Urban and Architectural Impacts of Hejaz Railway in Mafraq-Jordan

Abdelmajeed Rjoub & Rami Khaled Al-Shawabkeh

Department of Architecture
Al-Albayt University
Mafraq 25113, Jordan

Abstract

The study seeks to highlight the urban and architectural impacts of Hejaz railway stations that were constructed during the Ottoman rule in Mafraq governorate, especially the impact of the Mafraq station on the emergence of Mafraq city. This research used the descriptive and analytical approaches. Through reviewing and analysing the stations, the attached buildings and utilities revealed a clear impact on evolution and development of communities located along the railway, and also identifies the architectural styles of station buildings. This research concludes with multi recommendations focusing on the communities sited alongside the railway line. These recommendations give an opportunity to take care of the stations conservation and rehabilitation to get more contribution in the economic and touristic development, therefore this will generally achieve more benefits for the region.

***Keywords**:* Ottoman architecture, Hejaz railway, urbanism, architectural styles, Mafraq city

1. Introduction

Jordan is a land steeped in history. It has been home to some of mankind's earliest settlements and towns, and relics of many of the world's great civilizations can still be seen today (REF). The lands of Jordan and Palestine have served as a strategic nexus connecting Asia, Africa and Europe due to it considers the crossroads of the Middle East (www.kinghussein.gov.jo).

There is a network of roads radiates from the Hejaz as a giant spider's web, connecting Mecca to all parts of the Muslim world (kennedy, 2004). Historically, the most significant of these routes starts at Damascus in Syria, and also it is a direct continuation of the ancient trade route connecting Arabia to the Levant (Peterson 2012). For the first Muslim rulers of the Middle East, the Umayyad state established their capital at Damascus in the seventh century, making the Darb al-Shami, the "Northern Way," one of the earliest ways to be used for the Hajj (Petersen, 2013). As for the last Muslim rulers of the Middle East, the best-known examples of early Ottoman architecture in Jordan are the Hajj stations which were built along the railway to protect the pilgrimage route from Damascus to Mecca (Rjoub 2010). At the end of the 19th century and the beginning of the twentieth century, this railway acquired further attention by the Ottoman Sultan Abdul Hamid II. In 1900, the inauguration of the Hijazi railway along this road was done to facilitate the mission of pilgrims to reach Makkah. The construction of the railway has had a great impact on the areas that passed through and the societies that were stable in the most important ones. these impacts could be represented in; (1) occuring urban, commercial and economic renaissance in many cities along its 420 km in Jordan from Mafraq Governorate in the north and Amman in the middle to Ma'an in the south; (2) the emergence of new urban communities along the railway across the Jordanian territory, especially in the locations where the main stations of the railway were established; and (3) strengthening the social links between the cities and villages which located alongside the railway, especially around the stations. Today, most of these stations and forts are stand alone in the desert, but a few of them are in the centre of Jordanian towns. Most of them are well-preserved, and some have got excavation in recent years and have revealed significant information about the neglected Ottoman period and the extraordinary annual event of Hajj as shown in Figure 1. In the last five years, a lot of stations have been restored by Jordanian Department of Antiquities, and there is increased scholarly interest in all of them (islamic-arts.org). As a result, it has therefore become necessary to shed light on the axis of urban and architectural environment by indicating the impact of the construction of Hejaz railway and stations on the existed development or the emergence of new urban communities that not previously established in Mafraq Governorate.

Moreover, this research describes and analyses the urban and architectural characteristics of the various buildings and utilities that were attached to the Hejaz railway: the stations and their attached buildings, bridges, arches, dams and other utilities that were constructed during that era in the study area.

