

World Heritage Scanned Nomination

File Name: 1093.pdf

UNESCO Region: ARAB STATES

SITE NAME: Um er-Rasas (Kastrom Mefa'a)

DATE OF INSCRIPTION: 7th July 2004

STATE PARTY: JORDAN

CRITERIA: C (i) (iv) (vi)

DECISION OF THE WORLD HERITAGE COMMITTEE:

Excerpt from the Report of the 28th Session of the World Heritage Committee

Criterion (i): Um er-Rasas is a masterpiece of human creative genius given the artistic and technical qualities of the mosaic floor of St. Stephen's church.

Criterion (iv): Um er-Rasas presents a unique and complete (therefore outstanding) example of stylite towers.

Criterion (vi): Umm er-Rasas is strongly associated with monasticism and with the spread of monotheism in the whole region, including Islam

BRIEF DESCRIPTIONS

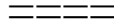
Most of the Um er-Rasas archaeological site has not been excavated. Containing remains from the Roman, Byzantine and Early Moslem periods (end of 3rd to 9th century AD), the site started as a Roman military camp and grew to become a town as of the 5th century. There has been little excavation of the ca 150-m by 150-m fortified military camp. The site also has several churches, some with well preserved mosaic floors. Particularly noteworthy is the mosaic floor of the Church of Saint Stephen with its representation of towns in the region. Two square towers are probably the only remains of the practice, well known in this part of the world, of the stylite monks (i.e. ascetic monks who spent time in isolation atop a column or tower). Um er-Rasas is surrounded by, and dotted with, remains of ancient agricultural cultivation

1.b State, Province or Region: Madaba Geographical Region

1.d Exact location: N31 28 34.8 E35 56 42.4



THE HASHEMITE KINGDOM OF JORDAN



NOMINATION OF THE OLD CITY OF **UM ER-RASAS** (KASTRUM MEFA'A)



FOR THE WORLD HERITAGE LIST

**THE OLD CITY
OF
UM ER-RASAS
[MEFA'A]**

NOMINATION FILE SUBMITTED

**TO
THE WORLD HERITAGE BUREAU AND COMMITTEE**

**FOR INSCRIPTION ON THE WORLD HERITAGE
LIST**

**BY
THE DEPARTMENT OF ANTIQUITIES
ON BHALF OF THE HASHEMITE KINGDOM OF
JORDAN**

FEBRUARY - 2002

**THE FILE PREPARED BY: ABDEL SAMI ABU DAYYEH
ARCHAEOLOGIST AND
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UM ER-RASAS

(KASTRON MEFA'A)

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IDENTIFICATION OF THE PROPERTY

STATE PARTY : Jordan (The Hashemite Kingdom of Jordan)

NAME OF PROPERTY (Nomination) : Um er-Rasas(Kastron Mefa'a)

PROVINCE : Central of Jordan

COORDINATES : Palestine Grid=237: 101

OWNERSHIP OF PROPERTY : The Sanctuary of the archaeological site is the property of the Department of Antiquities of Jordan

AREA OF PROPOSED PROPERTY : Two square kilometers With the buffer zone.

MAPS PLANS AND PHOTOS : Attached in a separate volume :

Prepared by :Abdel Sami AbuDayyeh
From the Department of Antiquities (DOA).





LOCATION

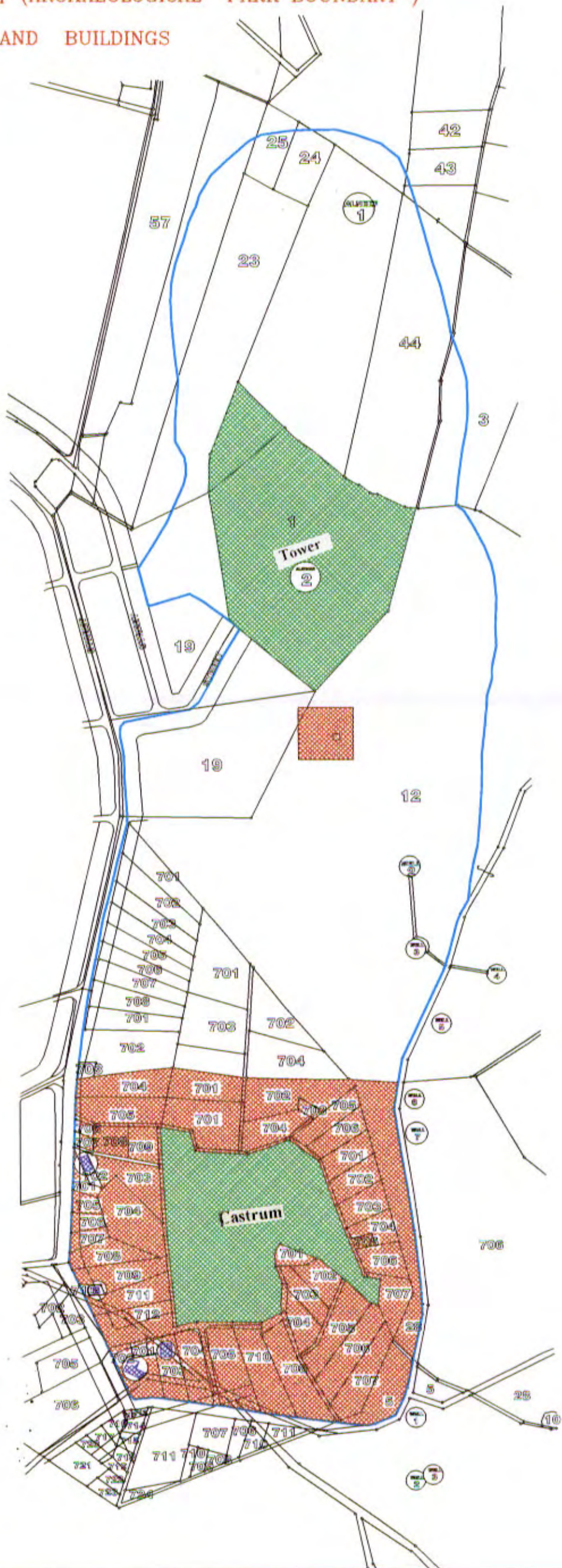
Palestine grid : 237 101

Um er-Rasas (Um Ar-Rassas) is located in central Jordan, 60 kilometers south of the capital Amman, 30 kilometers south-east of Madaba, north of Wadi el-Mujib, roughly half-way between the King's Highway, in the west, and the Desert Highway Road in the east.







