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The Lighthouses of Alexandria

"Let there be light"



Ras El Tin Lighthouse

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Introduction

Alexandria is one of the oldest cities in the Mediterranean. The city had a crucial role in shaping the history of the Mediterranean. Alexandria is also famous for its legendary lighthouse, the Pharos, one of the seven wonders of the ancient world. The lighthouse stood on the small Pharos Island for almost 13 centuries. Even though the Pharos collapsed its legend and fame still survives. Pharology, which is the science of designing lighthouses, is named after the Pharos. The great lighthouse of Alexandria caught the attention of travellers, historians and the like. Even today its reputation and fame overshadow *the other* lighthouses of Alexandria. This paper aims to study *the other* lighthouses, the ones that are lesser known but have marked the coast of the city for more than a hundred years. This research will trace the history and architecture of the lighthouses of Alexandria, their role in shaping the city's waterfront, their characteristics and their lighting technology.

Why Study Lighthouses?

- The fame and legacy of the great Pharos of Alexandria has put other lighthouses of the city in the shade.
- The last study about the lighthouses of Alexandria was conducted in 1912 by Gaston Jondet and B. Malaval. Since then there has been very little research about these unique structures.
- The lighthouses are an endangered type of buildings and soon will be obsolete because of the new navigation technology.
- Lighthouses are always located in areas with the harshest type of weather condition making them more liable to deterioration and degradation.

The aim of this research

- 1 To document the lighthouses of Alexandria
- 2 To study their existing condition
- 3 To highlight their importance as part of maritime heritage
- 4 To raise awareness of their need of conservation

‘Where there is light, there is life’, Henry Plummer

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1. The history of lighthouse construction

During the 1800s, lighthouses were part of the general public works plan carried out by Mohamed Ali the Viceroy of Egypt, in his goal to modernize Egypt, and to make it a competitor to European countries. To achieve this goal, railways, canals, bridges, telegraph posts, arsenals, docks, irrigation canals and harbors were constructed all over Egypt. Several lighthouses were constructed along the coast of Alexandria and eastwards in Rosetta, Damietta, Cape Bourlos and Port Said to facilitate the navigation of trade and navy vessels to and from Egyptian ports.

Mohamed Mazhar Pasha studied engineering and mathematics for 10 years in France during the 1830s. He was the chief engineer during the reign of Mohamed Ali. Among his engineering and military tasks, he was responsible for the construction of the first modern lighthouse in Alexandria at the tip of Ras El Tin Peninsula. This lighthouse was constructed while Mohamed Ali concentrated on the renovation of the Alexandria seaport and his wish to establish a powerful, well-equipped navy.

Later many lighthouses were constructed due to the energy and intelligence of Mickillop Pasha. Mickillop Pasha was a British Royal Navy soldier and the Headmaster of the Egyptian Navy School. He was appointed as the first chief of the Lighthouses Department which was established in 1868. The location of each lighthouse was carefully chosen by a specialized committee that comprised of experienced Egyptian sailors and professional maritime engineers under the supervision of experienced foreign experts. At the death of Said Pasha, in 1863, the lighthouse which is located in Ras El Tin was the only structure of its kind in any Egyptian port along the Mediterranean. Ismail Pasha (ruled 1863 - 1879) was responsible for the construction of several lighthouses in Alexandria such as the ones in Agami (1873), the lighthouse at the end of the breakwater erected in the Alexandria port (1876), and Qabbari lighthouse (1877).

2. Existing lighthouses of Alexandria

There are six lighthouses still existing in Alexandria. They are mainly located in the western part of the city except for Montazah lighthouse which is located in the Montazah Palace grounds to the east of the city. Some of these lighthouses are not functional and others are not accessible. Figure 1 shows contemporary Alexandria with the location of existing lighthouses in the western part of the city. Table 1 exhibits some characteristics of the existing lighthouses of Alexandria.

