Citizen Participation in Historic Cairo

Report Two: Al-Khalifa Street Area Research and Survey September 2019



جمعية الفكر العمراني Built Environment Collective







Desk Research and Field Survey

Prepared by: Ahmed Mansour, Architect

Team:

Ahmed Tarek Al-Ahwal, Architect Abdel Rahman Emad, Architect Ehsan Abu Shadi, Architect Hadeer Saeed Dahb, Architect Moataz Adel Mahrous, Urban Planner Mohab Essam, Architect

Ella Rechter, Art Historian Asmaa Ghanem, Architecture Student Basma Mamdouh, Architecture Student Rana Emad, Architecture Student

Second Report Al-Khalifa Street Area- Desk Research and Field Survey

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Second Report: Al-Khalifa Street Area - Research and Survey Phase

1. Introduction:

The Citizen Participation in Historic Cairo project (CPHC) is a participatory applied research project that studies the following aspects of Historic Cairo as a site of "living heritage":

- I. Management Guidelines for Heritage Sites applied to the neighbourhood of al-Khalifa.
- II. Studies for two special types of urban settlements within the borders of Historic Cairo:
 - a. Dilapidated historic neighbourhoods listed as informal settlements despite their historic fabric and heritage value.
 - b. Modern pockets of urbanism within the Historic City namely modern public housing estates built for low-income target groups.

The United Nations Educational, Scientific and Cultural Organization (UNESCO) listed Historic

Cairo with its urban fabric as a World Heritage Property (WH Property) in 1979. Historic Cairo suffers from accumulated problems, due to different factors such as dilapidated infrastructure, uncontrolled urban transformation, lack of services as



well as socio-economic pressures. A new approach towards the rehabilitation of the historic city should be adapted. Rehabilitation should not only preserve the urban fabric, but should address the revitalization of Historic Cairo as tangible and intangible heritage and as a resource that communities benefit from and therefore preserve.

This report is meant to discuss the "Management Guidelines for Heritage Sites", one of the components of the project mentioned above. This component focuses on the site management of al-Khalifa with a focus on conservation and urban development projects. It focuses on the formulation of a site management plan for the street and its heritage resources, particularly projects that have been or are planned to be implemented. This is to be done in partnership with stakeholders, whether residents, government officials, civil society, professionals, private businesses or potential sponsors and partners. This report includes literature survey and desktop research, a preliminary field survey and baseline research.

Al-Khalifa has an exceptional heritage value and is a hub for different activities, with a potential to enhance the socio-economic situation of the community through social, cultural and service projects.

2. Definition of Al-Khalifa Study Area and Al-Khalifa Street Area:

a) Extended Study Area:

A larger area has been designated to include parts of the districts of Misr al-Qadima (Fustat), Manshiyyat Nasir (northern cemetery) and Wasat (al-Darb al-Ahmar). The borders of the Extended Study Area lie within the Historic Cairo – World Heritage Property core and buffer zone areas. This larger area is marked on the map as Extended Study Area.



Figure 1 Al-Khalifa Study Area- CPHC 2018.

Within the borders of the Extended Study Area, the different components of the project previously mentioned will be reviewed:

- *Al-Hattaba* and '*Arab al-Yasar* are examples of the dilapidated historic neighbourhoods listed as informal settlements despite their historic fabric and heritage value, and despite being part of Historic Cairo World Heritage Property (See informal settlement report).
- Zaynhum and al-Mahkama are two of the housing projects within the borders of Historic Cairo World Heritage Property that will be studied. (See the public housing report). On the other hand, the projects within the Study Area will be thoroughly studied.

b) Study Area of al-Khalifa:

The Study Area of al-Khalifa is situated to the south of Historic Cairo - World Heritage Property. It consists of parts of the *qism*/district of al-Khalifa and al-Sayyida Zaynab. The Citadel boards it to the east, Salah Salim Street and al-Sayyida Nafisa square to the south, the Mosque of ibn Tulun and the Housing project of Zaynhum to the east and al-Rifa'i and Muhammad 'Ali streets to the north. The study area is situated roughly between the two hilly areas of the Citadel and Qal'at al-Kabsh and is connected to the Sayyida Nafisa and Bab al-Wazir Cemeteries.

c) Al-Khalifa Street Area:

Al-Khalifa Street Area is the focus of the component of the Management Guidelines for Heritage Sites – applied to the neighbourhood of *al-Khalifa*. This corresponds to the *Athar Lina*¹ action area, located to the south-east of Historic Cairo within the Study Area mentioned above. From the north, al-Saliba Street borders the area, from the east Darb al-Husr Street, from the south al-Sayyida Nafisa Square and from the west the Mosque of Ibn Tulun. Since 2012, Athar Lina Initiative has operated along the following three main lines of action:

- 1. Conserve and rehabilitate monuments and historic buildings to turn them into a community resource.
- 2. Establish and strengthen ties between the community particularly women, children and youth and their neighbourhood's heritage.
- 3. Link heritage to economic and social development through an integrated approach that enhances and improves quality of life in the historic city.

Al-Khalifa Street Area of al-Khalifa is part of the Study Area and includes the mosques of Ibn Tulun and al-Sayyida Nafisa, considered as anchor monuments of Historic Cairo. Other outstanding monuments within al-Khalifa Street Area are the mausolea of Shajar al-Durr, al-Sayyida Ruqayya, al-Ja'fari and 'Atika, restored by Athar Lina initiative under the supervision of the MoA as well as Fatima Khatun and al-Ashraf Khalil, for which a comprehensive conservation study has been prepared by Athar Lina. These diverse major anchors and outstanding monuments give the area a specific character. Al-Khalifa has an exceptional heritage value and is a hub for different activities, with a potential to enhance the socioeconomic condition of the community through social, cultural and service projects.

¹ The Athar Lina Initiative operates within the framework of a partnership between a number of governmental and non-governmental entities – principal partners being The Built Environment Collective and Megawra, in collaboration with the Egyptian Ministry of Antiquities and Cairo Governorate.

3. Field Survey of al-Khalifa Street Area:

A comprehensive information platform is needed in order to set up a management tool and conservation plan for al-Khalifa Street Area. A field survey and a database on the buildings and open spaces was prepared for al-Khalifa Street Area. This inventory represents an important tool for the analysis and implementation of planning and development policies and setting priorities concerning intervention on the built environment and possible projects.

In this framework, a Geographic Information System (GIS) was developed for al-Khalifa Street Area. The first step was to update the base map² and give each building and open space a codified field to link the geometry of the map to the collected information. It is worth noting that the URHC project updated part of the base map for al-Khalifa area within the framework of their action area in 2014, and that Megawra-BEC updated another portion of the base map for al-Khalifa area during the waste management project conducted in 2016. In 2018, the base map of al-Khalifa Street Area of CPHC was created combining the previous efforts of URHC and Megawra.

Concerning the buildings, a survey form³ was prepared for the field survey, to eliminate the discrepancies between the URHC and Megawra-BEC's previous surveys. URHC project surveyed 885 buildings before 2014, while Megawra surveyed 690 buildings in 2016. Because of the difference in the scope of work between the two projects, some information was missing and had to be completed. It was decided to update the information of URHC and Megawra concerning the buildings (total number of buildings is 1566).

The building survey form consisted of the following parts: building general information, its layout, functions, structure of the building, architectural value and integrity. The information collected was supported with pictures shot during the survey. The data retrieved took place in the field by means of visual analysis, without entering the buildings. The survey of the buildings took four months of field work and another month for preparing the maps.



Figure 2 Buildings of al-Khalifa Street Area (1566 buildings).

² The preparation of the base map, the GIS platform, the survey form, the coding for the buildings and open spaces approximately took one month.

³ See Annex I: Survey form of the buildings.

Concerning the open spaces, a survey form⁴ was prepared for the field survey. URHC surveyed 182 open spaces (2014). It was decided to survey the open spaces systematically, integrating the previous work of URHC (total number of open spaces surveyed is 361).

The subdivision of the streets/open spaces was subject to a number of factors, for example the change of the name of the street, changes in the physical dimensions of the space or the length of the street/open space.

The open spaces analysis survey form consisted of general information, typologies, use, users, finishing materials, and general quality. The survey of the open spaces took around 6 weeks, including field work, data entry and production of the thematic maps.



Figure 3 Open Spaces of al-Khalifa Street Area.

⁴ See Annex II: Survey form of the open spaces.

3.1 Buildings:



Figure 4 Administrative division and buildings of al-Khalifa Street Area.

Following the field survey and the GIS in 2018, a number of thematic maps were produced⁵. The number of surveyed buildings of al-Khalifa Street Area is 1566. Following are some of the outcomes of the survey and thematic maps represented quantitatively:

⁵ See Annex III, Thematic maps concerning the Buildings.

Footprints:



Figure 5 Buildings' footprint.

Al Khalifa Street Area	Buildings	
AI-MIAIIIA SUPEL APEA	Number	Percentage
Built	1374	87.8
Under Construction	6	0.4
Partial Ruin	77	4.9
Total Ruin	40	2.5
Un-built	43	2.7
Makeshift	26	1.7

The footprint of the area is the assessment of the volume of the surveyed buildings. It determines whether the buildings are still standing partially or have totally collapsed and identifies empty plots. Other types that will be discussed are makeshifts and buildings currently under construction. The following are the outcomes of the survey:



Figure 6 Total ruin plot in the shiyakha of al-Khalifa.

• The percentage of the built plots is very high, with a total number of 1374 plots which is 87.8%

• The plots in partial ruin are the buildings that have missing floors, but still have a part of the building that can still be used. The percentage of partial ruins is 4.9%, with a total number of 77 plots. These plots are mainly concentrated around Darb al-Husr Street, or the streets leading to it. The street is the border between the two *shiyakhas* of al-Khalifa and Darb al-Husr.

- The percentage of no. of plots in total ruin is very small and stands at 2.5% with a total number of 40 plots. The *shiyakha* of al-Khalifa has the largest plots identified as total ruin in al-Khalifa Street Area.
- The percentage of plots with makeshift structures is 1.7% with a total number of 26 plots. The makeshift is concentrated in the heart of the *shiyakha* of al-Khalifa.
- The total percentage of empty plots is 2.7% with a total number of 43 plots. Although empty plots are scattered in al-Khalifa Street Area, it is noticeable that the largest empty plots are concentrated in Darb Ghuzziyya. Still the *shiyakha* of al-Khalifa has a number of empty plots too, but smaller in surface area.
- Only six buildings are under construction in al-Khalifa Street Area.

Listing status:

The listed buildings are as follows:



Figure 7 Monuments and listed buildings in al-Khalifa Street Area.

- 26 buildings are listed as monuments.
- Nine buildings are listed as buildings of heritage value.

No.	Name of monument	Listing number
1	Muhammad al-Anwar Mausoleum	68
2	Al-Amir Shaykhu Mosque	147
3	Qani Bay al-Muhammadi Mosque	151
4	Khanqah of Shaykhu	152
5	Madrasa of Khushqadam al-Ahmadi	153
6	Minaret of al-Baqli	156
7	Shajar al-Durr Mausoleum	169
8	Madrasa of Taghri Bardi	209
9	Madrasa of Sarghatmish	218
10	Ahmad Ibn Tulun Mosque	220
11	Safiyy al-Din Jawhar Mausoleum	270
12	Sabil Mustafa Bey Tabtabay	272
13	Al-Sayyida Ruqayya Mausoleum	273
14	Fatima Khatun Mausoleum	274
15	Al-Ashraf Khalil Mausoleum	275
16	Bayt al-Kritliyya (Gayer-Anderson Museum)	321
17	Remains of al-Ghuri Palace	322
18	Hawd Shaykhu	323
19	Sabil of Qaytbay	324
20	Al-Ja'fari and 'Atika Mausolea	333
21	Sabil-Kuttab Hasan Katkhudha	405
22	Sabil al-Amir Abd Allah Katkhudha	452
23	Ahmad Kuhya Mosque	521
24	House of Amna bint Salim	559
25	Sabil Umm Abbas	
26	Al-Sayyida Sukayna Mosque	

No.	Address	Туроlоду
1	23 Al-Ashraf Street	Residential
2	17 Al-Khalifa Street	Residential
3	42 Al-Khalifa Street	Residential
4	50 Al-Khalifa Street	Residential
5	52 Al-Khalifa Street	Residential
6	11 Harat al-Sayigh	Residential
7	13 Harat al-Sayigh	Residential
8	15 Harat al-Sayigh	Residential
9	10 Al-Sayyida Sukayna Street	Residential

Number of floors:



Figure 8 Numbers of floors in al-Khalifa Street Area.

