevent any risk to the building have been duly taken. The lighting network has been comprehensively renewed and upgraded. This has had a very positive impact on the efficiency and functional value of the mosque, a fact that is much appreciated by the worshipers and attendants.

Reuse of Madrasa of Al 'Ayni as a Children Creation Centre



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Al-Mu'iz li-Din Allah Street -Humanity of Scale within Spatial Unity

The spatial unity between the many disparate elements of the Street of al-Mu'iz is remarkable. The structures of the street, which has come to being over the course of more than one thousand years, have many features and traits in common. The harmony between the different elements built until the late nineteenth century, and the refinement of their proportions and scale is such that one gets the feeling that they were all designed in the same age. While the architects and master builders have gone to great heights to display their individual skills and talents, their output has never clashed with the existing elements of the street or undermined the harmony between them. They were like virtuoso musicians in an orchestra, each performing his individual piece within a common symphony without disrupting the general melodic framework, the only difference being that in the case of al-Mu'iz Street, each musician played his piece in an entirely different era. The mosque of al-Hakim which used to stand outside the walls of Fatimid al-Qahira is a case in point. When Emir Badr al-Din al-Jammali became vizier after the Mustansiriyya troubles, he rebuilt the three gates of al-Futuh and al-Nasr in the north and Zuwayla in the south. As the gates were built slightly outside the original walls, the two new northern gates came to hold within them the mosque of al-Hakim and the three buildings became one architectural mass. The northern minaret of al-Hakim acquired a new appearance after the new walls and towers were built. Its lower base was re-formulated, yet to the passerby, it appeared as though it had been originally designed that way and that the added base was part of the original construction. A similar story happened later in Bab Zuwayla when al-Mu'ayyad Shaykh wished to construct the minarets of his congregational mosque. The result was a sensitive architectural pairing that rendered the minarets built above the towers of the gate an inseparable part of the ensemble, this despite the fact that they were added to the gates more than four hundred years later. A third example is the architectural cluster that al-Ghuri built on both sides of the street. He respected the original street line and allowed the silk market to penetrate his complex – the result being a coherent cohesive spatial mass. These examples show a builder and planner five centuries ahead of his time. Five hundred years later, modern theories of European architecture called for the same principles of including cultural structures within commercial clusters and opening them onto paths of human movement, thus allowing for heightened interaction between the man of the street practicing his everyday life and the cultural activities within these buildings. A different example of savvy architectural practice is the positioning of the sabil of Muhammad 'Ali in al-'Aqqadin with the minarets of al-Mu'ayyad in the background so that one sees them flanking the sabil in a seemingly coherent ensemble as one approaches the building. This is despite the fact that there is a distance of more than 20 metres between them.

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The Evolution of al-Mu'izz li-Din Allah Street

Cairo, in general, and al-Mu'izz li-Din Allah Street in particular, underwent numerous changes throughout the ages. In the Fatimid period, during what came to be known as the Mustansir Crisis, prices soared and the people suffered. Al-Mustansir sought the help of Amir al-Juyush (Commander) Badr al-Din al-Jamali whose many accomplishments included extending the area of Fatimid Cairo from the northern and southern side and demolishing the old wall. He also built the gates of Bab al-Nasr, Bab al-Futuh and Bab Zuwayla, introducing a new architectural style of stone construction hitherto not known in Cairo. The gates and walls enclosed within them the area between al-Hakim Mosque in the north and Harat al-Rum in the south.

Salah al-Din al-Ayyubi later expanded the boundaries of Cairo further by incorporating both Fatimid al-Qahira and al-Fustat within one walled entity. He also transferred the seat of rule and the royal residence to the new Citadel south of al-Qahira. This transfer had a pronounced effect on the construction patterns of Fatimid al-Qahira. The two Great Fatimid Palaces were no longer in existence and their sites were occupied by madrasas, markets and houses. The first madrasa to replace a section of the palaces was that of Sultan al-Kamil followed by that of al-Salih Najm al-Din to which his widow annexed his mausoleum.

Next came the Mamluk Sultan al-Zahir Baybars who constructed his great madrasa then Sultan Qalawun and his magnificent funerary complex. This was followed by his son, al-Nasir Muhammad whose extensive efforts to develop and upgrade the street can be considered al-Qahira's second major revitalization attempt after that of Badr al-Jamali. The result of his efforts was a vastly improved and truly splendid street. Emir Bashtak then built his magnificent palace and was followed by Sultan Barquq, the founder of the Burji Mamluk dynasty who established his splendid khanqah with its glorious decorations. Sultan al-Mu'ayyad demolished the jail of Khaza'in al-Shama'il and built his grand mosque with its two minarets on top of Bab Zuwayla. The next ruler was Sultan Barsbay who also built a madrasa surrounded by a suq. Al-Ghuri can be considered the most prolific builder and the grandiose urban cluster he built is one of the largest and most lavishly decorated in the history of Islamic architecture.

The final additions to the street are attributed to the Ottomans whose accomplishments were relatively limited. Arguably, the best oeuvre of that age, was the sabil and kuttab of 'Abd al-Rahman Katkhudha in al-Nahhasin area and its sister structure, the mosque of 'Ali al-Mutahhar, built at the same time by the same founder. 'Abd al-Rahman Katkhudha was the one who undertook the task of upgrading the street for the third time. He also renovated the complex of al-Mansur Qalawun and al-Azhar Mosque in addition to redecorating the street by painting it in white and red stripes (mushahhar).

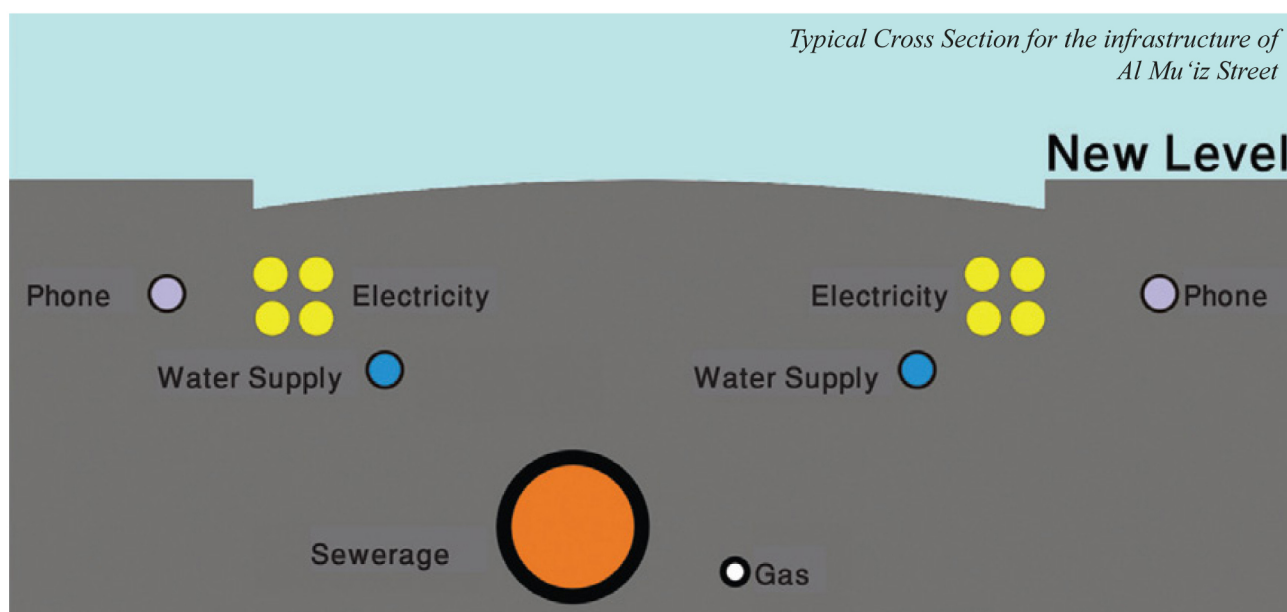
Al-Mu'iz Street Development Project

The development of al-Mu'iz li-Din Allah Street is the first stage in the process of urban preservation of Historic Cairo and is regarded as a pilot prototype for developing this area in the upcoming stages and upgrading the level of organization to world standards. The project is planned as follows:

1. Upgrading the infrastructure of the area and replacing the deteriorated utilities and networks.
2. Lowering the street level to reach a level appropriate to the entrances of the historic buildings as well as paving the streets with materials that befit the monumental character of the street. Street traffic should also be controlled.
3. Developing the facades of Bayt al-Qadi and the street facades in a scientific method that reflects the different ages witnessed by this street.
4. Developing all the elements of urban design such as the street signs, lighting and the seating areas.

Developing the Infrastructure of the Areas of al-Jamaliyya and al-Mu'iz

The Ministry of Housing, Utilities and Urban Communities has undertaken the responsibility of the renovation of the networks of electricity, telecommunications and gas. This was executed in collaboration with the Ministry of Culture, the Governorate of Cairo, the Ministry of Electricity and Telecommunications and Gas Misr Company. The aim was to prepare a plan for the full removal and replacement of the networks. The locations and levels of each utility network and its inspection rooms were located. In spite of the fact that al-Mu'iz Street is currently not supplied by gas, the gas network was also laid so that in the future, there would be no need for digging and refilling once again.



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Lowering the Street Level and Controlling of Vehicular Access

The level of the street was lowered to its level in the 1920s. This level was decided after excavation and was set at approximately 70 cm below its current level. The streets and pavements were paved with granite. Traffic in the street was restricted to bicycles and motorcycles in addition to police cars, ambulances and fire engines. Twenty-four hour electronic gates were installed at the entrances of the area. As a result, the pedestrians could move freely in the street - an unprecedented achievement in the modern history of Historic Cairo.

Development of the Street Facades and the Shops and Public Participation

In an attempt to upgrade the spatial configuration of the street and to beautify the buildings on both sides, the work team prepared a detailed survey of the facades of the buildings and shops to provide an authentic morphological study that aims at documenting the degree of deterioration and arriving at the optimum strategies for improving the street-scape. The objective was not to imprint the street with a specific character related to a particular historical period. On the contrary, each historical era has left its individual impression on the street and that in itself constitutes the history of the street. In other words, the changes applied to the façades were minimal and only to the façades that disfigured the architectural value of the street. The modifications were kept as minor as possible and were achieved through the smallest architectural interventions such as the addition of small wooden elements. The colors of the façades and their relation to the surrounding environment were also studied. All the buildings were whitewashed and the windows, doors, plaster and cracks were restored. All of the above was achieved through continuous liaison with the owners of the shops and the residents of the houses. The participation and cooperation of the users was fundamental in order to arrive at the best and most effective solutions. Finally, the signs of the shops were redesigned to fit harmoniously with the architectural style of the street.



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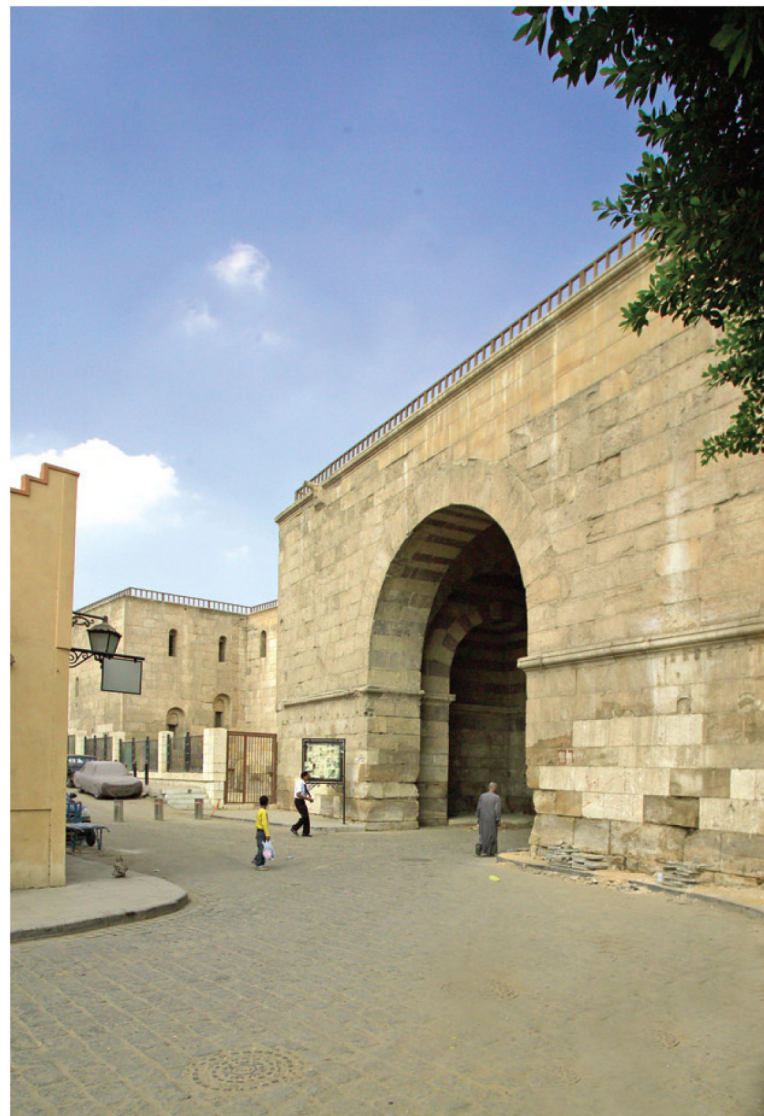
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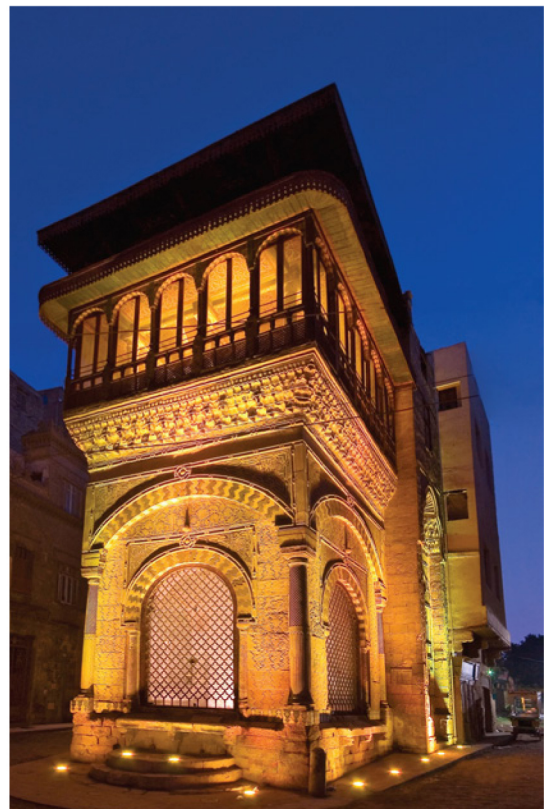