	Lighthouse name	Other names, (if any)	Date of Construction	Location	Height (m)	Range (nm)	Functional (Y/N)	Description	Type
1	Ras El Tin	-Old lighthouse, -Alexandria lighthouse - Grand Phare	1848 ²	Ras El tin peninsula	55 ²	21 ¹	yes	White round stone tower, black bands ¹	manne d
2	Mex Low	El Boughaz El Kebir	1908 ²	El Mex	20 ²		yes	Tapered with vertical red and white stripes	manne d
3	Mex High	El Mex	1894 ²	El Mex	30 ²		yes		manne d
4	Mex Old	El Fanara EL Amya (Blind lighthouse)	1890-1891 ⁵	El Mex			no		unused
5	El Agami¹	none	1873 ³	Marabout Island	17 ¹ 31 ⁴	15 ¹	yes	White stone tower, vertical black stripes ¹	unman ned
6	Montazah Palace	none	1940s	Montazah Palace	15 ²		yes		unman ned

Table 1: A list of existing lighthouses of Alexandria

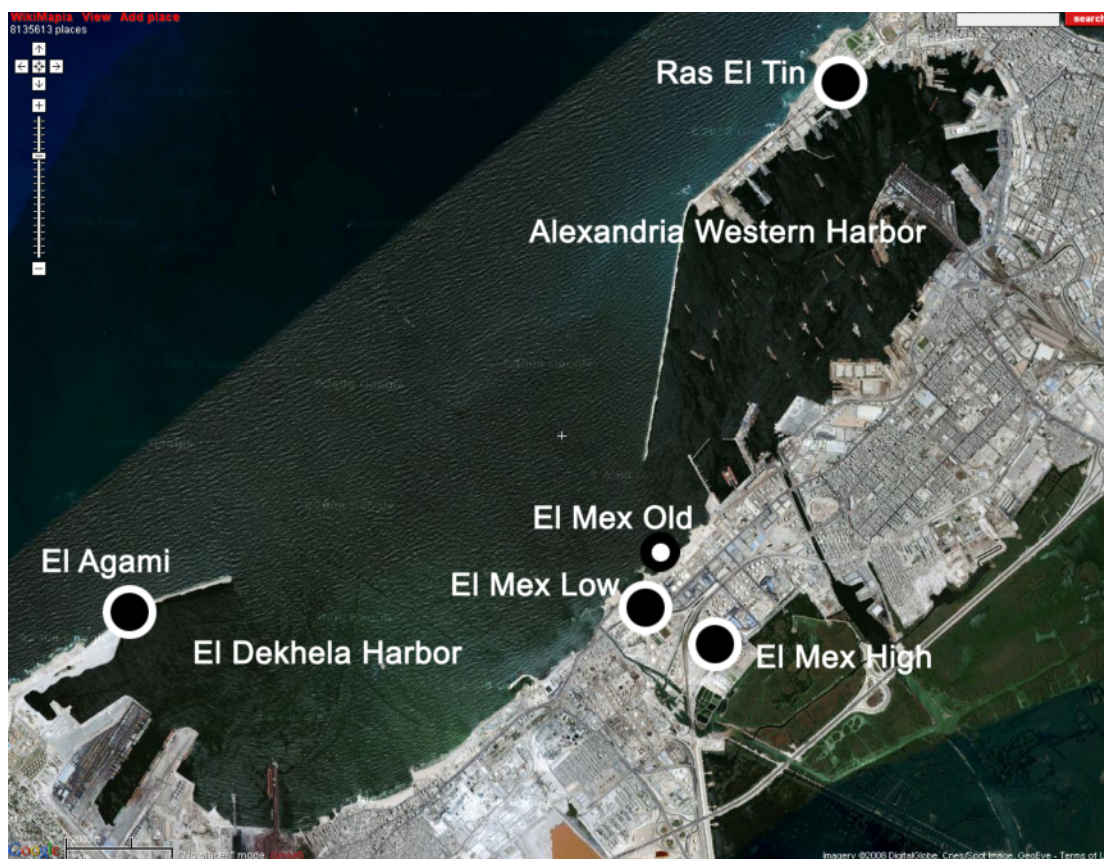


Figure 1: Satellite image of contemporary Alexandria illustrating the functioning lighthouses in black and the non functioning lighthouses in white
source: the author, base map after Google earth