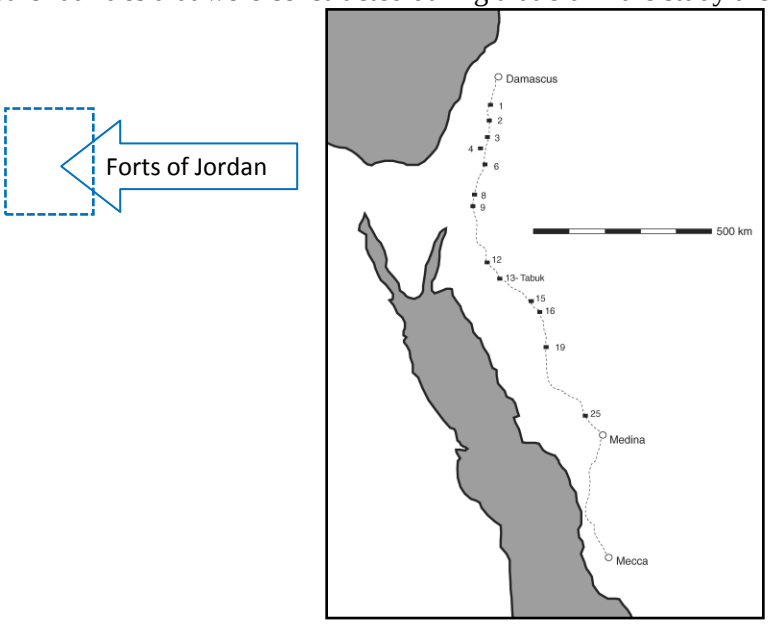

Figure 1. Map of Hajj route in the 16th century showing Fortsts in Jordan. 2) Mafraq, 3) Zerka (Qasr Shebib), 4) Zizia (Birkat Zizia), 6) Qatrana, 8) 'Unaiza, 9) Ma'an (Sourse: Petersen 2012, p: 22 with author's modifications)

The dimensions and floor plans of these forts are remarkably consistent. A square or rectangular shapes measuring approximately 20 meters on a side encloses a courtyard with a water well and stairs leading to a single upper floor. Although this design has much in common with commercial khans or caravanserais, the forts were built to provide shelter not only for pilgrims but for officials and guards, which averaged 20 men or less.

2. Research Methodology

The descriptive and analytical approaches were used to achieve the main objectives of this research. Also there were a set of methods and tools were used, such as literature reviews related to the field of study, photographing, map reading, field visits and visual observation, oral interviews, etc. The study was limited to the main stations and urban clusters located within the administrative boundaries of Mafraq governorate and based on the sequence of stations from north to south: Jabber al-Sarhan, Zumlet al-Turgi, Ghadir al-Abiad, Mafraq, Thughret Al Jub.

The research tries to achieve the contribution to knowledge to fill the gap of knowledge. This gap represents in that there are no clear guidelines for implementing HDMU schemes in Amman.

3. The study area

Mafraq governorate is situated in the north-eastern part of Jordan and it borders Iraq (east and north), Syria (north) and Saudi Arabia (south and east). It has an area of 26,552 km2 making up 29.6% of the total area of the country (The Jordanian Ministry of Planning and International Cooperation, 2012). The Northern Badiya region comprises the largest portion of the governorate. This makes it the second largest governorate after Ma'an. Its population amounts 549,948 with a population density of (20.7) per km^2 (Department of Statistics, 2015). Mafraq has always maintained a strategic position as it is situated at the crossroads of international routes linking up the Kingdom of Jordan to the Republic of Iraq via Al-Karama entry point, located at a distance of 285 km from the governorate's center. It also has features the Jaber border crossings into the Arab Republic of Syria, located 20 km from the governorate's center.

The Governorate was created in the 14th of November in 1985. It is made up of four districts that are further divided into 13 subdistricts and 18 municipalities (Ministry of Interior, 2017). These are as shown in the following Table 1:

Districts	Subdistricts	Municipalities	Population
	Mafraq Irhab Bal'ama Manshiyah	Mafraq Irhab Bal'ama Manshiyah	196000
northern Badia	Salhiya Dair Al Kahf Sabha Um Al-Jemal Om-Elqotain	Salhia Bani hashem Sabha Um Al-Jemal Om-Elqotain Al Dafyanah Al Sawafi	99000
North- western Badia	Serhan Badiyah Khaldiyah Hosha	Al Za'tari Al Hussein bin Abdullah Al Khalidiyyah Hosha Basilia alsarhan	247000
			549000

Table 1. the administrative devisions, subdivisions and municipalities in Mafraq governorate. (Source: Ministry of Interior and Ministry of Municipal Affairs of Jordan, 2017 with author's modifications)