No. of floors	No. of buildings	Percentage
0 floors	85	5.4
0-4 floors	1158	73.9
5 floors	150	9.6
6 floors	98	6.3
7 floors	38	2.4
8 floors	6	0.4
9 floors	2	0.1
10 floors	2	0.1
14 floors	1	0.06

This parameter is to show the homogeneity of the building heights in al-Khalifa Street Area. According to the current regulations of buildings issued by NOUH for Historic Cairo, for streets less than 10 meters in width the building height should not exceed 3 floors, and for streets more than 10 meters in width, the height should not exceed 4 floors.

- 79.3% of al-Khalifa Street Area's buildings have less than four floors.
- 85 buildings have zero floors, counting for around 5.4 % of the plots. These are either unbuilt plots or plots of total ruin.
- 9.6 % of the buildings have five floors. These are concentrated to the north of al-Khalifa Street Area, and closer to the main spine of al-Rukbiyya.
- Buildings consisting of six floors are concentrated in the *shiyakha* of Darb al-Husr, closer to the cemeteries. The percentage is 6.3% with a total number of 98 buildings.
- Less than 3% of the buildings consist of seven floors and are scattered across al-Khalifa Street Area.
- Only six buildings are eight floors high, three of them surround Ibn Tulun Mosque.
- Two buildings are of nine and ten floors each.
- Only one building is 14 floors high in the *shiyakha* of al-Khalifa.
- The 26 buildings listed as monuments were not considered in the building heights as they are treated differently.

Land uses - ground floor:



Figure 9 Ground floor - land use in al-Khalifa Street Area.

Land use	No. of buildings	Percentage
Residential	939	60
Commercial	413	26.4
Workshops	76	4.9
Warehouses	90	5.1
Parking	10	0.6
Admin/services	5	0.3
Cultural	14	0.9
Educational	10	0.6
Religious	39	2.5
Sport	1	0.06
Animal Sheds	5	0.3
No function	160	10.2

This parameter is to show the ground floor land-use of the buildings al-Khalifa Street Area. Some of the buildings have multiple uses on the ground floor. This will give an indication regarding the residential and commercial spines of al-Khalifa Street Area, as well as the services available.

- Al-Khalifa Street Area has 60% or 939 of its buildings used for residential purposes on the ground floor. Out of this number, there are 177 buildings that have mixed residential use on the ground floor.
- 26.4 % of the buildings are used for commercial activities. These are concentrated on the following streets, creating commercial spines in the area: the main spine of al-Rukbiyya, al-Khalifa, Darb al-Husr, al-Sayyida Sukayna and Ibn Tulun streets.
- Al-Khalifa Street Area has 10 buildings used for educational purposes, with seven schools already functioning in the area (some schools consist of more than one building).
- 39 buildings are used for religious purposes, of which 7 are listed monuments.
- 14 buildings are used as cultural venues. 12 of these buildings are listed monuments, and are open for visits.
- Only one plot is used as sports facility and is the Athar Lina | Cairo Governorate intervention made to construct Darb al-Husr football pitch.
- 10 plots are used as parking facilities in al-Khalifa Street Area.
- More than 10% of the buildings in al-Khalifa Street Area currently do not have a function.





Figure 10 Ground floor land use (residential, commercial, services and workshops) in al-Khalifa Street Area.

State of conservation:



Figure 11 State of conservation in al-Khalifa Street Area.

State of conservation	No. of buildings	Percentage
Good	111	7.1
Fair	650	41.5
Bad	588	37.5
Dilapidated	132	8.4
Ruined	42	2.7
Unbuilt	43	2.8

This parameter is the assessment of a number of surveyed queries that include the building's structure, finishing and the main manifestations of physical decay such as cracks, erosion and buckling.

- Al-Khalifa Street Area has almost 50% of its building in good and fair state of conservation. 7.1% are in good state of conservation and they are scattered around al-Khalifa Street Area.
- 41.5% of the buildings are in fair condition, and concentrated in the *shiyakha* of al-Saliba, closer to Ibn Tulun Mosque.
- The total number of buildings in bad condition is 588. This amounts to 37.5% of the buildings in al-Khalifa Street Area. They are mainly concentrated in the *shiyakha* of Darb Ghuzziyya and the *shiyakha* of al-Khalifa.
- 132 buildings are in a dilapidated state of conservation. The concentration of these buildings is in *shiyakha* of Darb al-Husr.
- The ruined and unbuilt plots in al-Khalifa Street Area are around 2.7% and 2.8% respectively.

Architectural value:



Figure 12 Architectural value in al-Khalifa Street Area.

Architectural value	No. of buildings	Percentage
Outstanding	13	0.9
High	25	1.6
Fair	210	13.4
Low	494	31.5
None	824	52.6

This parameter is the assessment of several factors that give a univocal weight for each building. These factors include the typology, period of construction, architectural significance and relationship of the building to its surrounding. It is worth noting that more than 60% of the buildings in al-Khalifa Street Area have modification and alteration (use of different materials, forms or colours) to the elevations that has compromised them. The state of conservation of the building also affects the overall architecture value.

- Less than 1% of the buildings in the study area is considered outstanding. These buildings are all listed monuments.
- 25 of the buildings are of high architectural value. These buildings are mainly listed either as monuments or heritage buildings.
- The total number of buildings considered of fair architectural value is 210 which is around 13.4%.
- 494 buildings are of low architectural value. This is around 31.5% of the total built environment.
- More than half of the buildings in al-Khalifa Street Area have no architectural value⁶. These include unbuilt plots and buildings in total ruin (around 6% of the plots in al-Khalifa Street Area).

⁶ Although the architectural value is low, this should be crossed referenced with other assessments, like building heights and setbacks in streets. It is evident that the homogeneity of building heights and the historic nature of the street fabric indicates the fabric is overall historical.

3.2 Streets and Open Spaces:

Following the field survey and the GIS, a number of thematic maps were produced⁷. The number of surveyed open spaces in al-Khalifa Street Area is 361. Around 84% of al-Khalifa Street Area's streets are less than 6 meters in width.

The following shows some of the outcomes of the survey and thematic maps represented quantitatively:

Street general quality:

	Number	Percentage
Good	0	0
Fair	76	21.2
Bad	274	76.4

The general quality is the evaluation of the open space taking into account the horizontal permeability⁸ of the space, walkability, state of conservation of finishing material and street furniture.

- The permeability of the streets/open spaces is considered high in the area, but the street paving and furniture is deteriorated or non-existent. This has affected the walkability of the streets, and therefore 76.4% of the streets are in bad quality.
- The state of paving of the main street is in a better condition, that is why the majority of the spaces identified as fair quality are located on main streets.



Figure 14 Fair general quality.



Figure 13 Open spaces/streets general quality.



Figure 15 Bad general quality.

⁷ See Annex VII, Thematic maps concerning the streets/open spaces.

⁸ Describes the extent to which urban forms and features permit or restrict the movement of people in different directions.

Presence of widening:

	Number	Percentage
Yes	133	38%
No	217	62%

The ordinance lines (*khatt al-tanzim*) previously mentioned are the main reason for the presence of widening in the streets. In case of demolishing a building and asking for a construction permit, a setback would be imposed on the owners. The comparison was made with the cadastral maps of the 30s and the current situation.

- 62% of the streets don't have street widening, creating a sense of the organic fabric of the historic city.
- 38% of the streets have widening in them. These are also an indication of the construction activities in the area. It is interesting to see the correspondence with building heights of more than 4 floors. They are mostly concentrated around the widened streets.



Figure 16 Open spaces/streets, presence of widening.



Figure 17 No widening, street alignment is clear.

Figure 18 Presence of widening.

Dominance of users:

	Number	Percentage
Pedestrian	285	18.5%
Vehicular	65	81.5%

During the survey, it was noticed that most of the streets are used by pedestrians and vehicular users. However, the dominance of one or the other is related to a number of factors, like the street width and the hierarchy of the streets.

- 2 More than 80% of the streets in the project are predominantly pedestrian. This corresponds to street widths of less than six meters.
- 3 Only 18% is dominated by vehicles. These are the main spines like al-Saliba, al-Khalifa and Darb al-Husr Streets.







Figure 20 Predominantly vehicular.



Figure 21 Predominantly pedestrian.

4. Monuments⁹

The total number of monuments in al-Khalifa Street Area is 26 monuments, and they are located in five *shiyakhas* that belong to two different *qisms*. The following table shows the names of the monuments, the period they were constructed in and the listing number that belongs to the MoA.

No.	Name of monument	Period	Era/Year
1	Muhammad al-Anwar Mausoleum	Ottoman	1780
2	Al-Amir Shaykhu Mosque	Mamluk	1349
3	Qani Bay al-Muhammadi Mosque	Mamluk	1413
4	Khanqah of Shaykhu	Mamluk	1355
5	Madrasa of Khushqadam al-Ahmadi	Mamluk	1486
6	Minaret of al-Baqli	Mamluk	1297
7	Shajar al-Durr Mausoleum	Ayyubid	1250
8	Madrasa of Taghri Bardi	Mamluk	1440
9	Madrasa of Sarghatmish	Mamluk	1356
10	Ahmad Ibn Tulun Mosque	Tulunid	876
11	Safiyy al-Din Jawhar Mausoleum	Mamluk	1314
12	Sabil Mustafa Bey Tabtabay	Ottoman	1637
13	Al-Sayyida Ruqayya Mausoleum	Fatimid	1133
14	Fatima Khatun Mausoleum	Mamluk	1283
15	Al-Ashraf Khalil Mausoleum	Mamluk	1288
16	Bayt al-Kritliyya (Gayer-Anderson Museum)	Ottoman	1631
17	Remains of al-Ghuri Palace	Mamluk	1516
18	Hawd Shaykhu	Mamluk	17 th century
19	Sabil of Qaytbay	Ottoman	1749
20	Al-Ja'fari and 'Atika Mausolea	Fatimid	1120
21	Sabil-Kuttab Hasan Katkhudha	Ottoman	1701
22	Sabil al-Amir 'Abd Allah Katkhudha	Ottoman	1719
23	Ahmad Kuhya Mosque	Mamluk	1310
24	House of Amna bint Salim	Ottoman	1540
25	Sabil Umm 'Abbas	Mohamed Ali	1867
26	Al-Sayyida Sukayna Mosque	Mohamed Ali	1904

According to the law of protection of monuments, the MoA is responsible for the protection of all the buildings listed as monuments regardless of their ownership. However, any conservation work should be supervised by the MoA, but the owner (other ministries or private) should cover the cost of all the work done.

The monuments in al-Khalifa Street Area date back to various periods throughout Egyptian history. The oldest monument is Ahmad Ibn Tulun Mosque from the ninth century. Few

⁹ See Annex V monuments survey.

mausoleums from the Fatimids and Ayyubid periods (e.g. al-Sayyida Ruqayya and Shajar al-Durr) are concentrated in the south of al-Khalifa Street Area. Around half of the inscribed monuments in Al-Khalifa Street Area belong to the Mamluk Period. Furthermore, a number of buildings from the modern (Muhammad 'Ali) period have been listed as monuments (e.g. Sabil Umm 'Abbas).



Typologies: al-Khalifa Street Area has seven mausolea, six mosques and two religious' colleges/*madrasas*. Furthermore, it has four *sabils*, two houses/*bayts* and one of each of the following typologies, fountain-quran school/*sabil-kuttab*, sufi hospice/*khanqah*, minaret, animal drinking trough/*hawd* and remains of a palace.

The total number of religious buildings are 17, and they count as the largest and most dominant group of buildings in al-Khalifa Street Area. Six buildings belong to the water structures of the area for humans and animals. The remaining three monuments are houses/ palaces.