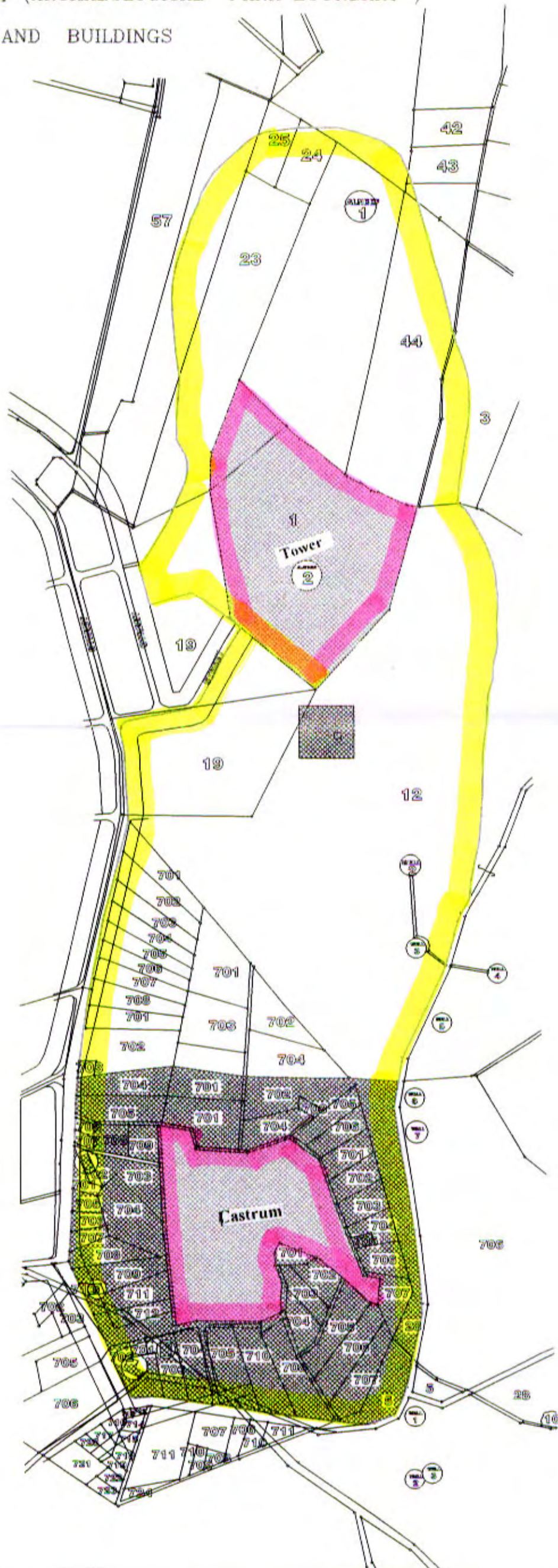
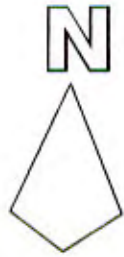
UM ER-RASAS

-  DOA OWNED LAND
-  ZONE TO BE APPROPRIATED
-  BUFFER ZONE BOUNDARY (ARCHAEOLOGICAL PARK BOUNDARY)
-  PUBLIC OWNED LAND AND BUILDINGS



UM ER-RASAS

-  DOA OWNED LAND (PROPOSED WORLD HERITAGE SITE'S BOUNDARY)
-  ZONE TO BE APPROPRIATED
-  BUFFER ZONE BOUNDARY (ARCHAEOLOGICAL PARK BOUNDARY)
-  PUBLIC OWNED LAND AND BUILDINGS



ACCESSIBILITY

It is accessible from Madaba : 1- Either by the road that leads eastward to Nitl from where it passes near the Iron Age Fortress of Za'faran, crosses Wadi er-Rumeil and bypasses the hilltop Iron Age fortress of er-Rumeil to the left, and the ruins of ancient 'Aylat, today the village of er-Rumeil, to the right, to reach Umm er-Rasas from the north.2-Or by the southern road that crosses Wadi el-Wala up to Thiban(Biblical Dibon) and from there it goes east to reach Umm er-Rasas.

JUSTIFICATION BY STATE PARTY : FOR INSCRIPTION

1st- STATEMENT OF SIGNIFICANCE

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Um er-Rasas is a fine example of an archaeological city of an outstanding universal value. It is a remnant of the peak of the Roman Eastern frontier camps of the Limus Arabicus as well as it became later an indicative example of highly ranked Christian cities that belonged to important Christian dioceses in the Byzantine era in the East that extended its life and importance with the same status in the Umayyad and even the Abassid (Islamic)Periods.

The city including the camp has been highly preserved in a unique way by being deserted and unoccupied after the Umayyad period for hundreds of years .On both the cultural and architectural levels ,the city can teach us a lot about the influence and interaction between the cultures of east and west during those periods.

The city remained unchanged for the last (1200) years and it still includes as components an outstanding example of a typical Roman and Byzantine military camp together with a Byzantine and Umayyad ecclesiastically dedicated settlement .

It is also remarkable due to its very high level of authenticity and integrity . Not having been affected by any type of urban zoning or modern action of building or use ,its spatial organization and structure

has remained largely negatively unimpacted and the function of the majority of its components correlates to their original old use. The different values of the city can be further demonstrated in the following aspects.

The Geographical Aspect :

Um er- Rasas was once one of the important Camps of the Eastern Roman and Byzantine frontier fortifications of the Limes Arabicus fortified system. Being positioned near the fringes of the eastern desert of the Roman/Byzantine empire and on the international trade route (The Incense Route) that linked south and west Arabia with Syria and Palestine in the north, and being in the ecclesiastical diocese of Madaba Um er-Rasas(Mefaa) must have gained high international importance and interest either on the level of military support or in the religious sphere or as a commercial centre.

The town must have had, in antiquity , a status or rank of a pilgrimage focal point. A big complex of churches (four churches) was excavated together with other small churches and chapels and more ones are expected to be exposed in the future .If the high Stylite tower with its small church are added to the component, one can expect huge numbers of pilgrimages that used to visit the city in a way to consult the stylite monk and to achieve his blessing in a manner that was used in the case of Simeon the Stylite in Antioch between (AD.417-459).

The military camp was established and deliberately existed within a buttressed fortified enclosure wall with two entrances and functionally was confined within that wall until conditions permitted and required the addition , in a later time, of a civilian quarter(settlement) and scattered structures of varied functions that extended widely to the north and evolved horizontally without any restricting factors

The Urban and Architectural Aspect:

The Urban uniqueness of Um er-Rasas seems from its being a city of two components ,the walled quarter (The military Camp) and the open quarter (The Civilian Quarter).

The Walled Quarter(The Military Camp):

The walled quarter has only been partly excavated ,but due to the huge quantity and amazing variety of the tumbled stone structures , as

visibly seen on the surface ,and due to the good state of preservation much could be learnt ,when completely excavated , about the architectural fabric and the building technology and the material used in the area at that time of the Roman/Byzantine era . Great amount of arches and vaults constructed of highly trimmed limestone boulders are still lined in rows , as if they have recently fallen in situ .The type of stone matches with the local easily available limestone. Two small excavated churches, within the walls, give an idea that even though this sector of the site (City) is described as a military quarter it included more than one fabric of urban and architectural development.