4. Hejaz Railway Line

The Hejaz Railway line was built on the order of Ottoman ruler Sultan Abdul Hameed II in the 1st of September in 1909 CE. The main objective of its construction was to serve the two Holy Mosques (Makkah and Madinah) and provide a modern means to transport Pilgrims who came from Asia, Europe and the Levant to the Holy shrines in Makkah and Madinah (whc.unesco.org). In 1864, the construction of Railway brought many benefits to the Ottoman Empire. These benefits were represented in; (1) providing the rest and relaxation of the pilgrims by replacing old camel caravans that took more than 40 agonizing days to reach Madinah from Damascus through the desert and the mountains; (2) making one of the meeting points for pilgrims from Anatolia, central Asia, and Russia, to be used by common public, therefore increasing Islamic ties (Alhusan, 2008); (3) enhancing the empire militarily; and (4) increasing its control over the Arabian Peninsula (Dardkah, 2011). The areas of the lines are fairly flat, with slight slopes and elevations in parts of them. The line path also faced areas that pass through valleys and seasonal waterways, which led to the construction of a number of stone vaults with different frequencies to overcome these obstacles and make the line as horizontally as possible. The total number was about 2000 overpasses (Almasri, 2016). Most of these bridges and overpasses still remain in well conditions despite of the natural and political circumstances that affected the whole region. According to Figure 2, the Hejaz Railway in jordan extends from the Jabber Station (Jordanian-Syrian borders) to the Al-Modawwarah (Jordanian Saudi borders) in a total distance that is estimated at (451.5) km. The Hejaz Jordan Railway is the only passenger railway operating in Jordan. A set of stations are located on this railway, are; Mafraq, Kherbet Samra, Zarka, Amman, Qatraneh, Ma'an. Stations were arranged every 20 kilometres or less for protecting the railroad. These stations includes a water well or a cistern (Katiby, 2016). Starting from 1952, Railway in Jordan is managed by the Jordan Hejaz Railway Corporation, and it is used for transporting merchandize between Jordan and Syria. The railway is not especially effective as a mode of transport. However, the Kingdom aims to expand its railway system to allow for better integration with other countries in the region (The Jordanian Ministry of Planning and International Cooperation, 2012).

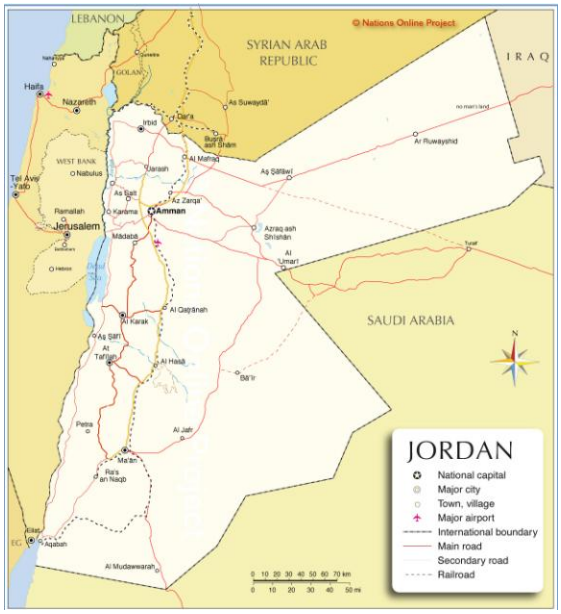

Figure 2. The route of Hejaz railway and the main stations in Jordan. (Source: One World - Nations Online all countries of the world, 2017)

The study area was administratively subordinate to Ajloun Liwa' in the Ottoman era, and also it was characterized as pastoral and agricultural region. The sultans of Damascus took great care of these caravans, where they built castles and fortifications on the Hajj route, maintained the water sources and pools, and formed military patrols to accompany the caravans and to protect them from the Bedouins' attacks (Bakhit, 2013).When operating the Hejaz line, a set of factors emerged to attract residents either to work or to travel by train to and from cities along the line, therefore settling in new places other than their hometowns (AlJalody, 1994). The line has had a wide range of urban impacts on the areas and communities that passed through, which can be represented in; (1) urban revival in the areas around the stations and along the line. This was manifested in the expansion of residential areas, the construction of shops, hotels and banks, and the supply of electricity and telegraph services; (2) the emergence of new urban communities close to the stations due to the ease of moving across the line and the stability of workers families in nearby places for the stations; (3) accelerating the process of urbanization of the Bedouin population and encouraging their resettlement and stability near the stations; and (4) the achievement of commercial and economic renaissance in the places located along the line, therefore facilitating the transport of goods and agricultural products among them (Daradke, 2011). According to Figure 3, Mafraq Governorate has five stations to service and operate the Hijaz railway, two of them are in Sarhan subdistrict: Jabber and Zumalt altorgi but there are another three stations in Mafraq district: Ghadir Abiad, Mafraq (main station) and Thugret Aljub. The following are the names of stations and description of urban communities that formed round them at present:

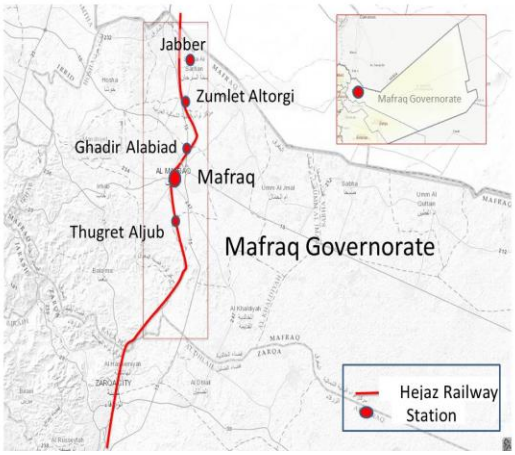

Figure 3. The map of route of the Hejaz railway and the main stations in the study area. (source: Umniah company, 2017 with author's modifications)