Name of monument	Туроlоду
Muhammad al-Anwar Mausoleum	Mausoleum
Al-Sayyida Ruqayya Mausoleum	Mausoleum
Fatima Khatun Mausoleum	Mausoleum
Al-Ashraf Khalil Mausoleum	Mausoleum
Al-Ja'fari and 'Atika Mausolea	Mausoleum
Safiyy al-Din Jawhar Mausoleum	Mausoleum
Shajar al-Durr Mausoleum	Mausoleum
Ahmad Ibn Tulun Mosque	Mosque
Ahmad Kuhya Mosque	Mosque
Al-Sayyida Sukayna Mosque	Mosque
Al-Amir Shaykhu Mosque	Mosque
Qani Bay Al-Muhammadi Mosque	Mosque

Mosque of Taghri Bardi	Mosque
Madrasa of Sarghatmish	Madrasa
Madrasa of Khushqadam al-Ahmadi	Madrasa
Sabil al-Amir 'Abd Allah Katkhudha	Sabil
Sabil Umm 'Abbas	Sabil
Sabil of Qaytbay	Sabil
Sabil Mustafa Bey Tabtabay	Sabil
Bayt al-Kritliyya (Gayer-Anderson Museum)	House
House of Amna Bint Salim	House
Remains of al-Ghuri Palace	Palace
Hawd Shykhu	Hawd
Minaret of al-Baqli	Minaret
Khanqah of Shaykhu	Khanqah
Sabil-Kuttab Hasan Katkhudha	Sabil – Kuttab

Monuments use: Out of the 26 monuments in al-Khalifa Street Area, ten of these monuments are not currently in use. These monuments are:

- Fatima Khatun Mausoleum
- Al-Ashraf Khalil Mausoleum
- Safiyy al-Din Jawhar Mausoleum
- Shajar al-Durr Mausoleum
- Madrasa of Khushqadam al-Ahmadi
- Sabil Umm 'Abbas
- Sabil Mustafa Bey Tabtabay
- Remains of al-Ghuri Palace
- Hawd Shaykhu
- Sabil-Kuttab Hasan Katkhudha



Figure 21 Ibn Tulun Mosque and Madrasa of Sarghatmish.



Figure 22 Madrasa and Khanqah of Shaykhu.

The number of monuments used for religious purpose are twelve as follows:

- Muhammad al-Anwar Mausoleum
- Al-Sayyida Ruqayya Mausoleum
- Al-Ja'fari and 'Atika Mausoleum
- Ahmad Ibn Tulun Mosque
- Ahmad Kuhya Mosque
- Al-Sayyida Sukayna Mosque
- Al-Amir Shaykhu Mosque
- Qani Bay al-Muhammadi Mosque
- Taghri Bardi Mosque
- Madrasa of Sarghatmish
- Minaret of al-Baqli
- Khanqah of Shaykhu

Most of the monuments mentioned above have a secondary use to them; they are used as visiting anchors and are part of cultural and tourism use for the area. Other buildings that have only cultural use in al-Khalifa Street Area are the House of Amna bint Salim and Bayt al-Kritliyya (both used as the Gayer-Anderson Museum), as well as Sabil Qaytbay that is used as a library.



Figure 23 Mausoleum of Shajar al-Durr.



Figure 24 Minaret of al-Baqli.



Figure 25 Map showing monuments land use in al-Khalifa Street Area, April 2019.



Figure 26 Map showing monuments usage in al-Khalifa Street Area, April 2019.

As for the state of conservation, eight monuments are in a good state of conservation. It is worth mentioning that out of these eight monuments, three do not have a function or are partially used (Sabil Umm 'Abbas, Sabil al-Amir 'Abd Allah Katkhudha, Shajar al-Durr Mausoleum and Hawd Shaykhu).

Twelve monuments are considered in a fair state of conservation. This means that some minimal decay might be visible but does not affect the integrity of the building. (Hawd Shaykhu, Sabil-Kuttab Hassan Katkhuda and the remains of al-Ghuri Palace.)

Only one monument is in a bad state of conservation. The physical damage is clear, but still the integrity of the building is clear. This building is Al-Ashraf Khalil Mausoleum.

Three buildings are considered in a dilapidated state of conservation. These monuments are in such a physical state that some parts of the building are either missing or have collapsed. The four monuments are Fatima Khatun Mausoleum, Safiyy al-Din Jawhar Mausoleum, Madrasa of Khushqadam al-Ahmadi.



Figure 27 Fatima Khatun Mausoleum.



Figure 28 Madrasa of Khushqadam al-Ahmadi.



Figure 29 Map showing the state of conservation of the monuments in al-Khalifa Street Area, April 2019.

5. Demographics



Figure 30 Shiyakha population by gender.



Figure 31 Population by educational status.
6. Crafts

The objective is to study workshops and production units in al-Khalifa Street Area in order to reach conclusive recommendations for the conservation plan and lay the foundations for the management plan. These workshops are crucial for the socio-economic sustainability of al-Khalifa Street Area and can be used as a catalyst for economic development.

Methodology:

Following the updated Geographic Information System (GIS) prepared for buildings in al-Khalifa Street Area, a further survey was conducted in June 2018 for the identification of craft activities. The stages of the work included:

- Review the craft study prepared by URHC in 2014.
- Develop a survey form for crafts based on the survey form used by the URHC Project¹⁰.
- Update the workshop and production units' data that were surveyed by Athar Lina Initiative in 2014.
- Register the recent data of the workshops on the GIS of al-Khalifa Street Area.

The methodology adopted a set of basic criteria to classify workshops:

- Type of workshop; 8 basic categories were identified:
 - Wood and carpentry
 - o Food
 - o Vehicles
 - o Metals
 - o Textiles
 - o Leather
 - o Stone and marble
 - Other (maintenance, installation of spare parts)

A secondary classification for each of these categories was also done as described below:

- Type of tools and equipment used:
 - o Hand (use of hand tools and light equipment)
 - o Machine (use of machines and heavy equipment)
 - Mixed (light hand tools as well as heavy equipment and machines)
- Use of the open space surrounding the workshop:
 - Production process
 - Display of products
 - o Storage
 - Other activities such as seating for food

¹⁰ Annex V: Survey form for crafts workshops.

Fieldwork results:

Al-Khalifa Street Area includes 130 workshops and production units comprising 30 carpentry workshops, 29 food units, 21 vehicle workshops, 20 metal workshops, 18 textile workshops, four leather workshops, one stone and marble workshop and seven other workshops.

Most of the workshops and production units are located on the main streets to the north of Al-Khalifa Street Area on al-Saliba and al-Rukbiyya streets, west of Ahmad ibn Tulun Street, south of Ibn Tulun Mosque and south-east of al-Baqli Street.

Carpentry, woodworking and food units represent the largest number of workshops in al-Khalifa Street Area, followed by vehicle repair, metals and textiles, while leather and stone and electrical repair workshops are the least found.



Workshop Types

Most workshops and production units in al-Khalifa Street Area rely on the use of lightweight tools, or a combination of lightweight tools and some machinery. The number of workshops that rely only on heavyweight tools is rare.

More than half of the workshops and units utilize the surrounding open space in their production activities and display of their products.



Type of use of open space



Figure 32 Workshop types in al-Khalifa Street Area, March 2019.



Figure 33 Workshops' tools and machinery in al-Khalifa Street Area, March 2019.



Figure 34 Workshops' use of public space in al-Khalifa Street Area, March 2019

The following are the results of each of the categories:

1. Wood and carpentry

There are 30 wood and carpentry workshops in al-Khalifa Street Area. There are eight workshops that produce furniture and do upholstery at the same time. There are seven wood cutting workshops that provide raw materials for other workshops. There are six workshops specialized in furniture only, and five workshops specialized in wood staining/tinting. However, there are three workshops that produce furniture, doors and windows, whilst only one is specialized in producing doors and windows. Around 14 workshops for wood and carpentry are concentrated around al-Baqli Street.

Besides the cutting and preparing of wood, most workshops rely on the use of lightweight tools and hand tools (drill, hammer, nails, paint, brushes, sandpaper, etc.).



Figure 35 Building number 7, Al-Baqli Street.

Figure 36 Building number 6, Zuqaq al-Sharaqwa.

Many of these workshops take advantage of the public spaces mainly for production activities, especially the wood tinting and upholstery workshops. The furniture, doors and windows workshops use the open space more for exhibiting their products.





Figure 37 Building number 52, Al-Khalifa Street.

Figure 38 Building number 14, Harit Abu Dawud



Figure 39 Wood and carpentry workshops in al-Khalifa Street Area, March 2019.

2. Food

Al-Khalifa Street Area has 29 food processing shops. There are 11 bakeries, six offal (food from animal organs), three pickles workshops, two bean and *falafel* restaurants, two juice squeezers and two *fitir* (Egyptian pie) ovens. This is in addition to one ice cream factory, one koshary shop, and one coffee mill. Coffee shops are not included because there is no processing in the products they offer. There are no concentrations of food workshops in Al-Khalifa Street Area, they are rather scattered.

Most rely on the combination of light hand tools and heavy equipment. For example, the bakeries and fitir shops have ovens, which is considered to be heavy machinery, but the process of making the dough is usually done manually.



Figure 40 Building number 85, Tulun Street.

Figure 41 Building number 23, Al-Rukbiyya Street.

The majority of these stores use the public space surrounding them to display their products or services (in the case of restaurants), especially during the late afternoons and evenings.



Figure 42 Building number 16, Al-Saliba Street.



Figure 43 Building number 15, Al-Rukbiyya Street.



Figure 44 Food processing workshops in al-Khalifa Street Area, March 2019.

3. Vehicles

Al-Khalifa Street Area includes 21 workshops. There is a total of five car mechanic and electricity workshops, and five motorcycle mechanic workshops. Furthermore, there are three car wash and oil changing facilities, two motorcycle assembly workshops as well as two tire repair workshops. Al-Khalifa Street Area also hosts one of the following: a car headlamp repair workshop, a bicycle repair/renting workshop, a car bodyworks workshop and one auto parts company that sells and fixes vehicles at the same time. Most of the workshops are located on the main streets or areas, with a large open space. 10 workshops are concentrated on al-Saliba Street.

Most of these workshops use lightweight hand tools and heavy equipment. More than half of these workshops utilize the open space surrounding the workshop in production activities.



Figure 45 Building number 2, Harat al-Sammakin.



Figure 46 Building number 11, Al-Khudayri Street.



Figure 47 Building number 2, Al-Saliba Street.



Figure 48 Building number 2, 'Atfit al-Dakni.



Figure 49 Vehicle workshops in al-Khalifa Street Area, March 2019.

4. Metals

Al-Khalifa Street Area contains 20 metal workshops. There are five workshops for door frames and windows, five copper workshops, and four lathing workshops. Furthermore, there are three blacksmith workshops, and two welding workshops for copper and one welding for metal. Seven of these workshops are concentrated along al-Khalifa Street.

Most workshops rely on the use of hand and light tools. More than half of these workshops utilize the surrounding public space for production activities.



Figure 50 Building number 4, Harat al-Bir.



Figure 51 Building number 9A, 'Atfit al-'Iyadiyya.



Figure 52 Building number 17, Al-Rukbiyya Street.



Figure 53 Building number 98, Tulun Street.



Figure 54 Metal workshops in al-Khalifa Street Area, March 2019.

5. Textiles

Al-Khalifa Street Area includes 18 textile workshops. There are six upholstery workshops, five tailors, four bag factories and three cap/hat factories. The workshops are scattered. The majority of these workshops utilize the surrounding open spaces for production activities.







Figure 56 Building number 99, Al-Baqli Street.



Figure 57 Building number 4, Zuqaq Sayyidi al-Mukhbir.



Figure 58 Building number 4, Zuqaq al-Sharaqwa.



Figure 59 Textile workshops in al-Khalifa Street Area, March 2019.

6. Leather

Al-Khalifa Street Area includes four leather workshops. There are two shoe repair workshops and two shoe factories.

The workshops use the surrounding open space to display products. The shoe repair workshops use hand tools while the two shoe factories rely on a combination of light hand tools and heavy equipment.



Figure 60 Building number 27, Al-Saliba Street.



Figure 61 Building number 10, Al-Khudayri Street.