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The Illumination of al-Mu'iz Street

Lighting the street at night is considered one of the most significant factors that serve to accentuate the beauty and magnificence of the historic buildings in general and the great street in particular. Lighting has a tremendous role as it could either distort or highlight the beauty of the historic building. The principal problem in al-Mu'iz Street is the unorganized interference between the lighting of the monuments, the various shops located on both sides of the monument and the public street lights. This interference led to the creation of a random lighting effect whose excessive glow negatively impacts the vision of the pedestrians. Therefore, a new lighting system had to be introduced to create a harmonious lighting effect that would outline the beauty of the monument without undermining the lighting of the streets or that of the shops. The illumination of the monuments is achieved through a state of the art system that is successfully applied in many historic cities. This modern system, which employs LED lighting units, allows the user the freedom to change the lighting hue from an array of all the colors of the rainbow. This also entails a low consumption of energy thereby lowering running costs. The location of the lighting units was designed to accentuate the architectural elements of the historic buildings, their facades and projecting markers such as the domes, the minarets and the entrance portals. All the monuments along al-Mu'iz li-Din Allah Street and of Bayt al Qadi square have been illuminated in a magnificent manner. To avoid any sort of disharmony between the lighting of monuments and that of the shops, a work team was assigned the responsibility of redesigning the lighting of the shop signs and the shops themselves in a manner that would not clash with the general ambience of the street. The lighting of the street was also modified. The old street lamp posts were replaced by historical looking lanterns that added to the magnificence of the historic area.



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Al Jammalya Street, the second phase after Al Muiz

Al jammaliya street starts from Bab An Nasr Gate to the north till Harat At Tambukshiya which ends at the middle of Al Muiz street. It is considered as one of the main historic urban elements in Cairo. Historic Cairo project started in 2009 to put a plan for renovation of Al Jammaliya, Habs Ar Rahba, Tumbakshiya, Sagha (Gold Market), Ghuriya and Bab Zuwayal. The project takes the axis form Bab An Nasr till the plaza of Al Husian mosque and from As Sagha till Bab Zuwayal to the south.

Infrastructure

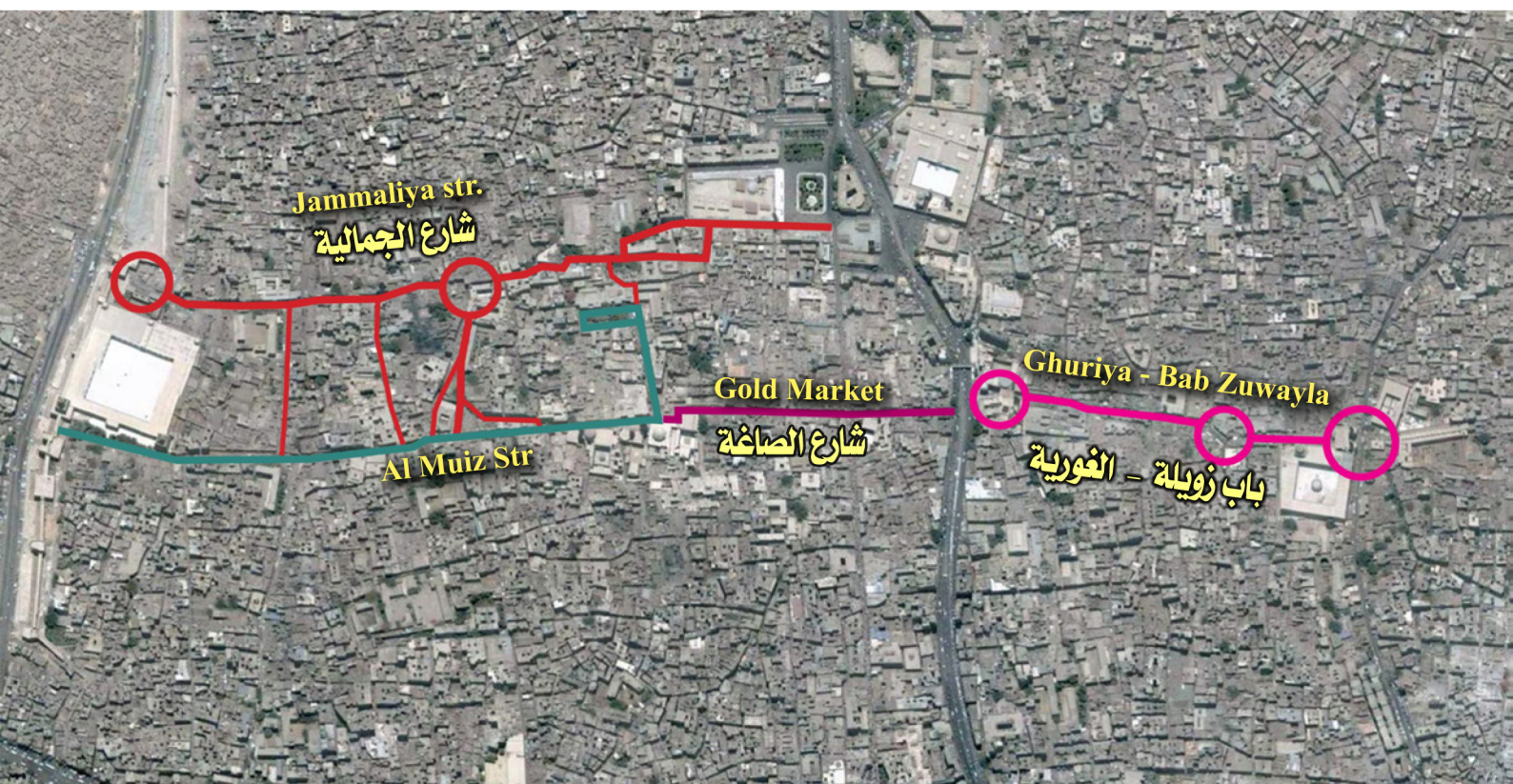
The project as a continuity of Al Muiz project deals with the infrastructure of the area. A complete replacement of the old infrastructure including sewage, water supply, electricity, telephony and rain water drainage.

Street Level

The level of the street was lowered till the original levels of most of historic elements. Most of the monuments in the area are under restoration some of them still didn't start yet.

Plazas

In this phase there are five small plazas, in side Bab An Nasr Gate, front of the wikala of



Uda Pasha, Al ghuriya, Sabil Muhammad Ali in 'Aqqadin and inside Bab Zuwayla. All these plaza will have a comprehensive treatment to revitalize the urban structure of the old city.