The Open Quarter (The Civilian):

Once again, this sector ,which is located to the north of the walled quarter , has been only partly excavated. But as it seemed from the small excavated portion a big ecclesiastical complex was centered in this part of the Byzantine world during the period of the sixth, seventh and eighth centuries. This complex, which is consisted of two main big churches annexed with two other small ones , could provide us with a variety of architectural artistic and historical knowledge and much information of the old urban city planing of the ancient world of the Byzantine era. The other excavated small churches in the neighborhood added to our information.

Basilica design of big churches is displayed together with small chapels and one aisled churches. The richness of the mosaics and the qualitative and quantitative variety in motifs provided us with a big corpus of information relating the city planing in Egypt ,Jordan and Palestine at that period which witnessed the mosaicising of the floors of those churches. A variety of city plans was depicted and reached us from these three areas of the ancient world of the Byzantine era.

On the other hand , one of the scattered structures in the remote northern side of that open quarter stands as the most outstanding and important example of its own type at that period of the early Christianity This monument is the Stylite tower. As it is still standing and well preserved in a unique condition of architecture with its full height(of 13 metres high) and domed room on the summit, it is considered as the most indicative example of that type of solid structures that served as a Stylite tower in the world.

Historical -Archaeological Aspect:

Even though the archaeological material that referred to a dating of the settlement before the Roman conquest of the region were scanty due to the limitation of archaeological excavations carried out on the site, they fit well with Biblical resources (Joshua. 13:18; 21: 37:and Jeremiah 48:21). These archaeological evidences indicated that occupation in the outer quarter of Kastron Mefaa (recently confirmed as Um er-Rasas) was attested in the Iron II period. To that era belonged a basalt column base, a scarab and a group of pottery sherds found below the Chapel of the Column.

In the Late Roman period, 3rd.to 4th.centuries A.D., there may have been an official building at the site as indicated by a Latin inscription found in the eastern courtyard of the church of Saint Stephen; from that same period there are also Thamudic and Nabataean inscriptions reused in the eastern wall of the same church and of the church of Bishop Sergius, a sculptured ram, part of a lintel found reused in the apse of the Courtyard Church, and coins, as well as other reused architectural elements.

Historical resources, such as Eusebius of Cesarea mentioned that a unit of the Roman army was stationed on the edge of the desert at Mefaat in the 4th.century AD..(*Onomasticon* 128:21).The *Notitia Dignitatum*, an official document of the Roman Empire, stated that auxiliary cavalry troops of the Roman army were stationed in the camp of Mefaa on the edge of the desert under the command of the *Dux Arabiae*. The locality of Mefaa is recorded by the Arab historian el-Bakry as a village of the Belqa' of Syria.

To the Byzantine era excavations and visible remains and monuments are visible evidences on the high rank of importance that Mefaa could achieve. Exposed churches with their mosaics of rich and varied motifs and artistic components stand as a good example of documenting evidences. They include subjects of history that make them as confident historical records of that era.

The mosaic of Saint Stephen provide further evidence of the existence of an organized Christian community in the diocese of Madaba, at the end of the 8th Century. The late date of the mosaics of the Church of Saint Stephen opens what was closed chapter of Jordanian history relative to civil, religious and artistic interests. We now know that at the end of the eighth century A.D. an urban flourishing community still existed at the site. That community was religiously and administratively organized and exhibited an unexpected artistic vitality. That Christian community was governed by a deacon with a bishop and local clergy.

The Multi Cultural and Religious Aspect:

From the big amount of excavated churches and from the existence of the elaborately constructed huge stylite tower we learn that Mefaa(Um er-Rasas) was in the Byzantine era an ecclesiastical focal point that is expected to have received visitors who came to pray or attend masses in such churches as the big church of Saint Stephen or the church of Bishop Sergius of the diocese of Madaba, during whose episode eight big projects of ecclesiastical type that archaeological excavations brought to light .Once again the introduction of the Stylite asceticism and religious austerity should have attracted to him a continuous streams of pilgrims who probably came to consult him or to ask for his prayers or receive his blessings as it was the case with the first Stylits Simeon of Antioch.

B-CRITERIA OF INSCRIPTION

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Criteria: I and III

The importance of the site was already noticed by the explorer E.H Palmer who visited it in 1871 and noticed that Umm er-Rasas must have been of considerable importance during the Byzantine period..

Um er-Rasas, in a way, represents a masterpiece of human creative genius. Um er-Rasas stands has the first site in Jordan and in the world that has a complete and intact ,solidly stone, constructed ,13 meters high ,tower that has served as a meditating platform for stylite monks, ascetics who lived on top of pillars seeking solitude. This tower was built in the middle of a square courtyard,and adjoined by a small church(the Church of the Tower) beside huge water cisterns hewn in the rock in the north of the ruins ,in the Byzantine period. It had no stairway but had a domed room at the top with a door opening on its southern side ,facing the church. A channel ran from top to bottom on the inside of the tower's wall ,probably to serve as a toilet. The discovery of a church ,used in Byzantine and early Islamic periods, in the south direction at the base of the tower in 1987 supported tthat functional view ,that this is a Stylite tower-a hypothesis proposed by C.Wilson in the nineteenth century. This Stylite tower is ,once again, shown, as a column, within a courtyard

relating a church with three hanging lamps depicted in the mosaics of Saint Stephen's church.

In the early Church, a solitary who lived on top of a pillar was called a stylite. Their pillars would vary in height, and the platforms, sometimes made more habitable by a small hut, were generally provided with a parapet against which the Stylite would lean for his scanty sleep. Food was usually supplied by disciples or admirers. Apart from prayer, Stylites gave much time to spiritual instruction, to reconciling enemies, and often to theological controversies. They considered St. Simeon Stylites their founder. Saint Simeon Stylite the first of the stylites or pillar ascetics was born on the Syrian border of Cilicia in AD. 389 or 390. In the vicinity of Antioch, and, after several years of ascetic life, he mounted a pillar, at first low, but gradually increased to a height of sixty feet high; he lived on the top of it until his death in AD. 459, occupied in adoration and intercession. This novel austerity attracted to him a continuous stream of pilgrims from all over the Christian world, and was widely imitated.

Criteria : III

The mosaics of Um er-Rasas include exceptional testimony to a disappeared cultural tradition and civilization

The richness of the inscriptions and the quality of motifs of the mosaic pavement of the church of Saint Stephen make it one of the most important archaeological monuments and historical documents including:

A-The dedicatory inscription along the step of the presbytery provides us with the ancient name of Um er-Rasas :Mefaa ,or Kastron Mefaa.