2.1 Ras El Tin Lighthouse

Also known as the Grand Phare. Ras El Tin lighthouse was constructed in 1842 (Shafei 1950), during the reign of Mohamed Ali, by Mohamed Mazhar Pasha, and was operational in 1848 (Malaval and al. 1912). The lighthouse was modified several times starting in 1919, provided with electricity in 1954, and lastly was renovated in 1993 (Rowlett 2007). Being located at the tip of Ras El Tin Peninsula, the lighthouse acts as a regional or landfall light and marks the entrance to the Western Harbor of Alexandria. It is the first landmark seen on approaching Alexandria along with the Marabout Fort to the west of Agami.

The lighthouse consists of a circular tapered wall-bearing stone tower with an outer diameter of 9.30m and wall thickness of around 1.20m. The stones were brought from the quarries of Cairo. The height of the building is 49m while its focal plane is 55m above sea level. The tower has a lantern and gallery. Its light characteristics are three white flashes, in a 2+1 pattern, every 30 seconds. The lighthouse was surrounded by a fort which was called El Fanar Fort or Ras El Tin Fort. Most probably, this fort was destroyed during the British bombardment of Alexandria in 1882.

Early photos of the lighthouse indicate that it was built with exposed stones which, most probably during the renovation of 1919, were plastered and painted in horizontal black and white stripes. The lighting equipment of the lighthouse consisted of a lantern with 24 panes. The mechanism was replaced and provided by Sauter of Paris in 1905. Originally the lighthouse used not to have a light source as indicated by Sir John Gardner Wilkinson (1797-1875) who in 1847 described the lighthouse as being in a good position for vessels arriving from Europe but, he continues, that he [Mohamed Ali] made a mistake of not having a revolving light, which might have been done with little more expense. Figure 2.



Figure 2: Southern view of Ras El Tin Lighthouse
source: The Alexandria & Mediterranean Research Center

The lighthouse is located within the headquarters of Egyptian Navy as well as the presidential Palace of Ras El Tin, which are restricted areas accessed only with a special permission. It is equipped with a light station that consists of a generator for electricity back up, living quarters for workers, a small workshop and an office. Figure 3. The top of the lighthouse can be reached by a spiral, cantilevered stair that connects the ground floor to a level just below the lantern room. Then a small one flight stair leads to the lantern room. In around 2000 an elevator was installed. The light source is a light bulb with a revolving lens. Even during the day, the lens revolves so as not to concentrate the sun rays into the lantern. Figure 4. The lantern is equipped with an external and an internal gallery for the maintenance of the lens. The condition of the building is fairly good except for few external cracks in the plastering. Windows are broken due to the harsh weather with birds cages inside the tower.

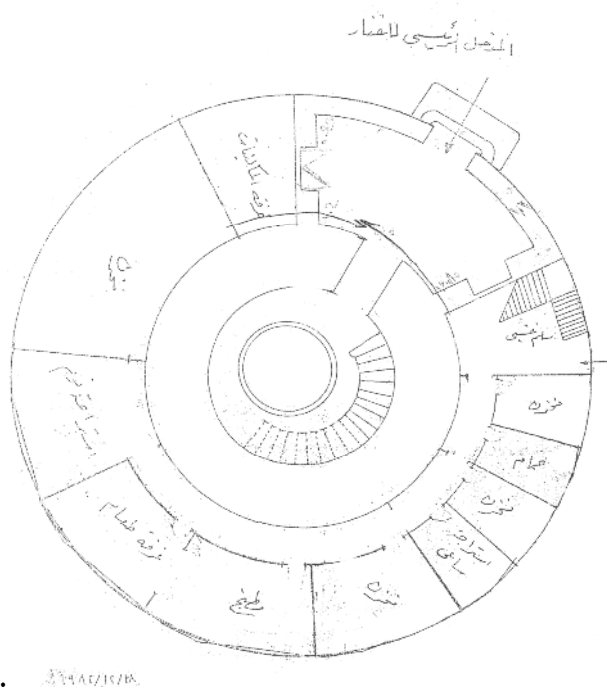


Figure 3: Plan of the Ras El Tin Lighthouse
source: Egyptian Authority for Maritime Safety