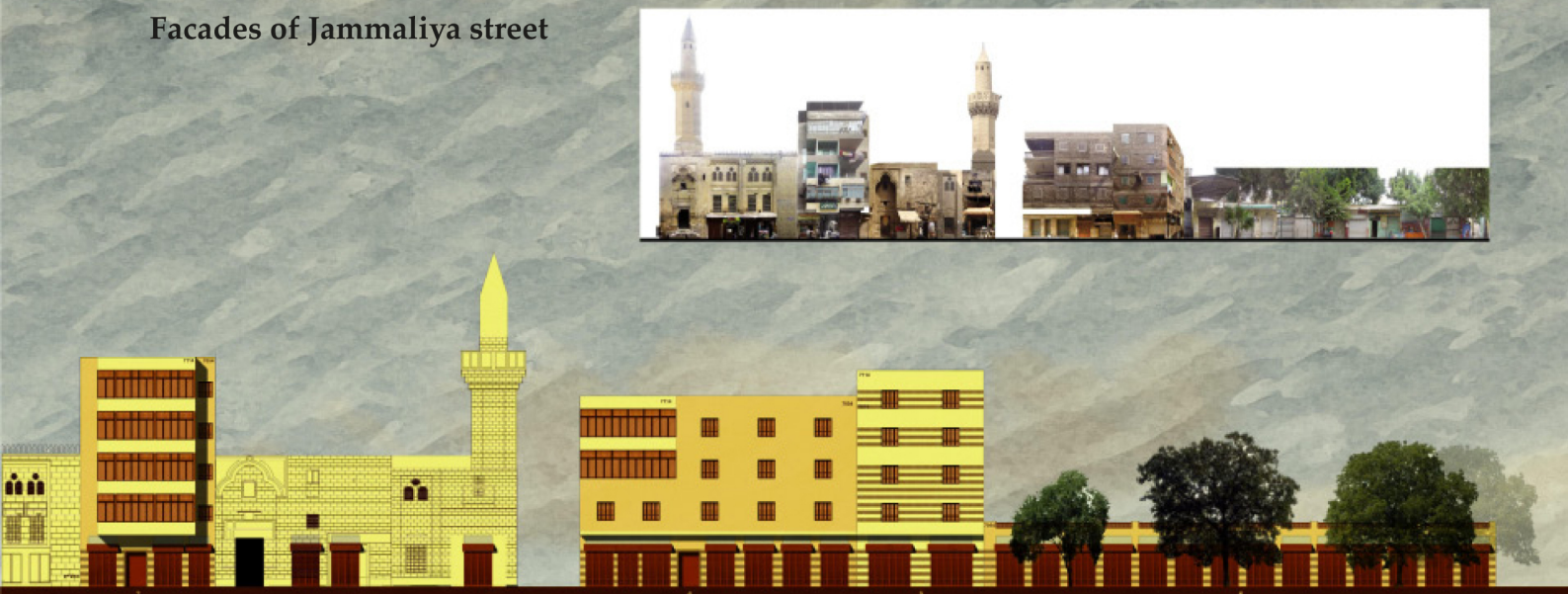
Facade Treatment

All the facades in the project area will be restored and enhanced with the historic character of Cairo using colors and materials compatible with the authenticity of the Historic city.

The estimate budget of the project is 60 million LE, It is scheduled to be finished in 2013



Facades of Jammaliya street



Investment potentials in historic Cairo

Historic Cairo has great investment potentials. A meeting point of world civilizations, the city had been at the center of local and international interest for centuries. Moreover, lying at a busy trade route between Europe and the Far East Cairo prospered significantly throughout the 12th and 16th centuries. Its booming businesses and prosperity gave rise to a sprawling complex of major buildings serving different purposes. Stretching far and wide in the city these elegant buildings include wikala (caravansaries) and khan (inns). However, despite their immense economic potentials they are still neglected and unutilised.

Investment opportunities in tourist-oriented Cairo

Predictably, tourism industry, a major money spinning wheel in Egypt, prospers remarkably in areas redolent with the scent of history and rich in monuments. This is because tourists burning with curiosity hardly resist the allure of archaeological sites and relics of ancient civilisations. However, tourism is not always safe for archaeological sites and monuments. Certain types of tourism pose a real threat to these treasures. The case in hand is sightseeing. In addition to its low returns, sightseeing mainly attracts the attention of tourists, who prefer to visit many places all in one go. Also fully aware of the unreasonably high prices of food and beverage in these areas, sightseers prefer going backpacking around. Nor sightseeing would help owners of businesses opened in these sites to have deep pockets. Worse, a budget has to be allocated permanently to finance the removal of bottles, cans, etc. strewn on the ground after the departure of these tourists. Sightseeing trips also frustrate prospects of families, who depend on tourism as a source of income.

Profit-making tourism

Tourism becomes a profit-making business only when visitors to the archaeological site are successfully persuaded to prolong their stay. There is hardly any doubt that tourists will appreciate the invitation if they are offered a good opportunity to enjoy a comfortable and reasonably cheap stay in hotels in the area. The entire area will eventually become busy with tourist activities and the returns, direct or otherwise, will be remarkably big. Conference tourism is also a lucrative tourist activity. Conferences and symposiums can take place within or near to the archaeological area. Participants will have a good opportunity to satisfy their curiosity over the place and its monuments if hotels overlooking the area are available. A meal in a restaurant or a gift bought as a souvenir will fill these people with nostalgia for their visit in Cairo upon their return home. To promote this type of tourism, well-equipped conference halls provided with a supply of the state-of-the-art technology should be opened. Reasonably cheap hotels should also be available to students and scholars who are common faces in academic conferences. The hotel's profits will increase remarkably if it has leisure facilities such as health clubs, discotheques, etc. Air-conditioned travel buses and cars should be available conveniently and within a short distance from hotels to carry participants to the conference halls. Travel brochures

and guidebooks to the place should be distributed to guests as soon as they are invited to check in the reception desk.

Home tourism

Home tourism traditionally compensates for the decline in the number of foreign visitors when tourism industry experiences a crisis or runs into difficulties for different reasons. Home tourism is an unsophisticated business. Cafes serving different types of customer, cultural centers and theme parks are more than enough to create a thriving home tourism in an area. Home tourism manifests itself strongly in many areas such as the vicinity of al-Hussein Mosque, Khan al-Khalili, al-Azha and al-Harawi plaza.

Investment in historic buildings belonging to Wakfs (religious endowments department)

About 70% of historic buildings in Cairo belong to the Ministry of Wakfs. Unfortunately, this wealth of heritage is left to decay. Another study may have a better opportunity to discuss the reasons in this respect. Investment projects in these immensely huge properties should seek to draw the attention of the intelligentsia on the one hand and the local admirers of history on the other. For instance, some of these buildings can be developed into housing units appealing to certain classes of tenants. However, investors should appreciate the area's history, monuments, and international rules and treaties associated with the preservation of historic cities and their identities. Industrial projects should not by any means be licensed in the area.