4.1. Jabber

It considers the first station on the line after entering the territory of Jordan on site 147 km from Damascus (Figure 3). It also includes one building consisting of three adjacent rooms intended for guarding and monitoring the nearest bridges built on the railway line. In the First World War, the building was destroyed, there was nothing left but the water well, which has been supplied the station with water. Since the thirties of the last century, some residents of Horan of southern Syria (villages: Nasib and Um al Ma'athin) began to settle in the town due to containing the remains of archaeological Roman site, water sources and good agricultural lands, as well as the nearness to their home towns (Mahmoud, 2011). Thereafter, in the fifties of the last century, the town settled by al-Sarhan clans (Alhusan, 2008). Currently, the new town has a geographical and economical position after making up as the border crossing center (Jaber-Nasib) between Syria and Jordan in the eighties of the last century. Also it has become the passageway of the international road connecting to Syria and Europe, in addition to establishing a free Jordanian-Syrian zone and the central trucks station to the east area of it (Dardkah, 2011).

4.2. Zumlet Al Torgi

It is a small village located at 17 km to the north of Mafraq city and lies to the east of the railway line (Figure 4). Of the most important characteristic of the town is an existence of extensive stone bridge near it, that still keeps its original form design. Its design can generally give a clear indications for the architectural and structural features of the buildings of the railway stations. On the other hand, the Jabber and Zumlet Altorgi now are the main towns that belong to "Sarhan subdistrict" with population around to (26305) inhabitants, land area of (99.4) km2 and urban density around (264) inh/km2 (Department of Statistics, 2015).

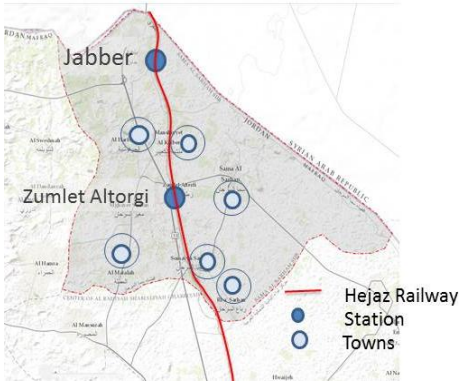

Figure 4. Map of Sarhan subdistrict showing the stations of hejaz railway and towns that have grown around. (source: Umniah company, 2017 with author's modifications)

4.3. Ghadeer Al-abiad

This town considers a small station lies 9 km from Mafraq city and at (152) point-kilometer of the reference station of Damascus (Figure 3). Figure. 5 shows that it consists of a two-room building that dedicated to maintenance processes and water supply. The village of Ghadeer was built nearby the station as there is a source of water (pond) composed of the confluence of seasonal valleys, and the water can remain until the hot summer months, which was given a strong incentive to attract the population to settle there (Alhusan, 2008).

Figure 5. The Ghadeer Al-abiad station along the Hejaz railway in Jordan (Sourse: Alhusan, 2008)

4.4 Mafraq

It is one of the most prominent stations along the Hejaz railway after its entrying into Jordanian territory from Syria where the train first arrival to the station was celebrated in1901 A.D (Dardkah, 2011).

It is located at (162) point-kilometer of the reference station of Damascus that was classified as the second class station, which has four sub rail lines and consists of 5 buildings, a water well, platform and garde (Figure. 3). These buildings were arranged from one side in a straight line parallel to the railway and distributed over an area of (66,855) m2 (Ministry of Interior, 2017). The importance of Mafraq station location, the variety of buildings and their functions had a strong impact on the emergence of Mafraq city. The location of Mafraq station has a history of civilization stretches from the fourth century BC (Mahmoud, 2011). It is the best known in the time of the Ottoman Empire just as a main station on the line of al-Haj al-Shami (Syrian Haj). In the late sixteenth century, the Ottomans built the "al-Fdain Fort" close to the location which aimed to protect the convoys of pilgrims and provided a s net of needed services during their passage across the region (Alhusan, 2008). The fort was destroyed in the 1950's but it is still existing in al-Fdain archaeological site up to now (Rjoub, 2010). Until recently, the station was used as a border station and customs point between Jordan and Syria. There is now an administrative and technical staff to take care of the line and maintain its sustainability. The buildings and utilities at the station can be described as follow:

a) Administrative building

It is a rectangular shape building with dimensions (11.30 m) from north to south, and (6.90 m) from west to east (Figure. 6.a). Alhusan (2008) stated that it is a two-story building in addition to the underground basement. The ground floor consists of five rooms and a wooden staircase leading to the upper floor. The basement located below the whole area of the building and can be accessed by a steel ladder where it was the seat of administration and staff offices. The upper floor was for the accommodation of the station manager and his family, therefore it was equipped with kitchen and bathrooms. The building has four entrances from all directions with similar in dimensions (285 cm x 100 cm), where the main entrance overlooks to the railway (Alhusan, 2008).

Figure 6. the Mafraq station along the Hejaz railway in Jordan including; (a) Administrative building, (b) Domestic buildings (c) Water Cistern (d) Railway Platform (e) The warehouse, (Sourse: The authors)

The architectural style of the building was similar to the same buildings in the other stations, where it was compatible with the traditional architectural style of the buildings that was prevalent at that time in terms of the use of natural limestone stone in the construction of walls. The natural stone was used in the exterior walls, which were cut off proficiently (Figure. 6.a). Windows and doors were relatively small dimensions and all of them were decorated with a soft surface stone frame. In addition, there is a prominent stone separator which extends around the all buildings sides that looks like separating the ground floor from the first. There is also a carved stone panel to introduce the name of station (Mafraq) which was embossed on the Northern and Southern facades. Moreover, wooden structure has been used to set up a pitch roof that was covered by tile plates, which give indication of a clear influence of European-architectural style, where this style of roofing was not using before (Figure. 6.a). At present , slight construction of the buildings at the station has been put in place to accommodate the requirements of station and its visitors.

The metal umbrella with a brick ceiling was added to the entrance of the administrative building on the western side overlooking the railway line (Figure. 6.a). As well as, a plaque bearing the name of station (Mafraq) in Arabic language and the portrait of King Abdullah II. Also landscaping works, seats and flower boxes were also installed around them.

b) Domestic buildings

These are two similar buildings in terms of form and function, that contain rooms to accommodate the station staff and workers (Figure. 8). Each building contains four rooms and one entrance heading towards the east. Natural stones used as a building material for walls, while steel beams used to bear a flat roof (Alhusan, *1999*). It is noted the existence of a basement below ground level in one of them, which is expected that it was used as a trench in the case of assaults because of existing four small holes in the western side (Figure. 6.b). Nearby the buildings, there are a vareity of parts of the railway that can be used as spare parts.

c) Water Cistern

It is circular Stone building with a diameter (4.5 m) and a height of 7 meters (Figure. 6.c). It can be accessed from the south west side through a door height of (2 m) and width (90 cm). The main role of the building was for loading water tanks that provided to the train through the pipe passing it to connect with the tube of water supply under the line. Later the building had another role when it used as a prison cell. The building has a single window which directed toward the rail line to facilitate the control during the process of water supplying.

d) Station utilities

Due to the status of station, there were a set of required services that support its function and meet the staff and passengers, are; (1) Railway Platform is an elevated structure along the east side of the railway which dedicated to assist in transferring of goods and animals to or from the carriages (Figure. 6.d). Also it is a stone wall with height of 90 cm from the railway level and extends to 20 meters long with a ramp at the north side (Figure. 6.d); (2) The warehouse is a small building located to the south side of the station. It also consists of three rooms, two of them are heading to the east side and intending to serve the station visitors as male and female W.C, while the third room is heading to the west and intending for washing and ablution. Moreover, it has a decorated small windows related to a sewage channel leading to the nearby wastewater collecting well (Figure. 6.e); and (3) The garden (Bahçe) was attached to the station located along the railway line from the eastern side (length of 50 meters and width of 20 m) contains a variety of trees since the founding of the station. It was just the first public park in Mafraq and until now called (Bahçe) as means the garden in Turkish.

4.4. *Thughret* Al Jub

The village of Thugret al-Jub is located in the east of railway on a hill overlooking the nearby plains (Mahmoud, 2011). It is a relatively small town which is populated by settled Bedouins that are dating back to the beginning of 1900 (Alhusan, 2008). Since then, it continues to cope with the rapid development of life and the transition from Bedouin to the rural life. The last station in Mafraq governorate which was sited in the south of Mafraq at (173) point-kilometer of the reference station of Damascus (Figure. 7). It is abandoned station with a single building and a water well. The building is similar to what was found in Jabber Station (Figure. 8). Also it is built of a mixture of natural stones; limestone and basalt (Figure. 8). The defensive purposes of the building are clear through the presence of stair remains leading up to the roof, which is equipped with bullet holes and bulletproofness from all sides (Alhusan, 1999).