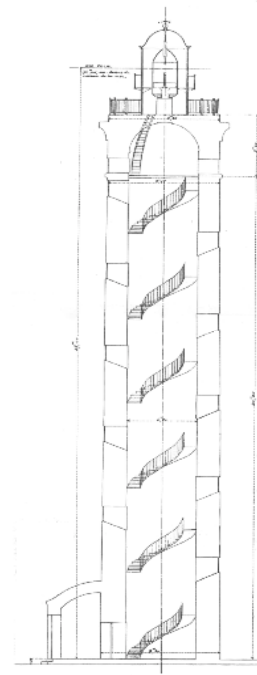


Figure 4: Section of Ras El Tin Lighthouse.
source: Malaval and al.

2.2. Mex High Lighthouse

Also known as Mex Grand Lighthouse. Constructed between 1890 - 1891 and lighted in 1894, the same year of the construction of the Mex Old Lighthouse which was erected on an island about 150 meters from the coast. The construction of both lighthouses cost about 3600 EGP. The original light source was provided by Lux and was visible from a distance of 10 miles. The light has a focal plane of 38m. Its light characteristics are two continuous white lights, one above the other; the lower is at a focal plane of 29m. The total height of the lighthouse is approximately 30m. The building is a round tower with double gallery and a dome topped by a ball-and-spike day mark. The upper half of tower is painted black, the lower half white. The light is located within a light station which is rectangular with a central open court. The condition of the lighthouse is fairly good with some longitudinal cracks in the external plastering. The Mex High Lighthouse works with the Mex Low Lighthouse to indicate a safe passage for vessels entering the harbor. Figures 5, 6.



Figure 5: Northern view of the Mex High Lighthouse,
source: the author

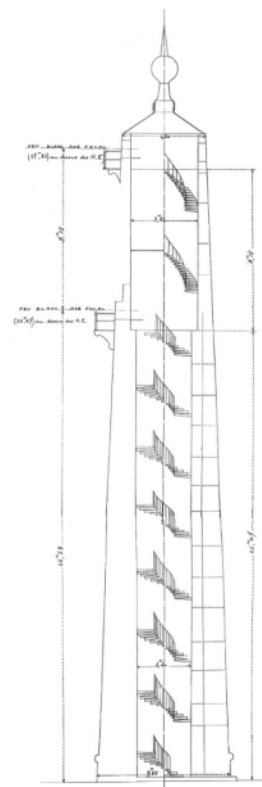


Figure 6: Section of the Mex High Lighthouse
source: Malaval and al.

2.3. Mex Low Lighthouse

Mex Low Lighthouse was constructed in 1908 while the station was established 1894. The lighthouse is still active; with a focal plane of 18m, it has two continuous red lights, one above the other; also a continuous white light at a focal plane of 13 m. Its total height is 20 m. It is a round tapered tower with a domed top rather than a lantern; the lights are shown through small openings. The tower is painted with vertical red and white stripes. The lighthouse is manned with an adjacent light station that houses services. The lighthouse consists of an external stair to reach the summit while maintenance is undertaken by using an internal staircase. The top of the lighthouse is marked with an ending decorative spike. Some professional mariners, such as Peter Mosselberger, describe the Mex Lighthouses as the most beautiful leading lights in the world. Figure 7.

Old photographs taken around 1897 show that the Mex Low Lighthouse was originally a signal tower before it was converted into the current Mex Low Lighthouse. The same pictures illustrate that the Mex Old Lighthouse – which is now deserted – was a functioning lighthouse at that time. It is not known so far the reason for neglecting of the Mex Old Lighthouse and renovating the Mex signal tower to be a lighthouse. Figure 8.