Architecture & design of wikala & khan

Functionalism provided the inspiration for the Muslim architect, who built the wikala and khan (caravansaries and inns), which, to put it simply, used to lodge travelers and merchants arriving in the city to make deals before they return home. The caravansari is a two-storied building. The upper store, designed to accommodate travelers, has a sitting room, a kitchen, a bathroom, one or two bedrooms and a dressing room. The lower story was dedicated to store merchandise. Trade activities used to take place in an open courtyard. To protect the privacy of residents, the Muslim architect recommended an independent entrance leading to the lodging house.

Developing wikala and khan into hotels

Taking into account the fact that wikala and khan basically used to act as inns and trade centers, slight modifications can easily develop these facilities into modern hotels. The room price should correspond to the aesthetic value of the building and its architecture. These hotels will definitely draw the attention of tourists, who love staying close to the splendours of the East.

Lack of tourism facilities within the deteriorated urban structure

Deterioration of inhabitant structure due to immigration outside the historic city replaced with small industrial activities

Tourism

Site Users

Historic Buildings & Urban

Deterioration of historic building due to uncontrolled usage.
New structures with no character affect the image of the historic site

Problem

Target

Demographic Equilibrium
Inhabitants - Workshops - Trades

+

Economic Equilibrium
Tourism - Traditional Artisan - Residential services

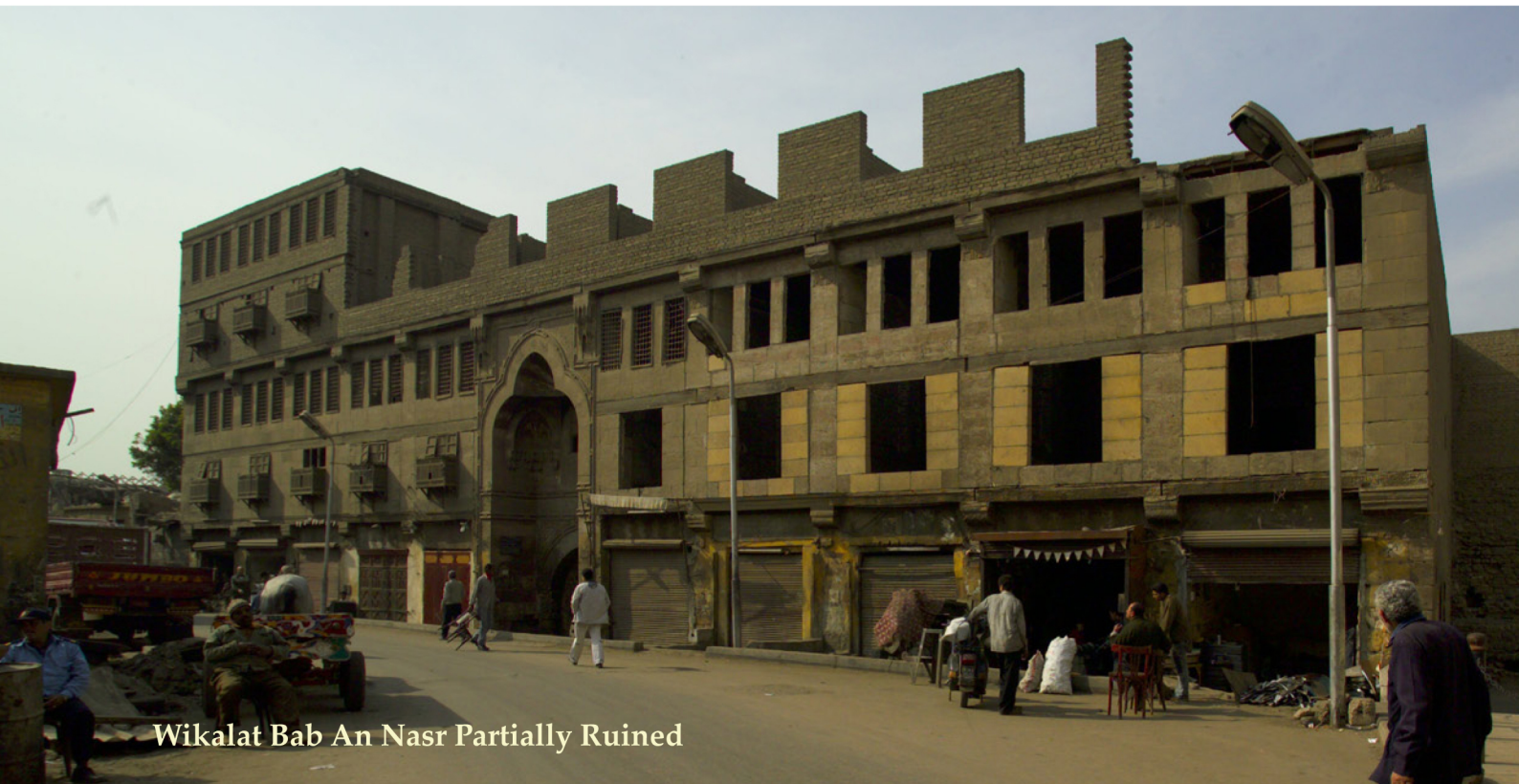
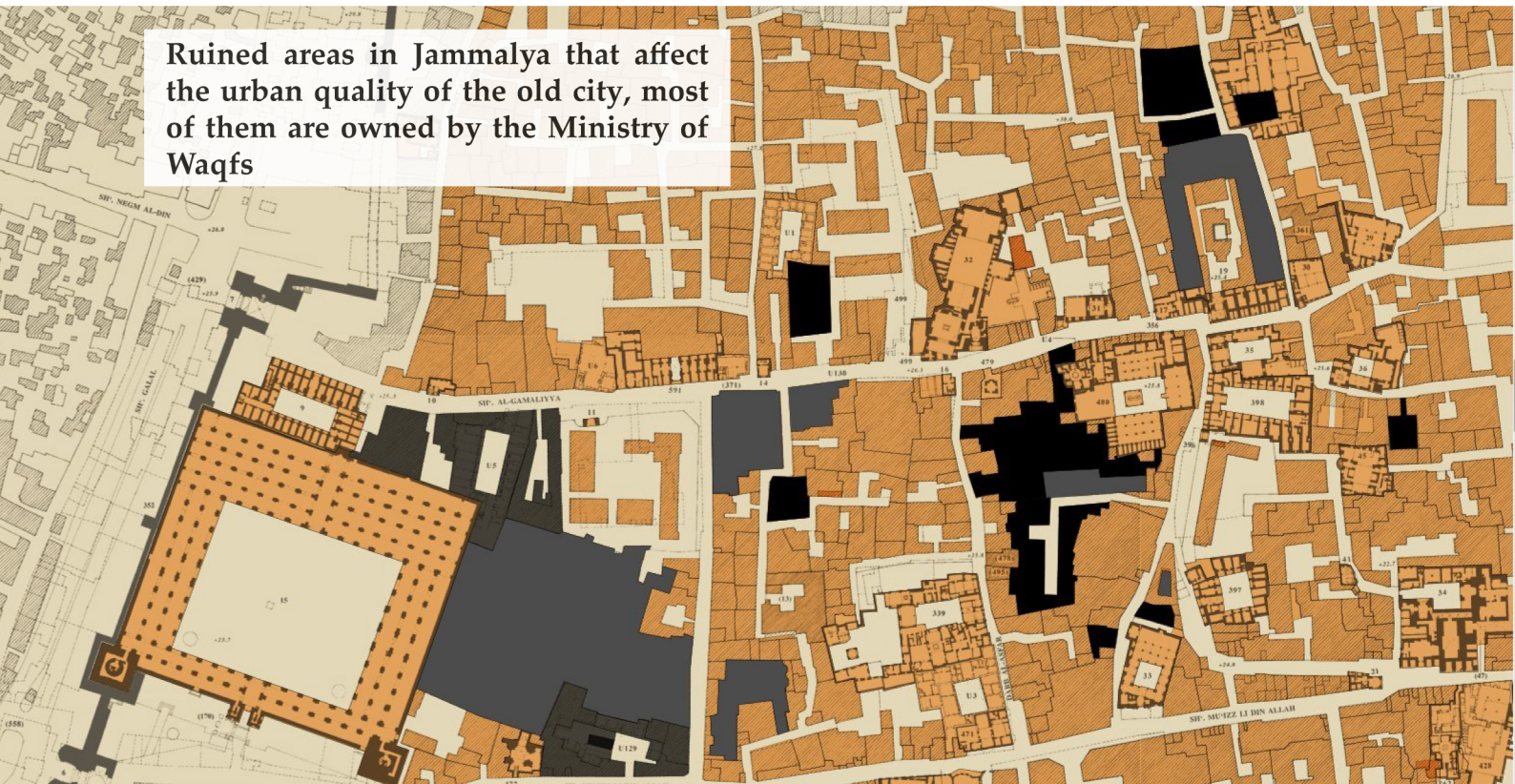
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Morphological Equilibrium
Compatibility with Historic Character