7. Stone and marble

Al-Khalifa Street Area includes only one marble cutting workshop, which is based on combining the use of light hand tools and heavy equipment.



Figure 62 Building number 8, Harat al-Jabbasa.



Figure 63 Leather workshops in al-Khalifa Street Area, March 2019.



Figure 64 Stone/marble workshops in al-Khalifa Street Area, March 2019.

8. Other workshops and production units

This category includes six workshops that repair electrical appliances and a workshop for the installation and cutting of glass and mirrors.

None of these workshops take advantage of the open space surrounding the workshop. All these workshops use lightweight and hand tools.



Figure 65 Building number 20B, Al-Saliba Street.



Figure 66 Building number 30, Al-Rukbiyya Street.



Figure 67 Building number 24, Al-'Attarin Street.



Figure 68 Building number 2, 'Atfit al-'Is.



Figure 69 Other workshops in al-Khalifa Street Area, March 2019.

7. Solid waste management:

The problem of accumulated solid waste is evident in the streets, vacant plots and dilapidated residential buildings of Al-Khalifa Street Area. The accumulation of solid waste affects the hygiene and health of the inhabitants and the state of conservation of the buildings. The following summary is based on the two main studies carried out in previous years, as well as some information that was updated during the current study.



Figure 70 Waste accumulation in heritage building.



Figure 71 Waste accumulation in dilapidated building.



Figure 72 Waste accumulation in street.





Figure 73 Waste accumulation in vacant plot.

- Urban Regeneration of Historic Cairo Project (URCH) 2014: As part of the URHC project, a study on the solid waste management was carried out by Environics, a group of specialists on Environmental Management issues¹¹.
- Athar Lina 2016: This study was prepared by Athar Lina in collaboration with: the Faculty of Regional and Urban Planning - Cairo University, the Faculty of Engineering -Ain Shams University and the Integrated community development office (Takween) within the framework of the Solid Waste Management Project in al-Khalifa area, under the supervision of the MoA and Cairo Governorate¹².

¹¹ Environics "Solid waste management report". Urban Regeneration project for Historic Cairo – UNESCO, World Heritage Centre, 2014.

¹² Built environment collective and Faculty of Regional and Urban Planning - Cairo University, "Solid waste management in al-Khalifa Area", 2015.

The two studies intersect with each other and almost cover the entire Al-Khalifa Street Area. Both these studies were based on a field survey (collection points, the demographics of the area, etc.). The studies took into account feedback from meetings with inhabitants and governmental stakeholders.

The current system:

The following is a brief on the current solid waste management system in Al-Khalifa Street Area, to determine its efficiency, obstacles and possibilities in order to overcome them within the proposed management plan. The Cairo Cleanliness and Beautification Authority (CCBA) is part of the Cairo Governorate and is responsible for waste management.



Figure 74 Solid Waste Management in Cairo. Environics "Solid waste management report". Urban Regeneration project for Historic Cairo – UNESCO, World Heritage Centre, 2014. P.43

The CCBA has many tasks:

- o Contracting with private companies or contractors for the collection of waste.
- o Supervision and auditing these contracts.
- Cleaning and sweeping the streets, unloading waste bins distributed in the districts and moving the waste to transportion stations.
- Management of transportion stations and burial sites through contracting recycling and burial companies.
- Managing and operating Al-Fustat Cleaning Company.
- Monitoring the policies of the Ministry of Environment through planning and technical assistance.
- Collecting the solid waste of residential units and shops not covered by private companies or contractors.

• Cleaning gardens and public spaces¹³.

CCBA divides the Governorate into four areas: North, South, East and West/Central. The South is divided into two groups (A and B); group A includes al-Sayyida Zaynab, al-Khalifa, al-Muqattam, Dar al-Salam and al-Basatin districts (includes al-Khalifa Street Area). CCBA has branches in every district and is responsible for all solid waste activities in the neighbourhood.

• Collecting:

Residential solid waste:

- CCBA divides the districts into smaller areas and is submitted to private companies to collect solid waste. In al-Khalifa, there are 8 contracting companies, each serving a number of units ranging from 3,000 to 10,000 units.
- \circ $\;$ The contract specifies the working methods and obligations of each party:
 - The contractor collects the solid waste of the housing units twice a week, and from the commercial facilities daily.
 - All the collected wastes are transferred directly to Al-Basatin Transport Station, about 4 km from al-Khalifa.
 - It is forbidden to separate waste in the street or buildings.
 - Subcontracting is prohibited.
- Equipment and labour specified for collection:
 - 1 worker per 300 housing units.
 - Truck load of 1 ton per 800 units.

Waste of business owners:

 Since 2014, the collection of solid waste from commercial or industrial facilities became the company's/contractor's responsibility, and the fees were added to the electric bill ranging from 10 to 30 L.E monthly, depending on each activity.

Cleaning and sweeping streets:

- CCAB is responsible for sweeping the streets and emptying solid waste bins distributed in the district. Furthermore, it is responsible for eliminating the accumulation of waste by means of dump trucks for wide streets and smaller trucks for narrow streets.
- Transport station and disposal of waste:
 - All the solid waste of Group A is transported to the Transport Station. From there, all the solid waste of South Cairo is transformed to the 15th of May burial site, where a compost plant is located, and the remaining waste is properly buried¹⁴.
- Monitoring:
 - The Central Administration for Monitoring and Supervision (CAMS) belongs to Cairo Governorate, with departments located at the district level.

¹³ Environics "Solid waste management report". Urban Regeneration project for Historic Cairo – UNESCO, World Heritage Centre, 2014. P.42

¹⁴ The private company ECARU operates both the burial and the plant through a 15-year contract with CCBA.

- District departments monitor both collection and waste disposal, and provide periodic reports to the head of the district and CAMS.
- CAMS records violations of companies and determines the financial penalties¹⁵.
- Penalties are sent to CCBA to be deducted from the companies.

Solid waste analysis:

The study was based on random sampling of solid waste from residential units, shops and restaurants. The analysis included the volume, weight, density and percentages of different components of each sample¹⁶:

- The proportion of biodegradable organic matter in solid waste of residential areas is approximately 65%.
- The proportion of biodegradable organic materials in the solid waste of shops and restaurants is approximately 28%¹⁷.

The following figures were calculated during the "Solid waste management in al-Khalifa Area" in 2015:

Description	Number
Number of inhabitants in the studied area	17452 inhabitants
Surface Area of the studied area	253284 m ²
Number of plots	1497 plots
Number of residential units	5328 units
Number of non-residential units	775 units
Amount of solid waste generated	8726 kg= 8.7 tons

Solid waste recycling:

Potentials for solid waste recycling were explored during Athar Lina Study¹⁸. Composting and biogas generation are possible options in the neighbourhood since 65% of the waste analysed from field samples was organic waste.

Since it is prohibited by law to sort solid waste on the streets or empty plots of a residential neighbourhood, sorting directly from households should be looked into and encouraged. The community participation in the sorting could be achieved through meetings and workshops.

¹⁵ The penalties stipulated in the contract: - 5 pounds per unit in case of delay in collection - 50 pounds if the uniform / official uniform of workers is not used - 100 pounds in case of sorting solid waste in buildings or housing units - 500 in case of disposal of solid waste in informal areas or areas not designed for that purpose.
¹⁶ Biodegradable organic matter: mainly food waste; non-biodegradable organic or inorganic: medical - plastic - paper - glass - metals - fabrics - construction waste.

¹⁷ Built environment collective and Faculty of Regional and Urban Planning - Cairo University, "Solid waste management in al-Khalifa Area". 2015. P. 24-31.

¹⁸ Built environment collective and Faculty of Regional and Urban Planning - Cairo University, "Solid waste management in al-Khalifa Area". 2015. P. 43-49.



Figure 75 Map showing the collection points in the study area. Built environment collective and Faculty of Regional and Urban Planning - Cairo University, "Solid waste management in al-Khalifa Area". 2015. P.23.

Summary of problems:

a) Institutional problems:

Due to the multiple tasks of CCBA and the fact that some of these tasks intersect with other governmental bodies, there are inconsistencies and lack of clarity of the different roles, which affects the efficiency of the current waste management system.

According to URHC project:

- A number of official bodies are responsible for the waste management system in Historic Cairo.
- The lack of clear roles and responsibilities for each body results in poor coordination between them (MoA and the Ministry of Environment).
- Lack of financial resources for purchasing adequate equipment and maintenance.
- Lack of employment necessary for management and monitoring.
- Lack of resources for the monitoring body.
- The system is not completely self-financed, it only covers 60% of the expenses, and thus depends on the Ministry of Finance to cover the rest.

According to Athar Lina Study:

- The lack of participation of the inhabitants in the collecting and monitoring plans.
- The existence of vacant plots and buildings used for the disposal of waste, as well as the lack of information on ownership with regards to these lands or buildings.
- Discrepancies of information concerning the number of housing, commercial, service and industrial units.
- Continuing to contract with the same contractors despite the poor service provided.

b) Technical problems of the collecting phase: -

According to URHC project:

- The placement of waste bins in front of monuments causing accumulation of waste.
- The lack of suitable equipment and collection tools suited for the urban fabric of the area (narrow streets and lanes).

According to Athar Lina Study:

- Spreading, sorting, and collecting recycling materials in the streets.
- The timing of waste collection is not suitable for about 16% of service recipients.
- c) Poor service provided by the contractor: (both studies agreed upon)
 - Contracting with subcontractors, they collect only recyclable waste from certain areas.
 - Contractor's failure to collect waste from all contracted units.

According to URHC project:

- Sorting waste in streets and on collection vehicles.
- Repeated complaint of low cost of service despite receiving other fees from recipients.
- d) Residents:

According to URHC project:

- Lack of commitment to waste disposal in designated places.
- Poor treatment of cleaners and waste collectors.

- e) Technical problems concerning the proposed recycling system: -According to Athar Lina Study:
 - Compost and biogas both need large amounts of organic waste to be produced in reasonable amount. Al-Khalifa Street Area generates 8.7 ton of waste per day. Almost 65% of the waste produced is organic waste. This is not enough to produce biogas for a large area.
 - Biogas generation is a process that needs safety procedures, periodical maintenance and high technical human skills.
 - Composting needs large areas as well as odour and pest control.
 - Sorting is a significant challenge in al-Khalifa Street Area. Waste sorting from households is a challenge in al-Khalifa Street Area. Athar Lina Study shows that almost 75% of inhabitants of al-Khalifa Street Area refuse sorting their waste.
 - Sorting in streets or empty plots of residential neighbourhoods is prohibited by law.

8. Subsurface water and its impacts on al-Khalifa neighbourhood:

Al-Khalifa Street is suffering from rising of subsurface water level affecting the quality of life and causing severe damages to historical and residential buildings, thus affecting the state of conservation of the buildings as well as causing health problems to the residents (joints and respiratory system diseases).

The Athar Lina Ground Water Research Project conducted by Athar Lina has focused on al-Khalifa Action Area since 2016. It is a multi-disciplinary research and training program that aims at devising innovative integrated solutions for groundwater problems in historic settings, with the participation of an international team of architects, conservation experts, planners and experts in urbanism, environment, infrastructure and water resources. From 2016 to 2017, the program was organized by Athar Lina as a collaboration between Megawra-BEC Oregon, Cornell and Cairo universities, Takween ICD, and A for Architecture. It is currently being continued by BEC.

The research project investigated the subsurface water resulting from combining leakages of supply water, sewage network and other sources. The possible reason for such leakage is the old and dilapidated infrastructure of the neighbourhood and of surrounding areas.

The research project addressed the levels and quality of subsurface water along the street,

its effects, potential and urgent interventions to protect historical buildings, potentials of water reuses and treatment techniques if needed. The following summary is based on this study.

Ground and subsurface water levels:

- Al-Khalifa street acts as a catchment area with lower ground level than some surrounding areas. Zaynhum to the west and al-Muqattam to the east.
- Changes of the ground level and soil composition along the street affect subsurface water distribution, levels and danger intensity on different buildings. The



impact of subsurface water on historical buildings is more critical and crucial than on residential ones, not only because of the buildings' age but also because of the low floor levels relative to the street resulting in the inundation of historic buildings.