Figure 7: Views of the Low Mex Lighthouses showing their setting and alignment
source: The Alexandria & Mediterranean Research Center



Figure 8: RIGHT The signal tower of Mex, to the far left and the little lighthouse of Mex to the right in 1897.

LEFT The signal tower was deserted and the little lighthouse was renovated to what is now the Mex Low Lighthouse

source: www.egyptedantan.com and Malaval and al.

2.4. El Agami

An unmanned lighthouse. The construction date of this lighthouse is unknown but some references state that it was constructed in 1873. It has a height of 14m and a focal plane of 17m, with two white flashes every 15 seconds. It is a stone tower with a lantern and gallery, painted with vertical black and white stripes. The lighthouse is located on a spit at the westernmost entrance to the harbor area, about 20 km southwest of the center of Alexandria. The Agami lighthouse is located in a restricted no access military area controlled by the Egyptian Coast Guard Forces. As a result little is known about the condition of the light. Figure 9. It is not known to the author if the existing lighthouse is the original building that was constructed in 1873 or if it has been renovated or even reconstructed.



Figure 9: The Agami unmanned lighthouse/or beacon
source: Egyptian Authority for Maritime Safety

3. Other notable "dark" houses

3.1. Montazah Palace

This lighthouse is located on the King's Tea Island in front of the Salamlek Palace at the eastern end of Alexandria, within the boundaries of the royal palace of Montazah. The construction date is around 1940s, after the construction of the Tea Island Bridge in 1941. The light is inactive. Its height is about 15m and it is constructed out of stone, unpainted plaster, with vertical fluting, a lantern, and gallery. It does not appear that this lighthouse was ever an official aid to navigation, although decorative lights may have been displayed. Many Egyptian romantic films were shot underneath the feet of the Monatazah lighthouse. Figure10.



Figure 10: The Montazah Lighthouse
source: The Alexandria & Mediterranean Research Center

3.2. Mex Old Lighthouse

It was on January 1st 1908 when the light of the Mex Old Lighthouse was switched off. The reason for this is most probably the building of a newer and higher lighthouse, the Mex Low Lighthouse. Now the Mex Old Lighthouse stands deserted and unmaintained facing the strong waves and harsh weather. The wooden bridge that once connected the lighthouse to the mainland is broken. Built in white sandstone with two galleries and without a lantern, the light was named in old photographs as signal tower not as a lighthouse. It is worth noting that the area around the lighthouse was named the Old Lighthouse Bay as it appeared in some maps. The lighthouse is named among locals as the “blind lighthouse” because it is dark and not functioning. The lighthouse used to be a signal tower in the early 1920s. It has two galleries and a beacon with vertical white and black stripes.

An adjacent structure built in reinforced concrete near the lighthouse seems to be of a more recent period, most probably as a place for its keepers. The light was an unmanned light signal. Sometimes it was mentioned in old paragraphs as a semaphore however in some maps it was named a lighthouse or the “little tower of Mex” (*petite tour de Mex*), as in the map of 1917 by the Survey Department of Egypt. Figures 11, 12.



Figure 11: The deteriorated condition of Mex Old Lighthouse, Lighthouse, source: Alexandria & Mediterranean Research Center

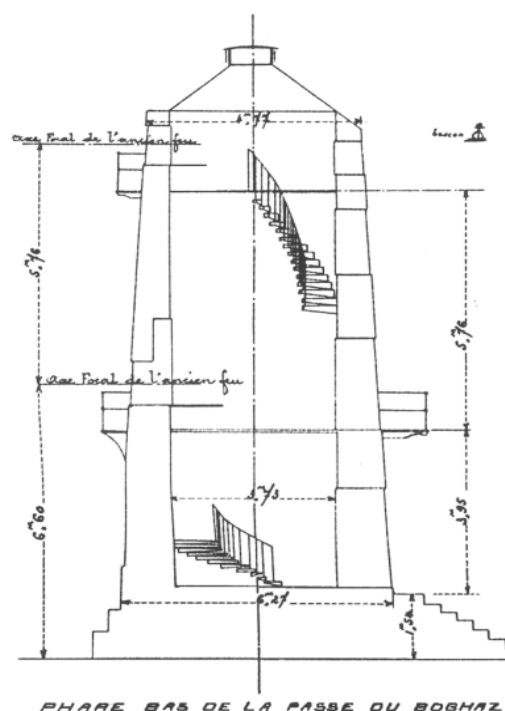


Figure 12: Section of the Mex Old Lighthouse, source: Malaval et al.