Sustainability

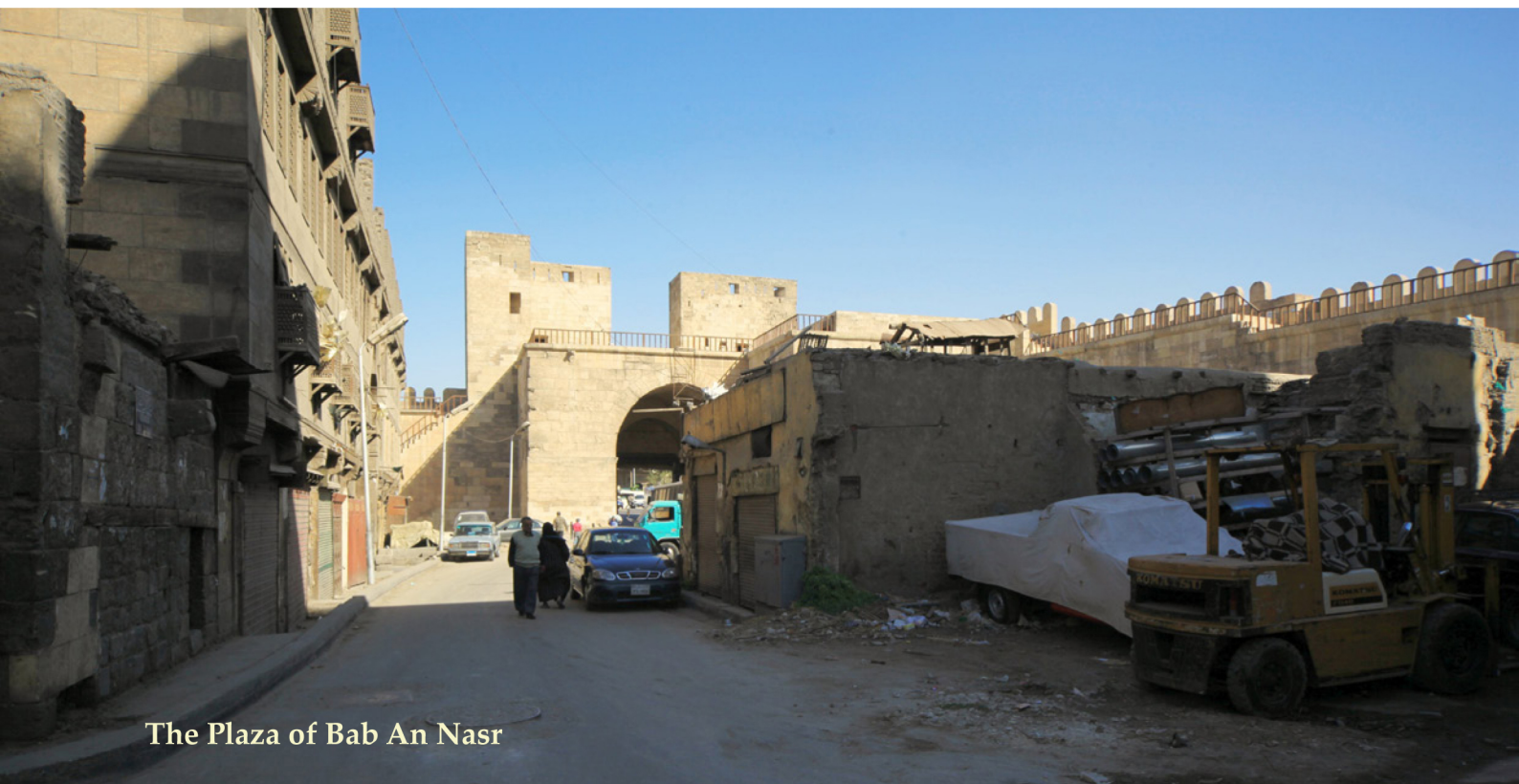
Ruined areas in Jammalya that affect the urban quality of the old city, most of them are owned by the Ministry of Waqfs