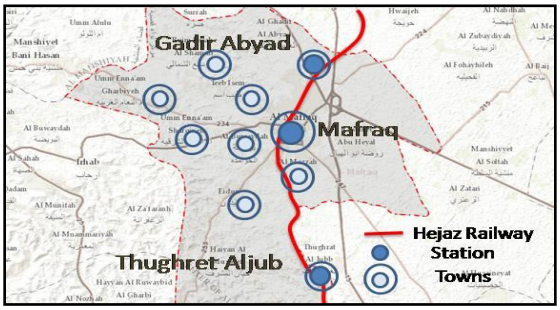

Figure 7. Map of Thughret Al Jub bdistrict showing the stations of hejaz railway and towns that have grown around. (source: Umniah company, 2017 with author's modifications)

Figure 8. The site of Thughret Al Jub Station in Jordan (Source: Alhusan, 2008)

5. The Impact of Hejaz station in the emergence of Mafraq City

After the establishment of Hejaz Railway, the location of city gained a significant importance because of its selection as an important station on the railway which is named "Mafraq". The location of city has remained devoid of any population stability since the construction of station in 1901 A.D. Up to the beginning of twentieth century, the construction of station was the most important event in directing the population towards the region, therefore attracting large numbers of them to work in the region and encouraging them to settle near the station (Figure. 9). The population came mainly from the cities located along the Hejaz line, especially from Ma'an, Amman and Damascus, as well as from nearby cities such as Irbid and Ajloun. Those newcomers hastened to build their houses and districts in areas close to the station. These districts names still have derived from the cities names that they came from, such as Al-Maaniyeh district (Ma'an), Shamiya (Syrian) and others. From the early 20th century, Mafraq was the location of a British military base and airport, later it became the base of Arab Legion during the 1948 Arab–Israeli War.

(a)

(b)

Figure 9. The site of Mafraq Railway Station in the twenties (a) and in the thirties (b) of the last century showing the traces of habitation around. (Source: Alhusan, 2008)

Since then, the city has become a main station on the only land road between the north of Jordan and Amman (Alhusan, 2008). It has also become an important station on the land road connecting with Baghdad to the east and with Damascus to the north either by land road or by train via the Hejazi railway (Kazan, 2007). The development of city continued over previous years, and the urban and economic development began to take shape. Therefore, there was a remarkable increase in the number of people coming from neighboring cities and villages to work and settle in Mafraq.

Today, Mafraq inculding its suburbs is a large city which comprise the so-called (The Greater Mafraq Municipality). This municipality is the capital of Mafraq Governorate, which forms the centre of government departments that includes its economic and social activities. Moreover, it is the headquarters of the third division of the Jordanian Army, King Hussein Air Force College and Al al-bayt university (Sqour, 2016). According to 2015 census, the total population of the Greater Mafraq Municipality is about (106008) inhabitants, the land area of (128) km2 which yields a population density of about (828) inhhabitants per square kilometre. The station was the nucleus from which the city was launched, and the construction was limited in the early part of the city until the 1940s between the land road connecting to Amman and the railway line as shown in Figure. 10.

The city then began to expand linearly along both sides of the line dividing the city into two parts from north to south. Currently, the station occupies a central location of the city where it's buildings were considered as the main monuments of Mafraq heritage due to the existence of distinctive construction and architectural style.