 Many monument levels are lower than the street level and most of them have water level higher than their level. For example, Fatima Khatun water level is higher than its ground level by 40 cm whilst Ahmad Kuhya level is lower than water level by 1.2 meter. In the case of Ahmad Kuhya, this is resolved by a dewatering system, however, does not prevent occasional inundation.

As part of the research project, an international school¹⁹ was organized to develop integrated methodologies for the treatment of water extracted during dewatering processes to be used as an alternative supply of water for cleaning, industrial, or irrigation purposes. In the later phases of the project, focus turned to reuse for irrigation purposes, particularly to rehabilitating abandoned plots and dumps in proximity to dewatered historic sites, converting them into green areas, and irrigating them using water extracted from dewatering. Because of the fluctuating quality of groundwater from one source during the year, it was felt that rather than develop costly treatment procedures tailored to a specific water quality then having to change it as the type of contamination changes, it is best to tailor the types of plants and trees to the worst-case scenario: salt tolerant inedible plants.

¹⁹ Organized in March 2017 by Athar Lina in partnership with Cornell and Oregon Universities and Takween ICD, 25 participants: architecture; planning, environmental design, heritage, structure, landscape design and hydraulics.



Figure 76 Examples of water problems along the street.

As part of the outcome of the research project, more than one pilot projects have been suggested. The following are two pilot projects that will be discussed further in the report:

• Kuhya Pilot Project is 250 square metres related open space for a 14th century listed mosque. The open space is the buffer zone of the monument, and was not used since the restoration and dewatering project executed in 2002 by MoA. The pilot project will look into implementing an experiment for reuse of groundwater for irrigation of potted plants and rehabilitation of neglected space, and as a potential base for the project in the northern section of al-Khalifa street.

• Al-Khalifa Heritage and Environment Park, is a 3000 square metres park with a women's gym, a kindergarten, an urban gardening and heritage awareness centre, kids play areas, shops and cafeterias. The northern wing of the park is funded by Cairo Governorate. As al-Khalifa is a water poor neighbourhood and suffers from a lack of green spaces, reusing Fatima Khatun and Ashraf Khalil subsurface water in planting a part of al-Khalifa park with non-edible plants was one of the outputs of the international school.

8.1 Kuhya Pilot Project

Introduction:

Aḥmad Kuhya Mosque is a 14th century mosque, located at 18 al-Bazabiz alleyway, al-Rukbiyya Street, al-Khalifa. The mosque was originally a large residential *qa'a* of a Mamluk palace built in 710 H- 1310 AD. During the Ottoman era, Prince Ahmad Kuhya transformed it into a mosque for religious ceremonies. An Ottoman minaret is attached to the mosque. In 2003, the mosque underwent a conservation project. This included installation of a dewatering system consisting of perforated pipes underneath the mosque. These pipes collect water into an underground chamber that periodically pumps the water into the sewage network.







Figure 78 Ahmad Kuhya Mosque.

In order to make room for this dewatering system, two residential buildings to the west and north of the mosque were demolished after the Ministry of Antiquities acquired their ownership. An open space of c. 250 m² was thus created north and west of the mosque and it accommodates the underground water-collection chamber. This open space has two entrances linked to two adjacent alleyways predominantly used by the residents of the area. The open space has wooden pergolas with lighting units. However, prior to our intervention this open space was abandoned and neglected.



Figure 79 The open space connected to Ahmad Kuhya Mosque.

The mosque is the only structure in the area with a complete dewatering system. This system decreases the water level by 3.7 meters. The amount of water pumped into the sewage system was estimated by Athar Lina to be around 192.6 cubic meters daily based on the

operation and rest times of the pumps. Water analysis demonstrated that its quality was suitable for irrigation without treatment²⁰. Other options for the reuse considered to be implemented later include cleaning and flushing.

In 2018, a pilot project in the related open space of the mosque was implemented by CPHC. The intervention was meant as an experiment for reuse of groundwater and rehabilitation of neglected space, as well as a potential base for the Al-Khalifa Street Area in the northern section of the street. The pilot project included the water extraction system and repairs to the electric and wooden fixtures in the open space. This pilot project aims to reuse water from the existing dewatering system in planting and watering potted plants in the mosque's yard, and for cleaning it and turning it into a communal space.

The community and the open space:

The quality of open space and water provides an opportunity for urban and water-related interventions in the area. Therefore, three community meetings, with representatives of local NGO's²¹ and MoA, were carried out by Athar Lina in 2017/2018, discussing the potential of the reuse of the open space and the dewatering system. The following recommendations were highlighted during these meetings:



highlighted [']Figure 80 A community meeting held in the open space of Ahmad Kohya Mosque.

- Reusing the space to host different local events (e.g. weddings, funerals...etc.) and different activities for kids and adults (e.g. literacy class, Qur'an class, library...etc.).
- Provide water reuse connections for non-potable uses, for irrigating other gardens in the surrounding area and usage in workshops through municipal water trucks.
- Provide shade and adequate lighting in the space to prevent undesirable activities such as drugs.
- Provide public toilets or make the mosque's toilets accessible at all times.
- Fix water leakage on the western wall of the mosque.

After more community meetings with representatives from MoA, the idea to host weddings and funerals was cancelled because of the space limitation (250 meters) and the lack of a closed space to be used during these occasions. However, the idea of having a recreational space for the women and kids of the area was more favoured. The activities could include a prayer area for women, a study area, sitting area and a place for activities for kids younger than 10 years old.

²⁰ Annex VI: Tables showing water test results of ground water.

²¹ Al-Nasab al-Sharif and Built Environment Collective.

The project:

Following the community meetings and based on the needs assessment, Athar Lina prepared a project proposal for the reuse of the open space to accommodate different activities and events, adding plants that would use some of the extracted water. Athar Lina also proposes that the open space is managed under the supervision of the Ministry of Antiquities in cooperation with representatives from the local community. Concerning the activities to take place in the open space, the Ministry of Antiquities will decide these activities based on their observation during the implementation phase.

In June 2018, The Ministry of Antiquities approved the following interventions for the implementation phase:

- Fixing the wooden pergolas.
- Repairing the landing on the floor of the open space in the area next to the mosque.
- Cultivating different types of potted plants as creepers on fencing. This would increase security and improve the quality of the open space.
- Installing pipes and a water pump within the existing chamber to irrigate the plants.

The project implementation took place between July 2018 and August 2018. This project is a pilot project for experimenting with alternative methods of groundwater usage within al-Khalifa's urban context.

Problem:	Solution
The ground water collected from the	Reusing the water for irrigating the plants in the
dewatering system in the mosque is unused.	open space and other gardens in the area, or for
	other non-potable uses (eg. workshops).
The open space attached to the mosque is	Rehabilitate the open space to accommodate
abandoned, unused and accumulates trash.	different activities and events for the communities.



Figure 81 All suggested forms of reuse of the water collected from the dewatering system of the monument.



Figure 82 Proposal for the plots and plants distributed in the open space.
The implementation:

Work started at Kuhya Mosque Square on July 15, 2018, and continued for three weeks until it was completed on August 2, 2018. The stages of work included the following:

- 1. The first week:
- The wood emery for the pergolas covering the entire area of the square, preparing for the painting with oil and flick.
- Oyster cracking in the damaged parts on the outer walls of the space adjacent to the neighbouring buildings (12.5 sq.m.).
- Building an iron box for the water tap and hose.
- Removing the stone tiles in the places with inclinations on the sides of the mosque wall (an area of 30 sq.m.).



Removing the stone tiles in the places with inclinations.



The wood emery for the pergolas.



Oyster cracking in the damaged parts on the outer walls.



Detaching the stone tiles to make the water connections.

- 2. The second week:
- Installing the electrical connections of the headlamps (5 headlamps) and the water pump.
- Buying the required amount of stone tiles to substitute the damaged ones (8 sq.m.).
- Cleaning the pergola and starting the oil painting.
- Putting oyster on the damaged parts on the outer walls of the space adjacent to the neighbouring buildings.
- Connecting the pipes of the water pump to the irrigation hose.

- Buying and growing plants in the pots, and placing it on the inner side of the outer wall of the yard away from the walls of the mosque.



Connecting the pipes of the water pump.



Placing the plants in the inner side of the outer wall of the yard.

- 3. The third week:
- Installing stone tiles with appropriate slopes.
- Painting wooden pergolas with oil.
- Buying and installing a water pump according to the recommendations of the maintenance company of the water reduction system.
- Increasing the height of the outer fence of the yard: 16 mm x 16 mm steel bars were welded to the fence, 50 cm vertically up to the fence and 50 cm diagonal 45°, and 5 horizontal rows of mesh wire were connected between the bars.



Painting the wooden pergola.



During the installation of a water pump.





Installing stone tiles with appropriate slopes.

The space after the work has been finished.

3. The final form of water connections and plants' pots:



Plan of the added water pipes and plants.



Section of the added water pipes and plants.

Suggested management and monitoring plan:

During the community meetings, it was suggested to have a management committee representing the community with the support of the inspectors of the MoA. This committee will also include members and leaders from the community. It will mainly supervise and suggest the activities to take place in the open space. Furthermore, this committee will monitor the following actions: irrigation, cleanliness, lighting fixtures, plantation and pump maintenance.

it was evident that the area has two key persons, identified as community leaders who can participate in the management phase of the project. The head of the NGO Al-Nasab Al-Sharif expressed his interest and was willing to organize the activities concerned with women (e.g. Qur'anic teachings, studying, etc.). The sheikh of the mosque (affiliated to the Ministry of Endowments) will also be involved in the management of the open space, allowing the use of the facilities available in the mosque. Two of the men who attended the community meetings expressed their interest to help too. It was suggested to include two women from the community in the management committee. Athar Lina Initiative will also be involved in the establishment of the management committee, and the kids' activities. Athar Lina, as mentioned above, has a very active role in the kids' activities in al-Khalifa area.

On the 22nd of January, 2019 a detailed proposal was submitted to the MoA by Athar Lina for the reuse of the open space connected to the mosque. The proposal suggested that the Heritage Awareness department of MoA, in collaboration with the two NGO's mentioned earlier, would carry out activities in the open space after its upgrading. The Heritage Awareness department will use the space for educational and awareness activities concerned with the monuments, directed to the kids and women of the area, as well as for handicraft workshops mainly for women. As for Athar Lina, the space will be used for activities related to al-Khalifa area, as well as a venue for its annual cultural programme. The MoA agreed to the proposal on the 28th of February, 2019.

8.2 Al-Khalifa Heritage and Environmental Park

Site context:

The site is located in the southern part of al-Khalifa Street Area (al-Khalifa Street.) An elevated vacant land used by residents as an open waste dump. The site faces two important monuments of al-Khalifa Street: Al-Ashraf Khalil and Fatima Khatun Domes. Also, the northern part of the park had a staircase that connects Zaynhum area (a social housing project, please see report on Social Housing) to Al-Khalifa Street Area. The surrounding monuments and residential buildings suffer from groundwater inundating which affects the structures and the overall environmental wellbeing. The site is around 3000 square meters and has a level difference of 9 meters.





Figure 84 Proposed shop zone.



Figure 85 The plot of the park opposite the domes of al-Ashraf Khalil and Fatima Khatun.



Figure 86 Domes of al-Ashraf Khalil and Fatima Khatun, from which water will be extracted.

Vision:

The vision was to create a green pocket in the heart of Historic Cairo helping to improve heritage, environment and local community.

In order to achieve this vision, the idea was to design a park serving the three functions: community park, heritage park and environmental park.

Community park:

 Creating small business and employment opportunities for youth through the development of shops, cafeterias and services of the park itself.



 Designing educational and recreational facilities for families geared mostly towards children, youth and women (kindergarten – play area – sports facilities for women – heritage and environmental education).

Heritage park:

- Introducing residents and visitors alike to al-Khalifa's rich heritage through information panels embedded in the architectural design.
- Attracting visitors from al-Sayyida Nafisa into the street and park.

Environmental park:

- Extracting the ground water inundating al-Khalifa's heritage sites.
- Reusing the extracted water to irrigate the park.
- Creating a green belt to improve the micro-environment of the street.
- Providing sanitary waste collection facilities.
- Training inhabitants in urban farming.