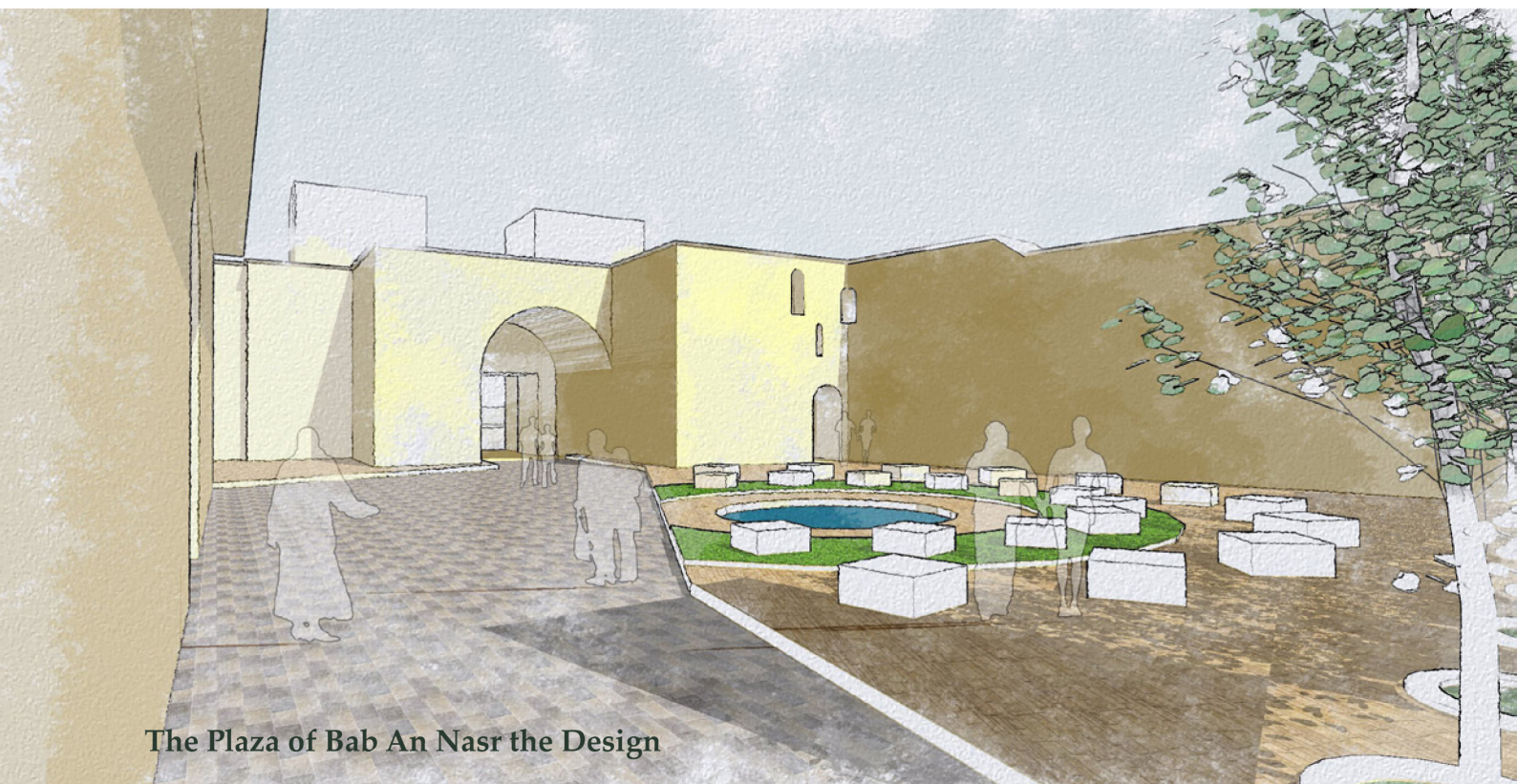
Wikalat Bab An Nasr Partially Ruined

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The Plaza of Bab An Nasr



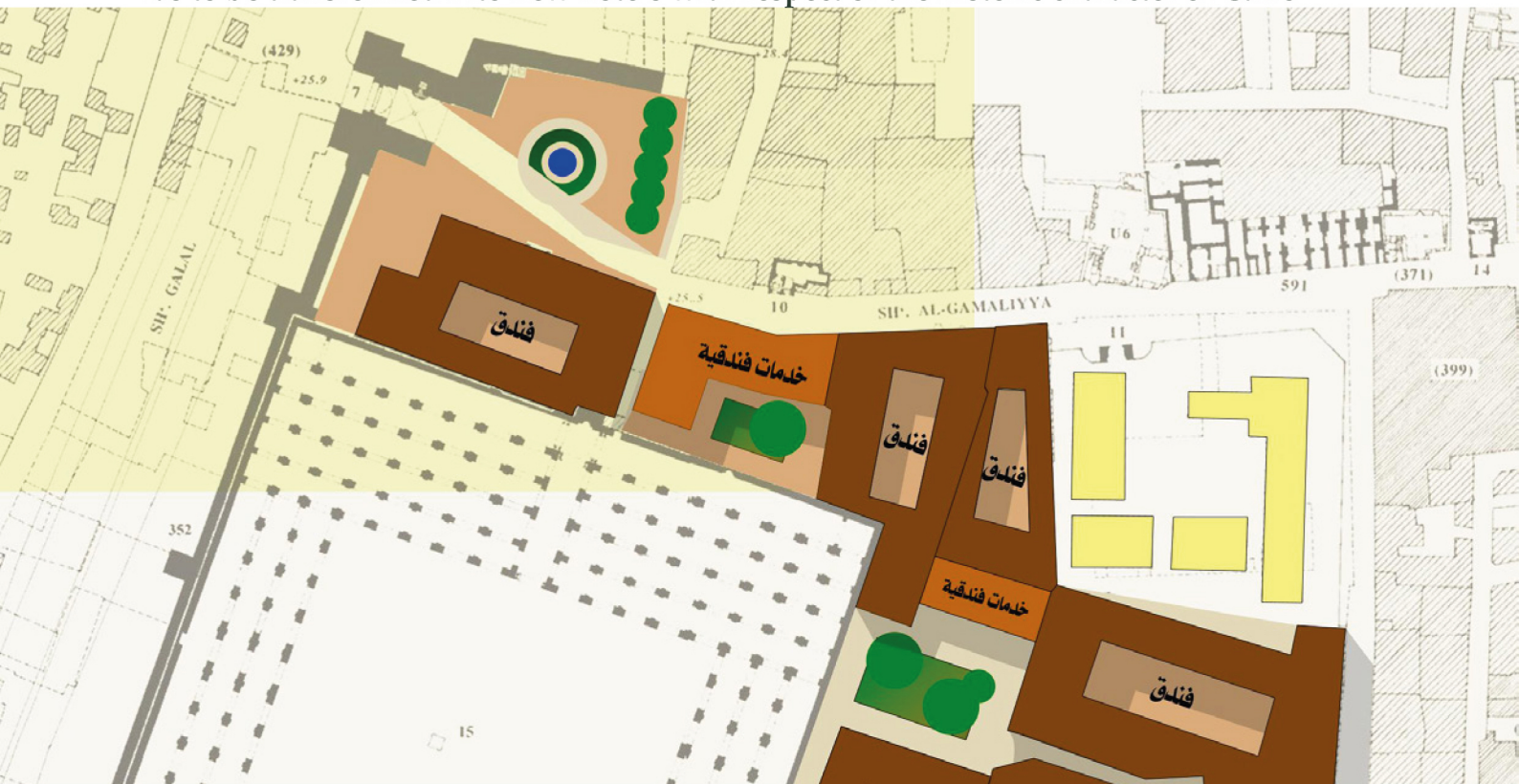
The Plaza of Bab An Nasr the Design

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The area around Al Hakim Mosque 12 acres with partially ruined structures of old wika-las to be transformed into new hotels with respect of the historic character of Cairo



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Remains of old wikala from Bab an Nasr street and the proposal for its revitalization



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The same wikala from inside and the proposal for its revitalization