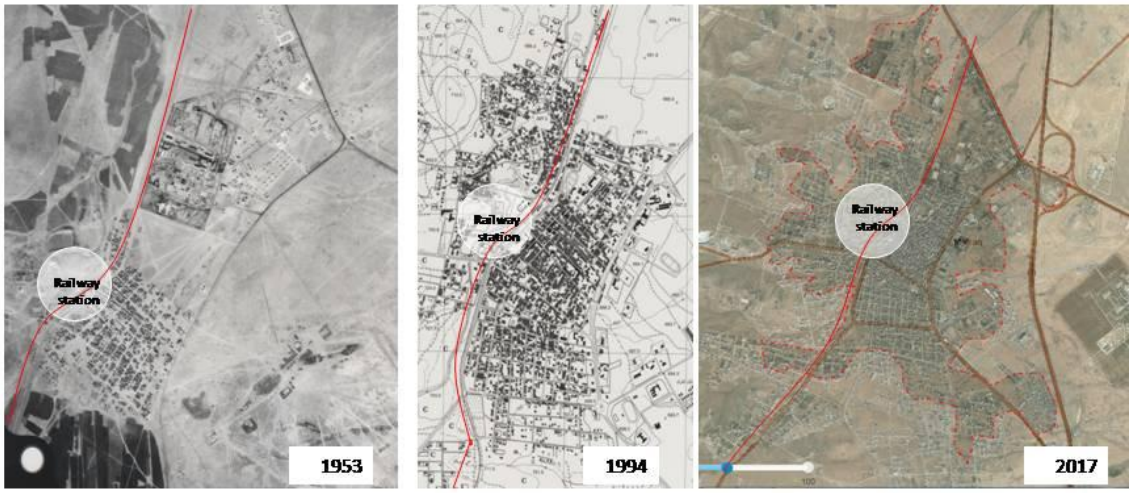

Figure 10. Evolution of the city area around the railway station. (Source: royal geographic centre and Google Maps with authors modifications)

6. The architectural typology of constructions

The stations has had multi functions, which are represented in providing the security, performing the necessary maintenance and supplying water and firewood of locomotives. Also, strategic and technical goals stations diverged from each other 10 - 20 km. Therefore, there were a clear variety in the land areas and functions of buildings in the stations, depending on the class of each station and the required services.

Generally, buildings were distributed along the railway line from one side, either from the right or from the left, excepting Amman and Ma'an station buildings, that were distributed among the both sides. The main types and functions of the buildings and utilities at stations are represented in; (1) administrative buildings contains on administration offices, services, guards and others; (2) domestic buildings allocated for stationmaster (Shawish), staff and guards; (3) station utilites include facilities assigned to serve passengers and maintain the line like workshops, water tanks, storages, warehouses etc; (4) minor constructions and equipment include platforms, turntables, lighting poles, columns that carry telegraph cables, telephone Services, umbrellas, water wells, water suppliers and rail switches; and (5) bridges and trunks of stone arches of different dimensions are constructed to overcome the topographical obstacles and ensure the functioning of the railway line horizontal level as much as possible. These constructions characterized as high precision in their structure, and they are still maintaining its original form so far.

7. Architectural style and building materials

A minor set of stations consists of one building with 2-3 rooms, like Jaber, Ghadir and Gahwaji, while the Mafraq station was the main station in the region due to its large area and the variety of its buildings. Administrative and residential buildings consisted of small rooms to accommodate the functions that were performed. Also the service buildings like workshops and warehouses were spacious with high ceilings and wide entrances to accommodate carriages and conduct the necessary maintenance for locomotives and wagons. The architectural style of the stations buildings is compatible with the surroundings environmental conditions and available building materials. Most of buildings were still keeping their original function as it was before 100 years, despite of thier neglect due to lack of use for a long period and/or the lack of the necessary maintenance Periodically.

In general, natural stone was used as a main construction material. The stone was regularly arranged on the external walls and facades to form horizontal courses (blocks), therefore making layers on top of each other with the wall thickness up to 50 cm. The facades includes a variety of different stone formations, patterns, textures, colours and types such as yellow limestone, sandstone and basalt. Building facades contained on small windows and vents, which indicates its function of control and defence.

Accodingly, it can be concluded that the architectural style of the buildings is similar to that prevailing in the region in general with some minor differences.

8. Conclusions and Recommendations

Hejaz railway is one of the main accomplishments of the Ottoman Empire which has had a significant impact in the religious, political, social and economic fields. It provides a vital link between the northern frontiers of the Islamic World to the Holly lands in Makkah and Madinah. It also witnessed a development process in the architecture field ranging from simple structures and guard posts to fortified enclosures which provide safety and security for travellers, therefore providing vital administration techniques for travellers masses in easing and facilitating travel along its road. The fortifications, stations and water works along the Hajj road represents outstanding example of architectural and transport security administration in a technological development of that time, illustrating significant stages in safety and security management.

The construction of railway has had a significant impact on the urban development of the communities that were existed nearby its stations. This has also led to creating of new urban communities and changing in the lifestyle of the region's population. All this was as a result of the sense of security and protection and the presence of stations nearby, ease of movement and the existence of suitable natural environment for stability and work. A set of urban communities along the line were populated and historically developed along the Trajanos and Al Haj routes. Water resources and agricultural land played a key role in attracting the population and stabilizing a set of the nomadic tribes who practiced grazing and agriculture in the region. These communities developed into major urban communities in the region.