Design Process:

The design of the park was developed in a participatory collective manner. Within the framework of Athar Lina Groundwater Research Project: Integrated solutions for ground water problems in historic contexts.

December 2016, the ARCE During conservation school²²: Ground water and salt damage to historic sites in urban context took place and was specifically focusing on integrated solutions. A sixconservation week school aimed primarily at Ministry of Antiguities employees. engages lt 20 MoA professionals in addition to around 7 employees of Cairo Government, the Ministries of Housing, Environment and Endowments, in addition to the Water and Sewage Companies and the National Institute for Water Studies. All the course activities took place in al-Khalifa generally, with a focus on the domes of al-Ashraf Khalil and Fatima Khatun as a case study.



This was followed by the international school for integrated solutions of ground water from 28 Mar – 8 April, 2017 in which inter-disciplinary minded students and young professionals worked collaboratively to develop innovative design solutions for a proposed Heritage and Environment Park overlooking al-Ashraf Khalil and Fatima Khatun Domes.

Design proposals addressed goals of enhancing public open space, empowering community, fostering environmental awareness, celebrating heritage, stimulating economic activity, and improving accessibility and climate. Teams examined techniques for converting groundwater present on the site from a liability to an asset that will provide functional and aesthetic benefits to the park and neighbourhood. These dewatering strategies are intended to have applicability beyond al-Khalifa.

²² The school was organized by Athar Lina Initiative – Megawra Built Environment. Funded by the American Research Centre in Egypt, with additional funding from the American Embassy under the supervision of the Ministry of Antiquities. In partnership with the Universities of Oregon and Cornell, and in collaboration with Cairo Governorate, TU Delft, Cairo University's Faculty of Planning and Takween for Integrated Community Development.

Participants later were divided into teams studying women and children, landscape, vegetation, accessibility, shops and cafeterias, narratives, water, and signage. The results of the previous work were presented to the community in a meeting; preliminary designs were shown to people of the neighbourhood and their opinion was sought concerning proposed functions, maintenance and security issues, optimum users and beneficiaries and the effect of the groundwater problem on their daily lives.



Figure 88 Different design proposals for the park developed during the international school.

Final Park Design:

The 3000 square meters dilapidated plot will be transformed into an environmental park with recreational facilities for residents and a heritage and environmental awareness. The design proposal focused on enhancing public open space and celebrating heritage. The design took into consideration empowering the community, stimulating economic activity and improving accessibility.

The design will use the groundwater present in the neighbouring monuments of al-Ashraf Khalil and Fatima Khatun to provide functional and aesthetic benefits to the park and neighbourhood. The ground water will not be treated but the choice of plantation will be mainly salt tolerant plants.

The Park will:

- Enhance tourist and special needs accessibility to the street and the park.
- Lower the groundwater table currently damaging heritage sites and housing stock, while treating and reusing the extracted water.
- Provide an opportunity to collect and recycle solid waste. Waste can be used for composting or for generating biogas (more can be found in section 7 of this report).

Park components:

- 1. Day-care centre
- 2. Kids open playground
- 3. Women's multi-use space
- 4. Cafeterias
- 5. Street level shops
- 6. Amphitheatre
- 7. Urban farming area1
- 8. Waste collection spots

Figure 89 Proposed design of the park.

5

2



Figure 90 Renders of the proposed design of the park.

Phasing and current development:

The park implementation was planned in three phases. The idea of phasing is important to facilitate structural implementation and to mobilize funds. Implementing work on a main spine of the historic city such as on al-Khalifa Street is challenging, especially that the street is used as a main thoroughfare for vehicles and pedestrians.

Phase zero: to implement the foundations and levelling and construction of retaining walls. Phase zero is being implemented starting Sep. 2018. The approved budget for implementation is 2,730,000 EGP.



Figure 91 Phase zero of al-Khalifa Park – Retaining walls and soil grading.



Figure 92 Image of construction work at al-Khalifa Park, March 2019.

Phase one: Constructing and operating the shops and the open-air theatre, as well as starting the plantation of the park to help increase the green area in the neighbourhood and to serve as a plant nursery for the rest of the park. In addition, accessibility stairs between Zaynhum and al-Khalifa Street are to be constructed as well as the dewatering system for al-Ashraf Khalil Dome. The estimated budget for implementation is 4,490,000 EGP.



Figure 93 Phase one of al-Khalifa Park.

Phase two: The last phase includes the construction and the complete operation of the park and activities and the second part of the dewatering system at Fatima Khatun Dome. The estimated budget for implementation is 5,050,000 EGP.



Figure 94 Phase two of al-Khalifa Park.

Plants selection

As a pilot experiment to test the types of salt tolerant plants that can be watered directly with untreated groundwater, Athar Lina conducted a year-long experiment to test the response of some plant types to watering with water extracted from the surrounding domes (Nov. 2017 – Dec. 2018). Plants were selected by our agricultual consultant. Numbers, watering and responses are illustrated in the following tables:

Plants	No.	Pots	Water used	Watering	Responses
Bottle brush	1		Brackish water		- Died - Pot might have restricted plant to grow as it is very narrow for the 3 m- height plant
Schinus terebinthifolia	2		1 Brackish water 1 Tap water		 Both of them are still green, the one with brackish water has lower green intensity Both are not blooming
Schinus molle	1	Plastic pots w	Brackish water	- 1 day per we - 2 days per wee	 It had dropped its leaves after transporting and started to regrow after week of watering with tap water, then brackish watering began It is still green. But after 6 months, growing has become slower No blooming
Chorisia speciosa	2	vith 40-50 cm diamete	1 Brackish water 1 Tap water	ek in winter ek in summer	 Both of them had dropped their leaves after transporting and started to regrow after week of watering with tap water The one with brackish has lower green intensity Both are not blooming
Azadirachta indica	1		Tap water for 4 months Then, with brackish water		 It had dropped its leaves after transporting and didn't regrow. So, it had to be watered with tap water for 4 months, then we started with brackish water It is still green No blooming
Papyrus	3		1 Brackish water 2 Tap water	- Day after day in winter - Every day in summer	- The one with brackish water grew slower. The other two are in very good conditions

Plants	Before brackish water	After brackish water	Tap water
Bottle brush			
Schinus terebinthifolia			
Schinus molle			

Citizen Participation in Historic Cairo (CPHC)



Annexes

Annexe I: Survey form for the buildings of al-Khalifa Street Area

القيمة المعمارية الكلية - 6. Over all architectural value										
ID Quism	كود القسم	ID Shiakha	كود الشياخة	ID Building	كود البناية					
Date of survey:		تاريخ المسح:	Name of the surve	yor:	إسم المساح :					
		1.1 Locat	ion - الموقع							
Quism:		قسم:	Street's name:		أسم الشارع:					
Shiakha:		شياخة:	Number:		رقم العقار :					
Building name (if exist):					اسم العقار (إذا وجد):					

مطابقة المبنى للذريطة المساحية - 1.4 Consistency with cadastral map للغريطة المساحية - 1.4 Ves نعم 💷 Ves

1.6 Турс	ology	(historical or contempo	يني (نمط تاريخي أو معاصر) - (rary	بط المب	ن
Residential		سكني	Commerce		تجاري
Apartment building		مبنی سکنی	Covered Market		سوق مغطى
Mansions Palace		سراية / قصر	Khan and Wakala		خان أو وكالَّة
Rab'a		ربع	Mall		مول
Townhouses		منزل	Industrial Productive		وحدة صناعية - إنتاجية
Villas		فيلا	Individual unit		وحدة مستقلة
Religious		ديني	Water and fortifications		دفاعية ومانية
Church and Cathedral		كنيسة أو كاتدرائية	Aqueduct and Fortifications		أسوار دفاعية- مجرى العيور
Mashehad and Mausoleum		مشهد أو ضريح	Hamam		حمام
Monastery		دير	Sabil & Sabil-Kuttab Hawd		سبيل- سبيل كتاب- حوض
Mosque		جامع أو مسجد	Water reservoir Tanks		خز ان مياه
Madrasa		مدرسة دينية	Meeda Bathroom		دورة مياه - ميضة
Synagogue		معبد			
Specialized		متخصصة	Specialized		متخصصة
School		مدرسة	Fire station		مطافئ
Theatre Cinema		مسرح ــ سينما	Hospital		مستشفى
Office Building		مبنى إداري	Station (train bus, etc.)		محطة (أتوبيس قطار الخ)
Khanqah-Tikya-Bymaristan		خانقاه – تكية - بيمار ستان			
Undetectable		غير محدد			

	2.1 Bu	ilding periods -	حقبه البناع								
Missing floor	أدوار مفقودة	نعم 🗖 Yes	No 🗆 Ƴ	غیر معروف 🖬 Undetectable							
Basement	البدروم	نعم 🗆 Yes	No 🗆 Y	غیر معروف 🛯 Undetectable							
Vertical addition	إضافة رأسية	Yes 🗆	نعم (No 🗆 Y							
Consistent with building:	متماشية مع المبنى	Yes 🗆	نعم (No 🖬 🦞							
Structure material	مواد الإنشاء	Bricks 🗆	طوب (حدید 🖬 Steel							
		Stones 🗖	حجر ۱	معدن 🖬 Metal							
		Wood 🗖	خشب (خرسانة 🛯 Concrete							
Extension:	امتداد	No.									
More than 60cm	أكثر من 60 سم	Yes L	نغم [
Consistent with building:	متماشية مع المبنى	Yes 🗆	نعم [No 🗆 Y							
Structure material	مواد الإنشاء	Bricks	طوب (حدید 🖬 Steel							
		Stone 🗆	حجر ۱	معدن 🖬 Metal							
		Wood r	خشب ۱	خرسانة 🗖 Concrete							

2.5		
تناسق ارتفاع الأدوار Consistency of floor height	لا 🗅 No نعم 🗅 Yes	غیر معروف 🖬 Undetectable
Ratio Building height/street width (the facade	أقل من 1:1 🖬 Less than 1:1	أكثر 🛛 More
with the main entrance)	1:1 🛛 1:1	غیر معروفם Undetectable
النسبة بين ارتفاع المبنى وعرض الشارع (الواجهة الرئيسية)	^{1:2} □ 1:2	

العلاقة مع السياق العمراني - 5.4 Relation with urban context									
Building in contrast with the urban context لمبني متنافر مع السياق العمراني	Yes	نعم 🗆	لا ت No						
لعلم متميز Landmark reference	Yes	نعم 🗆	لا 🗆 No						

ID Quism	كود القسم	ID Shiakha	كود الشياخة	كود البناية						
Date of survey:		تاريخ المسح:	Name of the surve	yor:	إسم المساح :					
الموقع - 1.1 Location										
Quism:		قسم:	Street's name:		أسم الشارع:					

Quisin.	سنم.	Street S hame.	اسم استار ع.
Shiakha:	شياخة:	Number:	رقم العقار :
Building name (if exist):			اسم العقار (إذا وجد):

حقبة البناء - 2.1 Building periods										
Pre-Modern (Befor		اسع عشر)	، القرن التا	ما قبل الحداثة (قبل						
Modern		اسع عشر)	ة القرن التا	الحداثة (فتر						
British Mandate (un	til 1950's)		الماضي)	نيات القرن	بطاني (حتى خمسي	، البر ا	فترة الانتداب			
Contemporary first period (1950	Contemporary first period (1950's-1960's)						معا			
Contemporary second period (197	'0's-2013)		إلى الآن)	(السبعينات	صر - الفترة الثانية	معاه				
	Uncertain		غير مؤكد							
عدد الأدوار Number of floors										
أدوار مفقودة Missing floor	Yes 🗖	نعم	No	ע ם	Undetectable		غير معروف			

	2.4 External archite	ctural proportion -	المعمارية الخارجية -	النسب	
Harmony between floors	التجانس بين الأدوار	High	عالي 🛯	low	ضعيف 🛯
		Fair	مقبول 🛯	undetectable	غير معروف 🛯