B-The dedicatory inscriptions near the presbytery ,on both sides of the altar ,contains historical information .Although there is some difficulty in reading it because of its use of abbreviations, its date of 756 A.D. furnishes , with another inscription in the same church , the name of two unknown bishops, Job and Sergius II who can be added to the list of bishops of Madaba.

C-The same inscription also identifies the mosaicist ,Staurachios,of Hesban town ,who was the first mosaicist in the region whose place of origin became known . He and his colleague Euremios paved the presbytery in March 756 , at the time of bishop Job.

D-The inscriptions of the mosaics ,here, mention the monk and priest Kayoum and his church of Phisga(Mount Nebo),west of Madaba. Moreover ,another inscription mentioned the name of bishop Sergios I of Madaba(587 A.D).These inscriptions confirm that the territory of the diocese of Madaba ,as it reached Mount Nebo (10 Km far west),it reached the Wadi Mujib-Arnon, 30 km. far, the southern border of the Provincia of Arabia.

E- One more point is that the late date, October 785 A.D. of the mosaic floor of Saint Stephen's church stands as a clear evidence on the extending for almost a century, the history of mosaic art in the east .

Criteria V

The Mosaics and the ecclesiastical monuments of Um er-Rasas stand as an outstanding example that represent the continuous traditional community or settlement especially when it is supposed to become vulnerable under the impact of irreversible change.

1-The mosaics of Um er-Rasas provided new evidence for the history of Jordan in the Byzantine and even Early Islamic periods. The mosaic of Saint Stephen provide further evidence of the existence of an organized Christian community in the diocese o oof Madaba, at the end of the 8th Century. The late date of the mosaics of the Church of Saint Stephen opens what was closed chapter of Jordanian history relative to civil, religious and artistic interests. We now know that at the end of the eighth century A.D. an urban flourishing community still existed at the site. That community was religiously and administratively organized and exhibited an unexpected artistic vitality. That Christian community was governed by a deacon with a bishop and local clergy .

2-The mosaics at Um er-Rasas provide evidence for the Arab military nature of the settlement. The majority names of benefactors mentioned in the inscriptions of the church of St. Stephen were of Arabic origin. Sample of such names : include:Abdallos,Obedos,Naoum,Kaioum,Soelos,Elias,Abesobeos,Alafa, and

Gomela .

Criteria VI

Um er-Rasas is directly associated with artistic works of outstanding universal significance. The mosaic floor of one of the churches of Um er-Rasas is considered as one of the most important archaeological pictorial documentary records in Jordan and even in the world, equaled only by the famous mosaic map of the sixth century A.D. discovered in 1897 in Madaba. The mosaic of the nave of Church of Saint Stephen displays a variety of city plans of three different geographical areas of the ancient world (The Byzantine Sphere), each plan accompanied by its toponym, or place name, in Greek script. Two areas in Asia (Palestine and Jordan), and the third in North Africa (Egypt).

A-The intercolumnar spaces of the north row a series of eight Palestinian cities are depicted: The Holy City (of Jerusalem) in which it is possible to identify the Anastasis church of the Holy Sepulchre according to the iconography attributed to it in the Byzantine period, Neapolis (Recent Nablus) with (perhaps) the façade of the church of the Theotokos on Mount Gerizim, Sebastis (Recent Sebastia), Caesarea on the sea; Diospolis (Recent Lidda); Eleutheropolis (Recent Beit Gibrin), Askalon, and Gaza;

B-The South row depicted seven Jordanian cities: beginning with the double plan of Kastron Mefaa (Recent Um er-Rasas); followed by Philadelphia (Recent Amman), Madaba, Esbounta (Recent Hesban), Belemounta (Recent Ma'in), Areopolis (Recent Rabbah), and Charach Moubal (Recent Kerak). Two additional Jordanian cities, were portrayed in the naves, one at the head of each aisle, associated with the portraits of the benefactors and inscriptions: Diblaton on the north, and Limbon (Recent Libb) on the south. Another toponym without illustration mentions Mount Nebo (Phisga) and the superior of the monastery of the Memorial of Moses who gave an offering to the church.

C- The inner geographical frame of the mosaic carpet is decorated as a river stream with fish, birds, and water flowers. Floating among them are boats and boys fishing or hunting. The continuous scene is interrupted by ten city plans of cities of the Nile Delta: Alexandria, Kasin, Thenesos, Tamiathis (Damietta), Panau, Pilousin, Antinau, Eraklion, Kynopolis and Pseudostomon.

IDENTIFICATION OF THE SITE

The modern name of the site, Um er-Rasas as it is pronounced means the mother of lead (Rasas means lead). Actually the term Rassas refers to the Arabic root Rass indicating the action of putting something on top of something else in perfect alignment. Therefore Um er-Rasas or mourassas in the toponomastic of the region is a term indicating a well-built. And, for this reason it is a good indication of the antiquity of the locality. The modern name was recorded in 1807 by the first modern explorer of Jordan, U. Seetzen. It was then visited by J.S. Buckingham in 1816, followed by many other explorers including E.H. Palmer and H.B. Tristan who realized the Christian character of some of the ruins.

The site of Um er-Rasas could be identified with the old name Mefaa or Kastron Mefaa, a toponym known from the Roman-Byzantine and Arabic sources and from the Bible. Mosaic Greek inscriptions discovered in the Church of Saint Stephen excavated on the northern edge of the ruins, and the inscriptions discovered in the church of the Lions have confirmed, four times, the ancient name of Um er-Rasas as Kastron Mefaa (camp of Mefaa), a settlement mentioned in the Bible (Joshua. 13:18; 21: 37; and Jeremiah 48:21) and in the Roman-Byzantine sources.

The *Notitia Dignitatum*, an official document of the Roman Empire, and the 4th Century AD *Onomasticon* of Eusebius of Cesarea, both state that auxiliary cavalry troops of the Roman army were stationed in the camp of Mefaa on the edge of the desert under the command of the *Dux Arabiae*. The locality of Mefaa is recorded by the Arab historian el-Bakry as a village of the Belqa' of Syria. The name Kastron Mefaa suggested the military nature of the settlement in the Roman, Byzantine and Islamic, and possibly even Nabatean periods. But the so far increasing number and the artistic sophistication of the mosaic pavements of the uncovered churches stand against that military function, at least in the Byzantine and Umayyad periods.