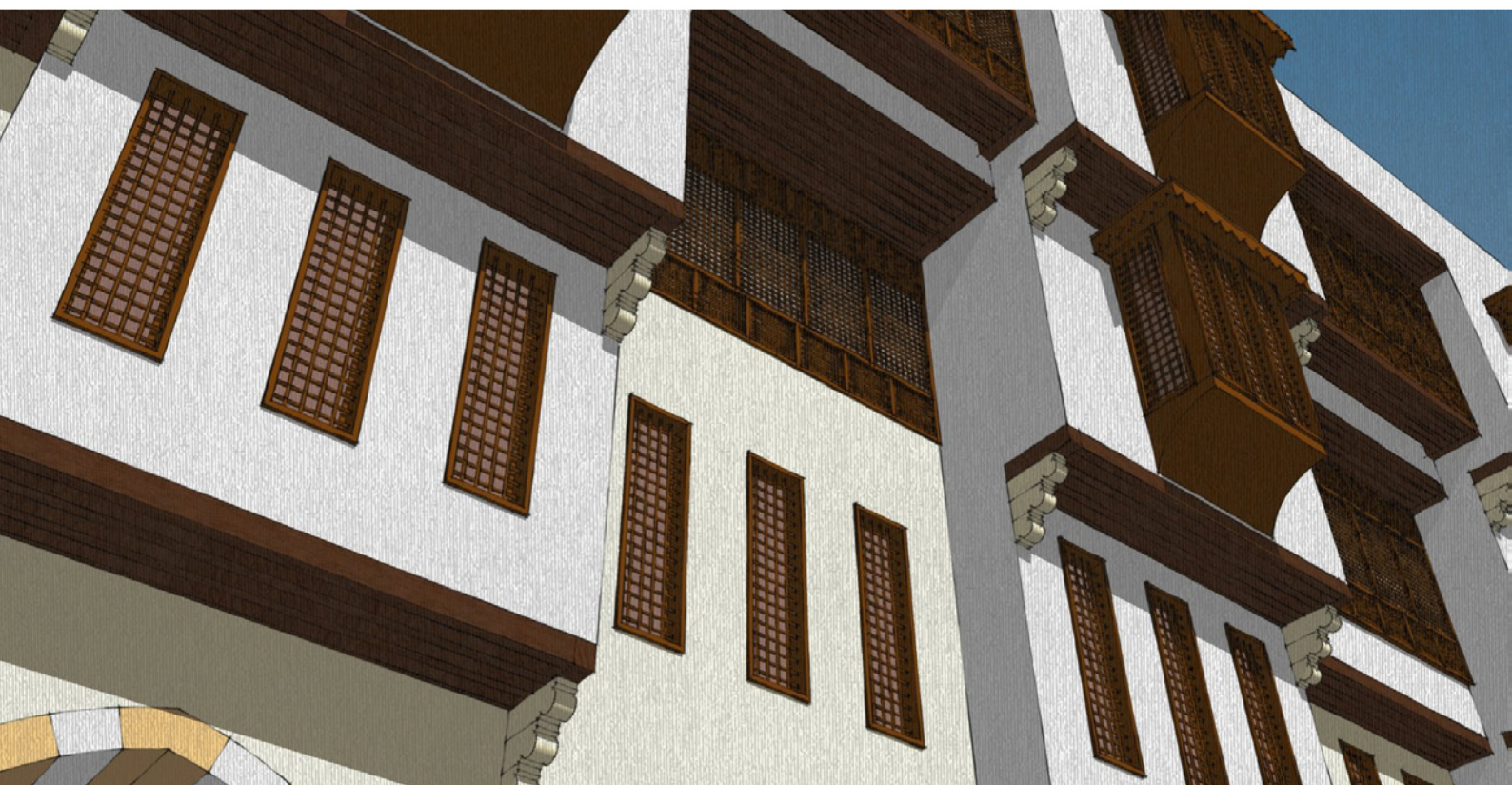
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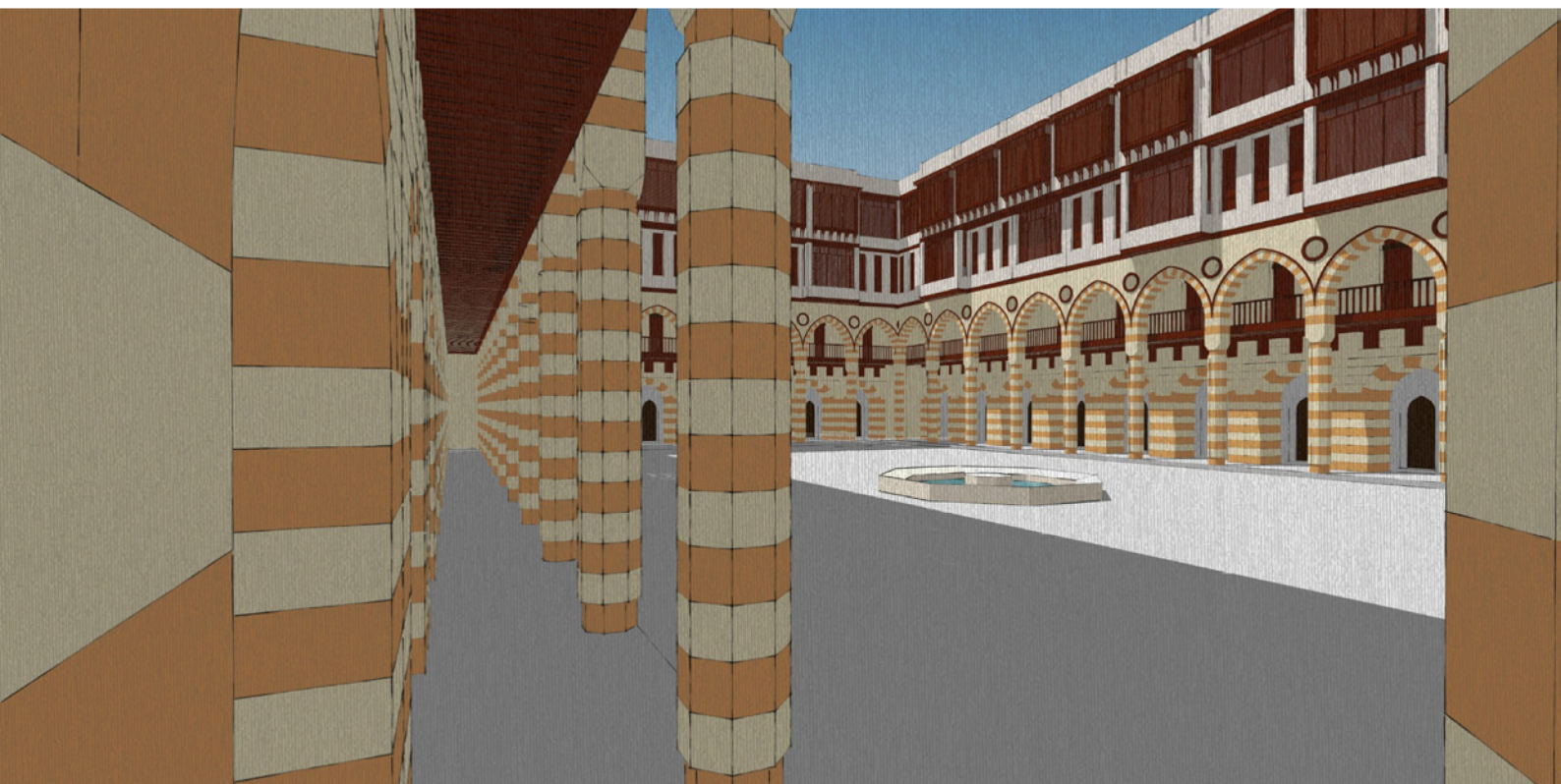
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Revitalization of old wikala as a potential for attracting investors to create touristic activities inside the old city of Cairo



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