	عدد عناص معمارية جديدة بالملاحظة (****) 5 2 Prosence of remarkable architectural elements (****)											
	J.Z FIC3	ence or	I EIIIai Kabi		ecturare	emer					л у	
Faca	ade #1	u 1	الواجهة				Faca	ade #2	□ 2	الواجهة		
Presence	يوجد	Yes	نعم 🗆	No	ע ם		Presence	يوجد	Yes	نعم 🗆	No	ע ם
Prevailing	سائدة	Yes	نعم 🗆	No	¥ ם		Prevailing	سائدة	Yes	نعم 🗆	No	L A
Faca	ade #3	a 3	الواجهة				Faca	ade #4	u 4	الواجهة .		
Presence	يوجد	Yes	نعم 🗆	No	¥ ם		Presence	يوجد	Yes	نعم 🗆	No	ע ם
Prevailing	سائدة	Yes	نعم 🗆	No	ע ם		Prevailing	سائدة	Yes	نعم 🗆	No	ע ם

(****) arches, portal, peculiar cladding, corners, porticos, external staircases, gates, wooden doors, sitting or covered entrance, iron doors, covered passages, buttress, balconies, loggia, masharabia, ironwork, wooden beam, cantilevers, molding, mashrafeya/bowwindow, boghdadly, columns, visible mansonry patterns, stoneworks, corbel, glazed tiles, balauster, gypsum glass windows, minaret, dome, wind catcher, vault, shakhsheka, cornice, wooden shades, embattlement

عقود، بوابة، كسوات متميزة، زوايا للمباتي، رواق مدخل، سلالم خارجية، بوابات، أبواب خشبية، مداخل مغطاة، أبواب حديد، ممرات مغطاة، رافسات معلقة، شرفات، رواق شرفة، مشربية، حديد مشغول، كمرة خشبية، كلبولي، زخارف مصبوبة، مشر قيةتنوافذ وأبراج بارزة، بغداطي، أعمدة، انماط مداميك حجر أو طوب مرئية، أعمال حجر، بلاط مطلي أو مزجج ، أعمدة درابزين (خشب أو جص او حديد)، نوافذ من الجص والزجاج المعشق الملون، متذانة، قبة، ملقف هواء، قبو، شخشيخة، كورنيش، ظلال خشبية، تحصينات

السلامة الكلية - 5.3 Overall integrity						
Modifications to the openings وجود تعديل واضح على فتحات المبنى	Yes	نعم 🗆	No 🖬 Y			
General modifications in contrast with the overall building وجود تعديل منتافر مع المبني ككل	Yes	نعم 🗆	No 🖬 Y			

القيمة المعمارية الكلية - 6. Over all architectural value							
Class	التصنيف	Outstanding	متميز 🛯	مقبول 🗆 Fair	لا شيئ 🗆 None		
		High	عالي 🛯	ضعيف 🗆 Low			

Annex II: Survey form of the open spaces of al-Khalifa Street Area

Presence of vehicular flyover	وجود كوبري للمركبات	نعم 🗆 Yes	No 🗆 Y
Presence of vehicular tunnel	وجود نفق للمركبات	نعم 🗆 Yes	No 🗆 🦞
Traffic island	الجزيرة الوسطى	نعم 🗆 Yes	No 🗆 Y
Presence of formal parking	وجود أماكن انتظار سيارات مخطط	نعم 🗆 Yes	No 🗆 Y
Presence of widening	وجود توسيعات	نعم 🖬 Yes	No 🗆 Y
Presence of fence/Walls	وجود أسوار	نعم 🛯 Yes	No 🗆 Y
Position of the fence/Walls	موقع الأسوار	Side	على الجانب
		Middle	في الوسط
		Side and middle	على الجانب وفي الوسط
		None	غير موجود

عناصر المناطق المفتوحة/الشوارع - 1.4 Open Space/street elements

جار ا Presence of green areas براء ا Presence of water features Free water dispensing Presence of substation Presence of substation Presence of substation Presence of garbage collecting points	وجود الله وجود مسطحات خط وجود معاصر ، وجود نقاط توزيع وجود مطات ثاثوية لله وجود نقطة تجميع لل	Presence of str Presence of Presence Presence Stepped stree Uphill street	eet furniture of public light ence of steps of staircases t/open space /open space	وجود أثاث للشارع = وجود إنارة عامة = وجود منرجات = وجود سلالم = منطقة مفتوحة/شارع منرج = منطقة مفتوحة/شارع مانل =		
وجود تمهيد او تعبيد Presence of paving	نعم 🗆 Yes	No	ע ם	جزئي 🗆 Partial		
وجود تغطية Presence of coverage	Yes	نعم 🗆		No 🗆 Y		
استمرارية التغطية Coverage Permanency	Permanent Temporary	دائمة 🗆 مؤقتة		لايوجد 🗅 None		
status of the open space/street	on-going infrast	ucture works	ة التحتية 🛛	أعمال جارية للبني		
حالة المنطقة المفتوحة/الشارع	on-going rehabi	litation works	ل جارية 🛛	أعمال إعادة تأهي		
		rehabilitated	دة تأهيله 🛛	تمت إعا		
	surfa	ce renovation	للسطح 🛛	إعادة تأهيا		
		none	لاشيء 🗆			
Degree of spatial quality	Good 🗆	ختز	E	ad 🗆 سيئ 🖬		
درجة جودة الفراغ	Fair 🗆	مقبول	Disrupt	سيئ جداً /متدهور 🛯 ed:		

مواد التشطيب - 3. Material

مواد التشطيب للمناطق المفتوحة/ الشارع (multiple choices) عمواد التشطيب للمناطق المفتوحة/

أسفلت asphalt أسفلت Asphalt أسفلت Stone حجر Basalt بازلت Basalt بالزلت Concrete tiles	تربة ا Soil تربة Ceramic tiles ا بلاطات سير اميك Grass لنجيلة Grass
Overall material evaluation for the open space/street م الكلي لحالة مواد التشطيب للمناطق المفتوحة / الشوارع	جبد □ Good مقبول □ Fair سيئ □ Bad

الحالة العامة للمنطقة المفتوحة/الشارع 4. Open space/ Street General Quality

Overall general evaluation of the open space/street	Good Fair	0	جيد مقبول
	Bad		سين (

1. Open Spaces/Street	general information	المفتوحة/الشوارع	وصف عام للمناطق
ID open-space/street :		1	كود المنطقة المفتوحة/الشارع
Date of survey :	تاريخ المسح:	Name of the surveyor:	اسم العساح :
	1.1 Locatio	الموقع - n	
Open space/street name	اسم المنطقة المفتوحة/الشارع:	Shiakha :	شياخة :
Quism :	قىم:		

المتصنيف (الحتيار واحد) (1.2 Typology (one choice)							
Cornish		کورنیش	Al-Sweeka		سويقة		
Al Tarik		طريق	Al-Sikka		سكة		
Al Shari'		شارع	Midan		ميدان		
Al-Darb		درب	Saha		ساحة		
Al-Hara		حار ة	Park		متتزه		
Al-'Atfa		عطفة	Garden		حديقة		
Al-Zuqaq		زقاق	Other		أخرى		
Passage		ممر					

التخطيط العام (اختيار واحد لكل سؤال) (I.3 General Layout (one choice)							
Average width	متوسط العرض	□ >6		6 - 2	m		< 2 m
		m		1120			
Access of vehicles	دخول المركبات	Yes 🛛	نعم		No		У
Sense of direction	اتجاه الحركة	C	ne way	•	اتجاه واحد		
		Two-wa	y street	Ο.	اتجاهان		
		None	/unclear	•	لا يوجد		
Number of lanes for each direction		0	ne lane		رية واحدة	رة مرو	حا
اتجاه	عدد الحارات المرورية لكل	Tw	o lanes		مروريتان	حارتان	
		Multin	le lanes		ت المرورية	الحار ال	متعدد
		indiap	None	3	CCC-		
Matellin Little (1.2.11.5)	C		Facu		1. 20 4		
waikability	سهوته الاستحدام تنمساه إحراد		Easy	u	سهن		
			Difficult		صعب		
		not a	ccessible		وصول إليه	يمكن ال	Y
Presence of sidewalks	وجود أرصفة	Yes 🗖	نعم		No		У
Walkability of the sidewalks الأرصفة	سهولة الاستخدام/السير على	Yes 🗖	نعم		No		У
الله Presence of safe crossing	وجود أماكن أمنة لعبور المث	Yes 🗖	نعم		No		У
Degree of horizontal permeability درجة سهولة الاتصال الأفقى	Easy 🗆	سهلة ا		Diff	icult 🕻	بة ر	ص

الاستخدامات والمستخدمون - 2. Use and users								
2.1 Appropriation of the open space/street (multiple	استخدام المناطق المفتوحة/الشارع (متعدد الاختيارات) - (2.1 Appropriation of the open space/street (multiple choices							
Parking (Informal)		أماكن انتظار للسيارات غير مخططة						
Culture, Entertainment		ثقافي أو ترفيهي						
Market		سوق						
Kiosk		كثرك						
Street vendor		باعة جائلين						
Storage		تخزين						
Play ground		ملاعب						
Waste collection		منطقة تجميع قمامة						
Transportation stop		محطة مو اصلات						
Work place		منطقة عمل للحرف و الورش						
Animal shed		حظائر حيوانات						
No appropriation		لا توجد استخدامات						

المستخدمون الأكثر شيوعا (اختيار وأحد) - (2.2 Dominant traffic use (one choice									
Vehicular dominance		استخدام السيارات سائد	Pedestrian dominanc	e	استخدام المشاة سائد				
2.3	المستخدمون للمناطق المفتوحة/الشارع - (2.3 Mobile users (multiple choices)								
Pedestrians		مشاة	Cars		سيارات				
Carts & trolleys/manual		عربات للبضائع تجر يدويأ	Carriages not motorized		عربات بدون محرك/جر				
Bicycles		دراجات	/moving by animals		بالحيوانات				
Motorbikes		در اجات نارية	Trucks/pick-up trucks		عربات نقل				
			Public & collective transpor		وسائل مواصلات عامة				

Annex III: Set of thematic maps concerned with the buildings of al-Khalifa Street Area











Annex IV: Set of thematic maps concerned with the open spaces of Al-Khalifa Street Area







Annex IV: Survey form for workshops

1. بيانات عامة

Location			الموقع
	إسم الشارع	Building number:	
		رقم العقار	
		Qism name:	
إسم الشياخة		إسم القسم	
Workshop/industrial unit's name:		· · · · ·	
إسم الورشة/الوحدة الإنتاجية			

Ownership				الملكية
Owner's name: إسم المالك				
Manager's name: إسم مدير الوحدة				
Date of establishment: تاريخ الانشاء	□ Up to 60	□ 70 – 80	□ 90 - 2010	After 2011

Space owned	Space rented
الوحدة تمليك	الوحدة مؤجرة

Please fill in the following part in case of rent:

 Old rent applied (Law 49/1977) 	New rent applied (Law 4/1996)
الوحدة يطبق عليها قانون الإيجار القديم	الوحدة يطبق عليها قانون الإيجار الجديد

Did the workshop/industrial unit change the type of its activity?