4. Vanished Lighthouses

Aside of these functioning and nonfunctioning lighthouses, there used to be other lighthouses that have now vanished. Examples of these lighthouses include:

4.1. El Qamareya Lighthouse

It was constructed in 1909. It was located in the area of Qabari It is not assured if it was a lighthouse or a signal tower because some maps name it as a signal tower for vessels. It is deducted that this lighthouse might have been dismantled to give way to new constructions and improvements of the harbor of Alexandria.

4.2. The Qabbari Lighthouse

This lighthouse was built in 1877 and is mentioned in some references as being built by Ismail Pasha. However it is not shown in maps of Alexandria.

4.3. El Omayed Lighthouse

This lighthouse is located in El Omayed, about 80 km west of Alexandria. It was constructed near a castle built in the 13th century by Sultan Bybars. In 1873 a lighthouse was constructed close to the castle. It is believed that the castle was knocked down to provide required stone to build the light-keeper's quarters. However Robecchi-Bricchetti who visited the place in 1885 alleges that the castle was still standing. (De Casson 1935) The lighthouse was erected by Ismail Pasha to please a foreign power which had had a ship wrecked along the coast of the Mediterranean. The light was extinguished during the First World War and had never been lit since. (De Casson 1935)

4.4. Tour de la Mission d'Egypte

The tour de la Mission d'Egypte was located at the North Eastern part of Ras El Tin Peninsula. As Gaston Jondet indicated, it was constructed by the French army at the time of the French Expedition to Egypt in 1798. It was a cylindrical brick tower, standing on natural rock. It was aligned with the Fort Qait Bey limit, and used to mark a dangerous rocky area at the entrance of the seaport of Alexandria. The tower no longer exists. It was last recorded in 1916. However it is not known if the Tour de la Mission d'Egypte was lighted or not. Figure 13

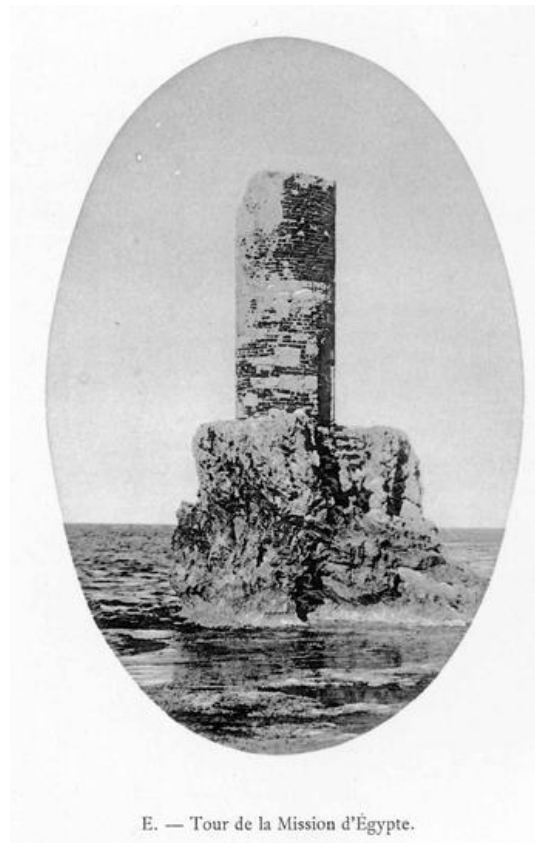


Figure 13: Tour de la Mission D'Egypte
source: Jondet, Gaston, M.