Mayfa'ah (Mefa'a), A forgotten Site in the Early Islamic Tradition

In The largely apologetic biography of the Prophet Mohammed which has come down to us, in its final form, from the hands of Abu Mohammed Abu al-Malik ibn Hisham(d.834),who edited materials originally assembled by Mohammed ibn Is-haq(d. ca.768),there is a section which tells the story of four men who,just prior to the coming of Islam ,broke with the polytheism of Quraysh in Mecca.They were representatives of the famous hanafia (singular hanif),thr pre-Islamic Arabian monotheists in the terminology of the Qur'an. These four,men who appear as a group in the biography of the Prophet Mohammed are Warqah ibn Nawfal ,`Ubayd Allah ibn Jahsh ,`Uthman ibn al-Hawarayrith ,and Zayd ibn `Amr ibn Nufayl. The first three all became Christians just before the time of Islam ,but Zayd in the words of ibn Is-haq, "stayed as he was : he accepted neither Judaism nor Christianity." It is Zayd whose story includes the account of a visit to a site which can now be identified as that Um Er-Rasas –Kastron Mefaa.

Due to his religious restlessness, Zayd ibn `Amr ,according to ibn Is-haq , "had determined to leave Mecca to travel about in search of the *Hanifiyyah*, the religion of Abraham."His travels took him,as the story goes ,as fas as Mosul in northern Mesopotamia and throughout Syria ;all along the way he was "questioning monks and rabbis(*ar-ruhban wal-ahbar*) .The text goes on to say that Zayd"...came eventually to a monk at Mayfa'ah, of the land of al-Balqa(Central high Plateau of Jordan).This monk said to him : You are seeking a religion to which no one today can guide you, but the time of a prophet who will come forth from your own country which you have just left drawn near .He will be sent with *Hanifiyyah*, the religion of Abraham, so stick to it ,for he is about to be sent now ,this is his time."

Having received the monk's prophesy at Mayfa'ah ,Zayd is said then to have set out on his return journey to Mecca .

The location and identification of Mayrfa'ah was ,until recently , a mystery .Arab geographers, simply following the identification of the biography of the Prophet Mohammed, were content to say that it was " a village of the land of Balqa of Syria (Balqa was known at that time as the high central Plateau East of the Jordan River).It is now clear that Um Er-Rasas is Kastron Mefa'a,known both from literary sources and inscriptions discovered at the site; and it is therefore plausible that Mayfa'ah is simply *Mefa'a* in Arabic transcription. It is philologically correct in that the diphthong 'ay' is often pronounced 'e'; and geographically the site is where it should be ,in the highlands of the Balqa.

For Muslim Arab Writers(historians) of the period like Ibn Is-haq,it would have been perfectly credible that Zayd ibn ‘Amr could have met a monk at Mayfa’ah –Kastron Mefaa at the turn of then 6th. to 7th. Centuries. The site should have been famous as a religious resort of consult at that time, and its fame reached as far north as north Syria, from where Zayd ibn ‘Amr was advised to ascend south to Mayfa’ah . Moreover it should have been flourishing and , according to archaeological record, it was in existence well beyond the lifetime of Ibn Is-haq.

DESCRIPTION

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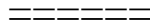
The ruins, situated at the highest elevation of a plateau, are visible from a distance of nearly twenty kilometers .

The site consists of five main components including:

- I- The Castrum,a walled area(Camp) of about ten hectares .
- II- The Northern Settlement.An open quarter of the same size to the north.
- III- The Stylite Tower Complex.The most visible monument of Um er-Rasas is a tower which is still standing at a distance of 1.5 km. north of the main ruins. The tower is in the middle of a square courtyard with a cistern to the north and a small church at its southeast corner.
- IV- The Ancient Agricultural Fields .
- V- The Reservoirs and Cisterns

Excavations started on the site in 1986 by the Department of Antiquities and the Franciscan Archaeological Institute, and were joined in the Spring of 1988 by a Swiss team supported by the Van Berchem Foundation.

PRINCIPLE MONUMENTS



I-The Fortified Camp (The CASTRUM) An Almost Fortified Square Fortress

The fortress of Kastron Mefaa, built at the end of the 3rd. or the beginning of the 4th. century A.D. appears as a large quadrilateral of 158m by 139m, surrounded by a solid wall 2m thick, reinforced by quadrangular towers, and two main gates ,one in the north, while the other one in the south. The walls, of cyclopean size , are made of large undressed blocks of stone, without any mortar and wedged with stones of smaller size. .On the inside there is a huge amount of stones out of which arise several arches, lintels and small columns decorated with crosses. At the south-east corner a deepening of the rubble probably indicates the presence of a reservoir .Because the city had no springs ,several cisterns are to be seen in the area outside and inside the ruins.

At the beginning of the 4th. century a wing of cavalry was stationed there. After the demilitarization of the campus during the 5th. century settlement remained within the enclosure .Then the internal fortress organization ,originally structured around two orthogonal ways ,was gradually modified by constructions built above courtyards and streets. Out of the four churches within the enclosure, (Twin churches) have been excavated. There are two other excavated spots: the North gate and the South gate areas.

A- Walls ,Interior and Gates of the Castrum

The top courses of the fortifications are lost. Nowhere has the original height of the wall been preserved. No restoration work was done on the whole enclosure excepted limited work by the Swiss team near the Twin Churches.

The excavations of the North gate were conducted by Swiss mission in the years 1991 and 1992. Excavations have exposed the passage and the guard rooms. Consolidation of walls has taken place in the form of re-pointing. The debris around the outside walls hide large parts of the external ramparts. Earth mixed with architectural fragments and blocks are visible among the debris. The gate provides access to a street which is now completely blocked with ancient collapse (2-5 meters of depth).

That street should be the normal access to the Twin Churches complex.

This structure is different from the North gate, as there is a small poster gate to the left of it, and a less clear use of the towers controlling access to the castrum. It is clear from the excavation that that gate didn't exist in the initial setting. There has been some consolidation of this structure, but the site needs considerable conservation efforts would the intention be to open it to the public.

B-The Twin Churches

Inside the castrum explorers have identified four ecclesiastical buildings. The twin churches built against the eastern wall of the castrum have been excavated by the archaeologists of the Max van Berchem Foundation, starting in 1988.

1 = The Church of the Rivers (A.D.578/79 or 593/94):

The Northern of the Twin churches

Excavated by the Swiss archaeological mission: Max van Berchem Foundation, directed by Jacques Bujard). Date of excavations: 1988, 1989, 1990. Superficies: 125 square meter. Earliest of the twin churches excavated by the Swiss mission members. The church has a mono apse with three naves separated by two rows of three arches, and a raised presbyterium, limited by chancel and flanked by two small rectangular chambers closed with doors. Three doors (one by nave) gave entrance through the western wall (from a kind of << narthex >>). Another door in the north wall, gives access into a small rectangular chamber (<< sacristy >> ?) covered by two arches. In later times two of the west doors were blocked and benches built along the wall, inside the church.

Walls:

They are of the common double sides of local uncut stones from different sizes and nature with medium filling of earth. Only the inner wall of the apse was built of well dressed and cut limestone blocks of pseudo

isodome aspect. The first row of voussoirs of the < cul de tour >> is still in situ, over a small cornice crowning the apse wall.