هل تم تغيير نشاط الورشة ؟

33 3#	
□ yes	🗆 no
نعم	У

2. Workshop/Industrial Unit Information بيانات خاصة بالورشة/الوحدة. الإنتاجية

نوع الأدوات Tools and equipment					
		والمعدات			
Manual	Machinery	□ Mixed			
يدو ي	ماكينات	مختلط			

أماكن ووسانل نقل الخامات Transportation of material/products والمنتجات					
Raw material source* مصدر الماده الخام*	District ا نطاق الحی	City-scale/regional 🗆 🗅 نطاق المدينه/ اقليمي			
	 Historic Cairo القاهرة التاريخية 	 Import استیراد 			

امكانية وجودها في الورشة

Raw material transportation* نقل الماده الخام*	 Manual (ex. carts/trolleys) يدوی (مثل عربات تجر يدويا) Motorbikes در اجات نارية 	 Cars/pick-up trucks عربات نصف نقل/سیارات Trucks عربات نقل
Product destination* جهه المنتج*	District الحي نطاق الحي	 City-scale/regional نطاق المدينه/ اقليمي
	Historic Cairo القاهرة التاريخية	Export تصدیر
Product transportation* *نقل المنتج	 Manual (ex. carts/trolleys) عربات تجر يدويا 	 Cars/pick-up trucks عربات نصف نقل/سیارات
	 Motorbikes در اجات ناریة 	Trucks عربات نقل
Due du et e ell'a ext	- District	
Product selling" جهه المنتج*	DISTICT ت نطاق الحي	Uity-scale/regional نطاق المدينه/ اقليمي
	 Historic Cairo القاهرة التاريخية 	Export تصدیر
Observation	In the workshop	Possible space

يوجد في الورشة

الورشة/ الوحدة *Workshop/industrial unit type	نو ع
---	------

الإنتاجية*

أخشاب *Carpentry/Wood-work

		ونجارة*
 Arabesque/wood lathing أرابيسك/ خراطة أخشاب 	Doors and windows نجارة باب وشباك	Engraving/relief carving الحفر على الخشب/ الأويمة
 Furniture/salon carpenter نجار موبيليا 	Furniture fixing تصليح الموبيليا	 Mother-of-pearls stones تطعيم بالصدف/ الاحجار
 Parquet workshop باركية 	 Wood cutting/warehouse تقطيع أخشاب/مغلق 	Wood staining/gilding طلاء الأخشاب
 Others أخرى 		

Leather*

جلود*

 Leather tanning دباغة الجلود 	 Leather products (artificial) منتجات جلد صناعي 	 Leather products (natural) منتجات جلد طبيعي
□ Shoes/bags repair تصليح احذيه وشنط		

Metals*

معادن*

 Copper/brass workshop ورشة نحاس 	 Gold/silver products منتجات ذهبية أو فضية 	 Fer forge فیرفورجیة
□ Foundries مسابك	Iron creteil حدید کریتال	 Iron filings برادة حديد
Lathing خراطة	I Metal casting صب معادن	 Metal doors/window frames إطارات أبواب وشبابيك معدنية
Metal furniture أثاث معدني	Metal welding لحام المعادن	 Processing (cutting, coating) تشغيل معادن (تقطيع، طلاء، إلخ)
 Smithereens حدادة 	 Weapons sharpening سن أسلحة 	 Others أخرى

Textile*

منسوجات*

 Carpets سجاد 		Clothes/knitwear ملابس/تريكو	Clothes/carpet mending رفة
lroning service □ clothes مکرجي	for	Khiyamiyya خیامیة	Upholstery منجد
Tailor ם ترزي		Others أخرى	Knotting/cord making عقادة

3. Physical Environment

معلومات عن البيئة المادية

Rootedness of the	شاط activity	إرتباط الن			
	-			بالمنطقة	
Activity exists in the area since (years) النشاط له جذور في المنطقة منذ (عدد سنوات)	□<10	□<20	□20-40	□ 40-60	□<60

أفي حالة بدء النشاط منذ أقل من 10 In case the activity exists since less than 10 years: 10 سنوات

Reasons for starting the activity in the area*	Distance to residence القرب من السكن	□ Complementary units in the area وجود وحدات مكملة	□ Space requirements متطلبات المساحه
سبب بدء نشاط الورشة	Rental value □	Others ⊔	
في المنطقة*	قيمة الإيجار	اخری	
The	تعم Yes	ם No	
workshop/industrial	نعم	צ	

Other unit supplements in the area الورشة/الوحدة الإنتاجية مرتبطة أو مكملة لوحدات أخرى في المنطقة				
Location of complementary workshops/industri al units موقع الورش/الوحدات الصناعية المكملة	 Surroundin g streets الشوارع المحيطة 	District ם في الحي	Historic Cairo القاهرة التاريخية	 Outside Historic Cairo خارج القاهرة التاريخية

غ Use of public space	إستخدام الفرا			المفتوح
Spread of activities in public space إشغال الأنشطة للفراغ المفتوح	yes نعم		no וו ע	
Use of public space for إستخدام الفراغ المفتوح	Production activi أنشطة إنتاجية	ties	Storag ם تخزين	je
	Display of produce عرض المنتجات	cts	Other ם لة أخرى	activities أنشم
Duration of use مدة الإستخدام	Seasonal ت موسمی	Part 🛛 ن اليوم	of day جزء م	Whole day طوال اليوم

Environmental assessment	التقييم	البيئي
Non-Product Output (NPO) وجود ہوالك إنتاج	تعم Yes	□ No ນ
Recycling of NPO إعادة تدوير هوالك الإنتاج	□ Yes نعم	□ No ⊻
	Inside the unit داخل الوحدة	 Outside the unit خارج الوحدة

4. Human Resources

البشرية

معلومات عن الموارد

Owner/ manager ²³ info	بیانات ormation	
		المالك/المدير
Working in the	□ Yes	No
workshop	نعم	۲
يعمل بالورشة		
Residence of the owner	Inside the district	Outside Historic Cairo

سكن المالك	داخل الحی Inside H ت ة التاريخية	listoric Cairo داخل القاهر	مرة التاريخية	خارج القاه
Age group المرحلة العمرية	□ 20 – 40	□ 40 - 60	□ >60	
Years of experience عدد سنوات الخبرة	□ < 5	□ 5 - 20	u 20 – 40	a > 40
Inherited/family craft activity نشاط حرفي عائلي/ موروث	⊡ Yes نعم		ם No ⊻	

Total number of	□ < 3	u 3-6	□ 6-9	□ > 9
workforces				
عدد العاملين بالوحدة				

5. Design and orders

5. معلومات عن التصميمات والطلبات

Design source* (if available)	مصدر التصميمات* (إن وجد)
 Inherited/traditional designs تصميمات تقليدية/موروثة 	Provided by client/designer مقدمة من العميل/ مصمم
 Internet/catalogue مأخوذة من الإنترنت/كتالوج 	□ Others أخرى

Order types*	أنواع الطلبيات*
 By consumers من قبل المستهلكين 	 By retailers من قبل تجار التجزئة
By intermediary clients من قبل عملاء وسطاء	Others ا أخرى

Clients*	الزيانن*
Local clients	Historic Cairo
زبائن من المجتمع المحلي	ربائن من الفاهرة التاريخية
Tourists	Clients abroad/export
سائحين	عملاء بالخارج/تصدير
City scale/regional	
نطاق المدينة/إقليمي	

		Sayeda Nafissa								Ahmed Kohya	Al-Saliba's	
		square (Piezometer)	Ashrat Nhaii	I (Plezomete	er)		ratima kha	ion (Plezom	eter)	(Dewatering cistern)	house (well)	Eavption
Lab		Chemonics (Dr.Ahmed Gaber) 19/10/2017	Chemonics (Dr. Ahmed Gaber) 19/10/2017	Dr.Abeer (A 9/201	UC lab) 6	NWRC 5/2017	NWRC 14/8/2017	NWRC 16/8/2017	Chemonics (Dr. Ahmed Gaber) 19/10/2017	NWRC 5/2017	NWRC 11/2018	code for sewage
Physicochemical parameter	Unit	After pumbing for 15 minutes	After pumbing for 15 minutes	Nopumpin	g	After pumbing for 15 minutes	After pumbing for 10 hours distributed on one dav	After pumbing for 30 hours distributed on 3 davs	After pumbing for 15 ninules	After pumbing for 15 minutes	No pumping	
Frace Metals												
Aluminum (Al)	mg/l	-	-			0.018	•		-	<0.006	0.028	
Antimony (Sb)	mg/l		-			<0.004			-	<0.004	>0.009	
Arsenic (As)	mg/l	-	-			<0.001	-		-	<0.001	>0.006	
3arium (Ba)	mg/l		•			<0.006	•		-	0.136	0.059	
Cadmium (Cd)	mg/l	-	•			<0.001	-		-	<0.001	0.005	
Chromium (Cr)	mg/l		•			<0.001		•		<0.001	>0.002	
Cobalt (CO)	mg/l	-	•			<0.003	•	•	-	<0.003	>0.003	
Copper (Cu)	mg/l	-	-	2.9		0.095			-	0.015	0.014	
ron (Fe)	mg/l		1	0.26		0.779				0.068	0.022	
_ead (Pb)	mg/l					<0.003				<0.003	>0.007	
Vanganese (Mh)	mg/l		1			1.44			ı	1.08	0.015	
Vickel (Ni)	mg/l					0.022	•			<0.001	>0.004	
Selenium (Se)	mg/l		1			<0.001			ı	<0.001	>0.007	
Fin (Sn)	mg/l	,				<0.004				<0.004	>0.006	
/anadium (V)	mg/l	,				<0.002				<0.002	>0.001	
Zinc (Zn)	mg/l					<0.001				<0.001	0.009	
Vicrobiology Parameter							ARC (Ag	riculture) center)				
				24h	48h							
Fotal coliform	CFU/100ml			1006*102	7.9x108	Z	2000	Z _{TI}	,	178	630	
				Mainly Bacillus	Mainly Bacillus							
⁻ ecal coliform	CFU/100ml	-	-			NF	-	-	-	16	340	
E-coli	CFU/100ml						Ŗ	Ч			260	20
ntestinal Nematodes							п	Ę				_
				1210								
- ungai count	CFU/ml	•		Mainly yea Rhizop	st and us		•	•			•	
Algal count	Cell/ml	-	-	10				•				

Annex V: Tables showing water test analysis of the ground water in al-Khalifa.
Citizen Participation in Historic Cairo (CPHC)

				-					-	-	
-	314.74	235	-	1610	1841	1335	219			ng/l	SO4 ²⁻
-	0.25	0.4	-	<0.2	<0.2	<0.2	6.1			ng/l	PO4 ³⁻
	46.23	25	•	15	27	<0.2	61			mg/l	NO3 ¹⁻
,	<0.2	<0.2	,	2.11	2.8	<0.2	1.3	1	1	mg/l	NO2 ¹⁻
	72.73	172	,	1534	1465	1557	40	,	,	mg/l	Cl1-
											Major Anions
'	58	162	'	1105	975	1089	16			mg/l	Na ¹⁺
,	58	45	'	118	175	85	92	1	1	mg/l	Mg ²⁺
,	28	22	'	46	85	41	5.9	1	1	mg/l	K ¹⁺
,	157	125		742	796	578	5.6			mg/l	Ca ²⁺
											Major Cations
,	375	1.4		819	829	478				mg/l	Bicarbonate HCO31-
,	0	8		0	0	0				mg/l	Carbonate CO3 ²⁻
'	0.2	2		1.1	0.9	1.3				mg/l	0&G
	27	3.15		88	68	65	87			mg/l	COD
15	7	4.7	-	10	17	11	8			mg/l	BOD
'	-	1.58	-	-		11.16					SAR
'	0.31			'						mg/l	T.P
'	44.8									mg/l	TKN
'		6		4.031	3.143	54.25				mg/l	Ammonia NH ³⁻
'	13.15	1123		4.232	3.3001		1.1			mg/l	Ammonium NH ⁴⁺
5	5.5	1.754	-	13	7	-	•	-	-	NTU	Turbidity
15	14	385	-	9	з	14				mg/l	TSS
	666	385	3700	6144	6784	5768	319	2890	2900	mg/l	TDS
-	1.562	0	-	9.6	10.6	8.2	-	-	-	mmhose/cm	EC
'	7.54	7.81	-	7.6	8.04	7.28	7.8			-	PH
	-	5.54	-	1.3	1.6	5.16	6		-	mg/l	DO
	Nopumping	After pumbing for 15 minutes	After pumbing for 15 minutes	After pumbing for 30 hours distributed on 3 days	After pumbing for 10 hours distributed on one day	After pumbing for 15 minutes	No pumping	After pumbing for 15 minutes	After pumbing for 15 minutes	Unit	Physicochemical parameter
code for sewage reuse 2015	NWRC 11/2018	NWRC 5/2017	Chemonics (Dr. Ahmed Gaber) 19/10/2017	NWRC 16/8/2017	NWRC 14/8/2017	NW RC 5/2017	Dr.Abeer (AUC lab) 9/2016	Chemonics (Dr. Ahmed Gaber) 19/10/2017	Chemonics (Dr.Ahmed Gaber) 19/10/2017		Lab
Eavption	Megawra's house (well)	(Dewatering cistern)	ieter)	aton (Piezom	Fatima Kha		lil (Piezometer)	Ashraf Kha	square (Piezometer)		
	Al-Saliba's	Ahmed Kohya							Sayeda Nafissa		

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