Mafraq railway station was the largest and most prominent in the study area and has had a significant impact in the establishment of Mafraq city and its urban structure and growth alongside the railway. Buildings at the stations are mainly characterized as a permanent and durable. They were mostly one-story, except the administrative buildings at Mafraq, and there were basements in some of these buildings. The load-bearing walls system was used in the construction system in addition to the use of natural cutting stone as main material for external walls. Moreover, there are two types of roofs: flat and inclined (pitch) roofs. The metal and wooden skeletons were used for roof bearing. However, in Mafraq station the red tiles were used for roof covering which indicates a clear influence of the European architectural style at that time. Finally, The researcher recommends the following:

- Emphasize the need of preservation Hejaz railway and the prevention of any action that can harms it, in addition to documenting the beginnings of the establishment of Jordanian state.
- The necessity of permanent restoration and maintenance of the stations and buildings for its reusing of the touristic purposes and the socio-economic development, in order to benefit the population and the region in general.
- The need to remove the decorative additions to the buildings constituting an unacceptable visual polution such as cement walls, painting works for stone facades as well as metal umbrellas and others.
- The need to deep researches and studies can be directed towards the architectural and structural styles of the hejaz railway stations in Jordan and demonstrate their different characteristics.
- Develop the performance of Hejaz railway corporation to become a qualitative tourist transporter activates the local tourism by train.

References

Alhusan, A (1999), Mafraq Governorate and its Surrounding through Ages. Amman: al-Arez Press.(in Arabic)

Alhusan A, (2008), Hejaz Railway line / Southern Section –Jordan. Amman: Ministry of Culture. (in Arabic)

AlJaloudi, O (1994), Ajloun District (Qada') (1864-1918). Publications of the Committee of History of the Levant. Jordan University. Amman. p. 150. (in Arabic)

Almasri, A. Al-Waked Q. (2016) Inspection and Numerical Analysis of an Ottoman Railway Bridge in Jordan. Advances in Materials Science and Engineering 2016. 1-7

Bakhit A, Pascual and Mundy, (2013). Trans Jordan in the early Ottoman era. In: Myriam Ababsa (ed.), Atlas of Jordan. Presses de l'Ifpo,. pp. 188-197

Daradkeh, S. (2011). Hejaz Railway (Dialectic of Challenges and Success) Historical Reading in the course of work". al-Bayan journal. al-Albayt University. Volume V, 3rd issue. p 29. (in Arabic)

Department of Statistics. 2015. Population and Housing Census. Available online at [http://www.dos.gov.jo/dos_home_a/main/population/census2015/Persons/Persons_3.2.pdf], access on 21/12/2017.

Kennedy D and Peterson A. "guardians of piligtim wells: Damascus to Aqaba." Saudi Aramco World . January/Februaury 2004 pp 12-19.
http://archive.aramcoworld.com/issue/200401/guardians.of.the.pilgrim.wells-damascus.to.aqaba.htm

"Khazna Katiby" M. A. (2016). Amman Railway Station in the 1940s, as I lived and knew. Amman. p. 15 (in Arabic)

Mahmoud A. (2011). The emergence and development of urbanization along the Hejaz railway. Al Bayan Journal. al-Albayt University. Volume V. 3rd issue. p. 191. (in Arabic)

Ministry of Interior. 2017. Governorates & Sectors; Mafraq Governorate. Available online at [http://moi.gov.jo/Pages/viewpage.aspx?pageID=428], access on 2/12/2017.

One World - Nations Online all countries of the world. 2017. Map of Jordan (Hashemite Kingdom of Jordan). Available online at [http://www.nationsonline.org/oneworld/map/jordan_map.htm], access on 22/11/2017.

Petersen A. (2012). The Medieval and Ottoman Hajj Route in Jordan: An Archaeological and Historical Study. Council for British Research in the Levant. Levant Supplementary Series. Volume 12. pp 12-19.

Petersen A. (2013). The lost Forts of Mafraq and the Syrian Hajj Route the 16 Century. In: Porter and Liana Saif (ed.). The Hajj: Collected Essay. London.

Qazan S, (2007). Mafraq and its environs during the reign of the King Abdullah- I, Mafraq. p15 (in Arabic)

Rjoub A. Al-Husan A. (2010) Ottoman Islamic Architecture in Jordan, Qal'at al-Fdain as a model. Jordanian Journal of History and Antiquities. Vol. 4 Issue 4. p. 50. (in Arabic)

Saqer S., Rjoub A. Tarrad M. (2016). Development and Trends of Urban Growth in Mafraq City, Jordan. Architecture Research, 6 (5). pp. 116-122

The Jordanian Ministry of Planning and International Cooperation. 2012. Development plan (2012-2014) for Mafraq Governorate. Amman.

Umniah company. 2017. Map of Jordan. Available online at [http://gis.umniah .com/Umniah/ Umniah ViewerAR/ app.html#en], access on 25/12/2017.