The apse was partially over cut through the inner side of the city wall. The walls are quite well preserved sometime over three meters high. All of them have been restored by the Swiss mission members.

Floor:

All the church was paved with colored mosaics, half of which are still in situ. under 10 to 20 cm. of dump and sand protection.

The semicircular area in the apse in the presbytery of the northern church of the complex was decorated with a field of flowers and two lambs facing the altar. The later construction of a fixed altar caused the destruction of the heads of the two animals. Three trees decorated the rectangular area in front of the altar with figures that have been disfigured by iconoclasts. A man seated on a stool with a flower in his hand can be identified in the first figure to the right. A second figure was harvesting fruit from the tree on the left side beside which a sheep was grazing. The empty area between the chancel screen and the panel was filled with geometrical motifs on the sides, with two pair of partridges facing a bunch of grapes, as well as a pair of peacocks on the west side.

Winged animals facing bunches of flowers decorated the nave along the step of the chancel screen, as in the church of Bishop Sergius. The central carpet was decorated with acanthus scrolls starting with a sea animal in the first row to the east, like the Abyss in the church of Bishop Sergius. The outer frame was decorated with scrolls of vine shoots coming out from the jars held by the four Rivers in the corners. An elongated jar on a pedestal was represented in the central scroll of the east side. Although iconoclasts disfigured the animals motifs of the composition, some intact figures remain, like the River in the southwest corner with a reed in his right hand, followed by a harnessed horse, and a bear-trainer with beard and moustache who held the bear by a rope. In the acanthus scrolls of the carpet one can see the portrait of the same benefactors depicted in the mosaic floor of the Bishop Sergius church. Among the geometrical motifs with which the aisles and the intercolumnar spaces were decorated, was a remarkable medallion with a winged(?) that decorated the area in front of the northern sacristy. The similarity of style and of the decorative program of its mosaic floor with that of the church Bishop Sergius leads to the assumption that the church was mosaiced by the same team of mosaicists of working at the time of Bishop Sergius at Um er-Rasas. Therefore it is proposed to choose AD 593/4 as the 12th.indiction year given by the inscription near the entrance of the church.

Dating:

The mosaic is dated to 593-594 A.D.. The church was probably built half a century earlier.

2= Church of the Palm Tree:

The Southern of the Twin Churches

Excavated by a Swiss archaeological Mission, Max van Berchem Foundation (Jacques Bujard) .Date of excavations:1988, 1989, 1990 .Superficies 220 square meter. Located Inside the Castrum.It is the southern of the twin churches which have been excavated by the Swiss mission. This church was the latest **built. It has a mono apse with** three naves separated by two rows of three arches. It has a raised presbyterium and limited by chancel and flanked by two small rectangular chambers closed with doors (in the original state, these chambers were completely open to the naves). Three doors (one by nave) gave entrance through the western wall (from a kind of << narthex>). Two other doors are visible in the south wall, the one situated in the east opening into a small rectangular chamber covered by two arches. The apse partially cut off from the inside side of the city wall.

The Walls

They are of the common double side of local uncut stones from different sizes and nature with medium filling of earth. The inside wall of the apse is of better quality, the use of stones being more regular, of quite regular shape and put on horizontal courses. Benches were found along the north and south wall. Two arched lintels found during the excavations prove that two small windows existed over triumphal arch. Traces of plaster still subsist on the different walls.

II- THE NORTHERN SETTLEMENT AREA (300x200m) :

It consists of collapsed structures, where four areas have been excavated including:

A--The Ecclesiastical Complex : Four Churches

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On the northeastern edge of the ruins of the Settlement a large and interconnected liturgical complex with four churches was identified. This included the two churches with mosaics: the church of Saint Stephen to the east and the church of Bishop Sergius to the north. The third church is called the courtyard church ,and the fourth is the Aedicula church ,both were paved .

1-: The Church of Bishop Sergius

The church was built in A.D.586. as a basilica with an apse and elevated gamma presbytery and two steps higher than the nave .It had an altar which shows two main phases of construction . It had the ambo in the nave on the southern corner of the presbyterium. In the presbytery we find the bench for the clergy (the synthronon) on the interior of the apse, with a service room to the north. Through the main entrance ,one could enter a room with mosaics which was between the baptistry to the north, and a funerary chapel ,to the south. The cruciform basin of the baptistry was covered with a waterproof reddish plaster ,but was badly damaged in a secondary reuse of the room .Two barrel-vaulted tombs in the funeral chapel continued eastward under the presbytery of the Courtyard Church.

The church is part of a bigger ecclesiastical complex comprising four churches. According to the dedicatory Greek inscription in a medallion which is between two lambs in front of the altar, this northern (lower) church was built and mosaicised in the year 587, at the time of Bishop Sergius of Madaba.A Greek inscription between two lambs and two trees is visible in the presbytery of the church.

.The two lambs are intact ,but iconoclasts had destroyed all the other rich figurative motifs of the main nave except for a personification of a Season which had been protected by the stone base of the pulpit(a later addition to the church)

Originally the rich program consisted of a frame featuring acanthus scrolls with scenes of hunting, fishing and wine making. Within the frame ,the central carpet included two classical personification :the Abyss(or Sea) and the Earth. Between these were portraits and scenes from the lives of the benefactors of the church with their name.Outside the main entrance to the west was the baptistry chapel of the complex and a funerary chapel, together with a paved church on a higher level, with a polygonal apse.

2-: The Church of Saint Stephen:

The church was built as a basilica with an apse and elevated gamma presbytery and two steps higher than the nave .It had an altar which shows two main phases of construction. In the presbytery of the church of St.Stephen ,with the altar there are the bases of the ciborium and two side rooms. It had the ambo in the nave on the southern corner of the presbyterium.

The Church of Saint Stephen is one metre higher than the Church of Bishop Sergius. A stairway connected them. From the Greek inscription on both sides of the altar we are informed that the mosaicist Staurachios Ezbontinos (from Esbounta-Esbous:of Hesban) and his colleague Euremios paved the presbytery in March 756, at the time of Bishop Job.

The work was completed in October 785, at the time of Bishop Sergius II in honor of Saint Stephen by care of the deacon John, who was "chief of the Mefaaites and econom" and with the collaboration of all the people of Kastron Mefaa "who love Christ".