5. Relation to other lights in the area

The placement of lighthouses should follow the topography of the area. Aligning two fixed points on land provides a navigator with a [line of position](#) called a range. Ranges can be used to precisely align a vessel within a narrow channel. If the landmarks of a range are illuminated with a set of fixed lighthouses, navigation can also be done at night. Such paired lighthouses are called range lights. Two lights are used in this scheme. The one closer to the vessel is named the Front Range; the furthest away is called the rear range. The rear range light is always taller than the Front Range light. When the vessel is on the correct course, the two lights line up above one another. The placement of the Mex Lighthouses, the Low and High lighthouses, follows this rule. The Mex Old Lighthouse also had a range light with the Mex High Lighthouse have indicated one of the two paths to enter the port of Alexandria. In this case the high range light was playing a double role determining the two passages. This role became obsolete when the Mex Old Lighthouse was switched off. Figure 14.

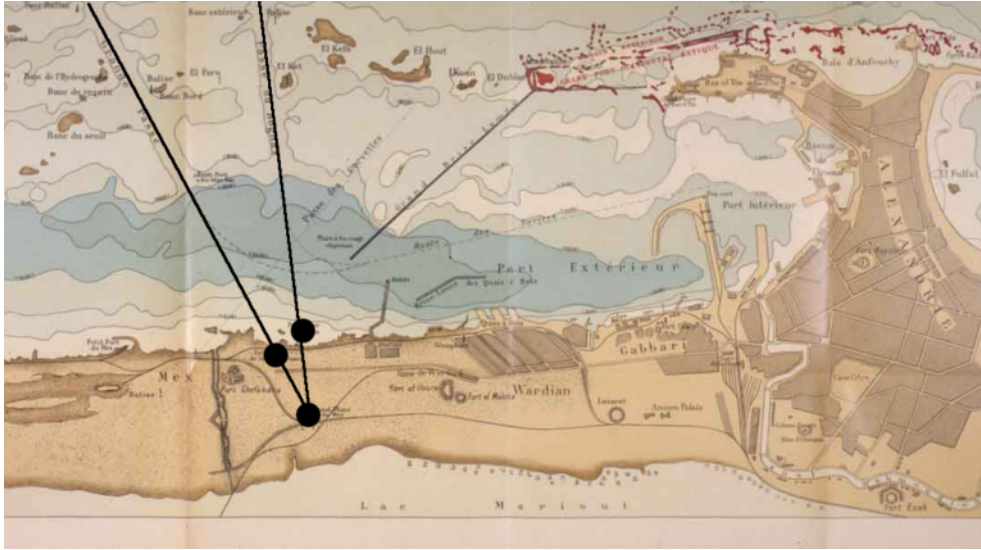


Figure 134: Map of Alexandria 1912 illustrating the relationship of the Mex lighthouses with other lights. The lines mark the safe passage in and out of the harbor avoiding rocks and other obstacles
source: base map after Jondet.

6. Concluding remarks

After studying the lighthouses of Alexandria a crucial question arises: are the lighthouses of Alexandria worthy of conservation? The lighthouses of Alexandria have made a significant contribution to maritime history; they embody distinctive characteristics and represent a unique building type and method of construction. According to the listed buildings prepared by the Governorate of Alexandria according to law 144/2006, Ras El Tin lighthouse is registered as a listed building under number 1710 and Montazah Lighthouse under number 2019 as a national landmark. They are listed as structures of special architectural merit. This implies that only these two structures are protected by law leaving out the other lighthouses which are not registered to their gloomy fate. Recent changes in the purpose of lighthouses and the advancement of navigation technologies may make lighthouses obsolete. Therefore, the research recommends that the lighthouses less essential to navigation should be transformed into observation towers within a development plan of their urban setting administrated by local governmental and private non-profit organization.

Future research:

- Comparative analytical study of the architectural elements of lighthouses of Alexandria.
- Conservation and restoration plan of the reuse of Alexandria's lighthouses by studying each lighthouse within a detailed study of its potential, existing condition and development potentials.
- Comparative architectural study of the lighthouses of Alexandria and other lighthouses of the Mediterranean in terms of shape, building materials and decorative elements.

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