The other inscriptions which accompany the geometrical patterns of the mosaic provide the names of the benefactors, among them Kayoum, priest and monk of Pisgah-Mount Nebo. Since the portraits and the scenes of hunting, agriculture and pastoral life once depicted in the mosaics were disfigured by iconoclasts, the major interest of this mosaic is the double geographical frame and the place names which accompany the city plans. Between the intercolumnar spaces were inserted eight Palestinian cities

on the north: The Holy City (of Jerusalem), Neapolis-Nablus, Sebastis-Sebastia, Cesarea, Diospolis-Lidda, Eleutheropolis-Beit Gibrin, Askalon, and Gaza; and seven Jordanian localities on the south: the double panel of Kastron Mefaa-Umm er-Rasas, Philadelphia-Amman, Madaba, Esbounta-Hesban, Belemounta-Ma'in, AreopolisRabbah, and Charachmouba-Kerak. Two Jordanian cities were added in the naves along with the portraits of the benefactors: Diblaton, on the north, and Limbon-Libb, on the south. The inner geographical frame of the carpet is decorated as a river stream with fish, birds, and water flowers. Floating among them are boats and boys fishing or hunting. The continuous scene is interrupted by ten city plans of localities of the Nile Delta: Alexandria, Kasion, Thenesos, Tamiathis-Damietta, Panau, Pelousion, Antinaou, Eraklion, Kynopolis and Pseudostomon.

The mosaic of Saint Stephen provides further evidence of the existence of an organized Christian community in the diocese of Madaba at the end of the 8th Century, an urban community with obvious artistic vitality.

The richness of the inscriptions and the quality of the motifs of the mosaic pavement of the church of Saint Stephen make it one of the most important archaeological monuments of Jordan. In this mosaic of the Umayyad period, we find a combination of many of the themes which had become progressively more popular in the earlier mosaics of Jordan: portraits of benefactors, hunting and pastoral scenes, scenes of a daily life, architectural representations, birds and flowers which fill the elaborate geometric patterns, and inscriptions.

3 - :The church of the Courtyard

: A Small Church

Between the Church of Bishop Sergius and the Church of Saint Stephen, an original paved courtyard was changed into a church with the addition of an apse on the western wall. Two barrel-vaulted tombs in the funeral chapel of the Church of Bishop Sergius continued eastward under the presbytery of the courtyard Church. This might explain the liturgical purpose of this new church which has its apse oriented to the west. The funerary character of the church is emphasized by the multiple tombs below the slabs inside the church itself. In the tombs, several women were buried, some of them wearing bracelets, rings and necklaces with bronze crosses.

Its plan can be regarded as with three naves (separated by two lines of

two arches each) if it is admitted that the southern side of the church of the Bishop Sergius could constitute his northern side. The apse presents a raised prebyterium originally provided with a chancel.

The access to this building was done by two doors bored in the medium of the southern wall and by the close churches. It is more probable than it served as " place of distribution " for the Churches of St.Stephen and of Bishop Sergius,of which it was separate only by two arches between which a chancel was established.

Walls:

Very heterogeneous, the building being inserted inside various pre-existent structures. The walls are of the general type with two irregular facings of blocks of various sizes and natures separated with an earth filling. Only the quality of construction varies from one wall to another. They were originally covered with lime plaster more or less thick of which it remains important fragments in situ.

Floor: Was entirely covered with rectangular blue/grey "gypsum" flagstones,including for presbyterium..

4- : The Church of Aedicula:

The church with a polygonal apse in the western sector is called the church of the Aedicula because of a small niche on the southern wall. It was built in the sixth century A.D. on a higher level than the other churches. It is a paved church in the southwestern sector. It was somewhat isolated from the other three churches, and had its own entrance on the southwest corner of the complex. The courtyard with the cistern north of the Aedicula Church was reached from the interior of the town through a tunnel which passed below the presbytery of the church. The church had a double door on the façade and another door in the southern wall.

A trench was opened in the slab-paved floor of the nave to check the absolute date of the building since it seemed more ancient than other edifices in the complex. Through a round shaft, a tomb one meter below covered with slabs was reached. Inside the tomb, with the skeletons of the deceased, there was a straw basket still filled with glass vessels and a cylindrical bone object covered by two strips of metal on the edges; inserted into it was a metal object similar to a small spoon which was used by women for the application of kohl(eye liner).One of the round

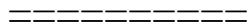
vessels still contained a black liquid ,possibly the remnants of an unguent .On the east side of the tomb ,among the bones, were two elongated glass bottles and a wooden box ,all probably part of womens' cosmetic ensembles. The round box which was most exciting find ,was covered by a thin layer of material which had been painted with geometric motifs and a series of winged animals.

ANALYSIS

It is stylistically interesting to examine the four contemporaneous pavements of Um er-Rasas, where at least two teams of mosaicists at work could be detected .The team responsible for decorating the church of the Lions was particularly skillful in rendering of the animals and trees in their geometric setting .The other team was responsible for the decoration both of the church of Bishop Sergius and the church of the Rivers where the same patterns were used with the same rendering of design and colour. On the basis of this identity, the 12th.indiction year , still readable in the destroyed dedicatory inscription near the door of the church of the Rivers ,can be fixed to the year 578/79 or 593/94 , at the time of Bishop Sergius .To them we can add the mosaic of the church of the Priest Wa'il, more naïve and inaccurate ,but using the same technique in rendering colour.

Of historical and artistic importance is the city plan of *Kastron Mefaa* that decorates the northern intercolumnar space of the church of the Lions. Thanks to this discovery, this plan could be compared with that of the same city found in the church of Saint Stephen and dated to the Umayyad period. The plan of *Kastron Mefaa* in the church of Saint Stephen is more schematic compared to this new plan. Here could be seen clearly the intention of the mosaicists to depict *Kastron Mefaa* in its urban identity ,with the walled castrum and the northern quarter outside the walls. A church and a smaller building of an unidentified nature are depicted inside the castrum. The outer quarter also is walled ,like the town, and is united to it by a wall of a small size .Four churches are depicted inside the perimeter of the quarter, where ,as the plan of Saint Stephen, an open space with a column raised on a step platform was depicted .Here , a cross is added to the capital on the top of the column. Given the realistic rendering of the city, it should be imagined a real column standing in the middle of the ruins, the nature of which is still unknown.

B- OTHER CHURCHES



1:- Church of the Lions:

The Church of the Lions lies to the south of the St. Stephen's. A similar plan to that discovered in Saint Stephen Church of Kastron Meffa was later discovered in the inter-columnar space of the Church of the Lions . Thanks to that discovery, we are able to compare two plans of the same city .The plans were made two centuries apart. The plan of Kastron Mefaa in the church of Saint Stephen is more schematic when compared to the other plan .In the church of the Lions we can see clearly the identification of the mosaicists to depict Kastron Mefaa with an urban identity .It shows the walled castrum and the northern quarter outside the walls. A church and a smaller building of unidentified nature are depicted inside the castrum. The outer quarter ,too ,is walled, as is the town, and the two parts of the town are united by a wall of minor dimensions.

In 1989-90 the name of Bishop Sergius could be read again in the mosaic floor of the church of the Lions in the outer quarter of the depicted city plan. The eighth indiction year given together with the name of Bishop Sergius in the inscription in the main nave, enables to choose the year 588/89 for this outstanding work of the mosaicists of the city.

The complex of the church of the Lions consists of the church and a series of annex rooms and courtyards. The complex is well delimited to the north, west and south by streets, and to the east by a courtyard. Tombs were found outside of the entrance of the Church. They are built structures covered with slabs.

Plan:

The church is the largest one actually discovered in Umm ar-Rassas. It is also the only one to possess three apses. The two lateral small apses, ornamented with small semi circular niches were vaulted with (cul de four); the first rows of voussoirs still in situ on each of them. Two rows of five arches each divided the internal space in three naves. The collapsed north group had been left in situ. The raised central presbyterium was well preserved with, exceptionally in situ, the steps leading to the ambo, the base of which was found at its original position. The main entrance was in the middle of the west wall. In the same wall a second door open on a closed small room covered by a stone flat roof supported by two arches. Two other doors, still unexcavated, are visible

in the northern wall. The Southwest corner of the building is getting place to a small staircase.

Walls

As for all the others churches, the walls are made of two rows have simply undressed blocks of different sizes with internal filling of earth and chip stones. The pillars display regular brickwork even if the blocks are cut less accurately. Higher up the blocks become progressively smaller and less uniform. The main apse is made of large roughly hewn summarily blocks, quite in regular rows, with intervals filled with chip stones. The northern wall (quite unexcavated but shocked by the collapse of the arches) and, at a smaller scale, the southern one, do not **appear to** offer sufficient guarantees from a static point of view. The loss of cohesion is at the origin of general disjoints of the stone elements and to some edge break up.

Floor:

The whole church was paved with polychrome mosaics which suffered iconoclasm and ancient destruction (1/3 of the pavement is missing)Even that, these mosaics are remarkable for the quality of the representation of the two lions which gave the name to the church, and, most of all, by the representation of *Kastron Mefaa*, much more realistic than the one of St Stephen.

2:- The Church of the Priest Wa'il

The small church was part of a larger ecclesiastical complex ,not yet explored, outside the northwest corner of the walled castrum .It was ,then excavated and brought to light in 1990-91. A door in the eastern wall of the south aisle joined it with the main church to the east. The church was built and mosaiced in the year 586 A.D. as stated in the dedicatory Greek inscription in the central carpet : at the time of the most pious Bishop Sergius, was built and completed this holy temple by care of the priest Wa'il (Walesos,in Greek0,in the month of Dios of the fifth indication of the year 481(A.D.586).This is the priest and his servant

The western section of the mosaic floor was partially repaired with white tesserae independent of the iconoclastic damage of the figures .The presbytery was decorated with a composition of intersecting and adjacent octagons, forming squares and oblong hexagons in the curb of the apse .The area of the chancel protruding into the nave was decorated with a rectangular panel closed in a polychrome undulating ribbon. Three zebus were figured facing a thick clump of acanthus leaves in the center from which sprang vine shoots with grapes and tendrils.

The central carpet in the nave was enclosed in a narrow frame with a continuous series of white medallions on a black background, filled with jars on the corners, flowers, isolated fruits, a cage, and birds that have been disfigured. A free composition on different layers is represented in the carpet. As written in the inscription, in the first east scene was portrayed the priest Wa'il standing with his arms extended to receive a small branch from a figure (his servant?) seated on the back of a stag. Two other figures holding a stick were portrayed on the opposite side. It followed a travel scene with a red carriage drawn by a horse proceeding among highly stylized flowers. In the third scene several hounds pursued an unidentified beast. In the bottom scene there remains part of a big-game chase with a horseman spearing a wild beast which was pursued by a dog, while a second horseman followed behind.

In the east intercolumnar space of the southern row, was portrayed a standing figure east, dressed in a red mantle with a whip in his hand. On the opposite intercolumnar spaces there was a sea monster with a twisted body, followed by a Nilotic scene with two boats floating on the water with fish and aquatic flowers. The naked fisherman with a hat is the only figure in the whole composition spared by the iconoclasts. In the fourth intercolumnar space the mosaicists depicted four busts of half-naked women holding cornucopias in their left arms, from which water poured out, next to a high building with a red roof, an open door, and three towers with open windows, and smaller houses. Of the fourth woman, only part of the elbow is left.

The two side aisles of the church were decorated with a continuous series of acanthus scrolls filled with living motifs, like sheep, goats, a stag, and a horseman. The eastern end of both aisles was decorated with an isolated square panel with a pomegranate tree on the south, and a palm tree on the north.

3:-The Church of the Tabula

Located in the western sector of the urban quarter, outside the north-west corner of the walled castrum. Work was continued on the main church of the ecclesiastical complex of which the small church of Priest Wa'il was part. The small church has been excavated in 1990-1991.

This large church with two service rooms on both sides of the apse, was paved with a stone floor. A tabula anasta with a Greek inscription has been added in the stone floor of the presbyterium inside the central entrance to the sanctuary. Of the inscription only some letters were still visible. The raised presbyterium has been closed by a stone

chancel screen partly preserved on the sides .The original stone slabs on the west side had been later removed and replaced by oil shale slabs of which only fragments remained scattered among the debris. One fragment was decorated with a cross ,in relief .Among the fallen stones of the roof the upper part of two small stone columns have been found decorated with crosses.

The Church is classical with three naves separated by two rows of four arches .The central nave is closed, to the east, by a raised apse presbyterium, the two side aisles by small chambers of rectangular shape and covered by an arch, both still in situ The Southern chamber is largely open to the nave .A door in the middle of the eastern wall gives access to outside or unexcavated annexes .The previous entrance was through a door opened in the middle of the south wall on the same wall, a second door gave access to the connected small rooms. A door in the western wall connected directly that church to the church of Priest Wa'il .Another one, in the northern wall, was opening to same unexcavated dependencies .On the northern wall again a second door opened in a small-unexcavated chamber of a square tower. That passage was covered with a small arch supporting a staircase leading to the first floor door entrance of the tower

The mouth of a cistern is visible in the central nave, near the western wall .Three water channels bring water from the roofs to it.The southern nave was reused in late antiquity as dwelling .The chancels of this church are left in situ .The south chancels are standing .They were cut from coquina limestone

The church was primitively paved with mosaics ,which were replaced by local alabaster slab floor except in the presbyterium .Large parts of it were removed during excavation .The church is earlier than the church of Priest Wa'il,dated to AD 586.

It is expected that all the church will be sheltered, the chancel and ambo anastyle (after implementation of a stone consolidation process), the mosaics and stone floor presented after restoration.

4:-The Church of Saint Paul

The continuation of the research in the urban sector between St. Stephen complex on the northern edge of the ruins and the walls of the Kastrom to the South has brought to light two more ecclesiastical complexes. The southern one rotates around the Church of the Lions which had a splendid mosaic floor by the mosaicists of Madaba. The central ecclesiastical complex is made up of the Peacocks Church and a church which was brought to light and called as the Church of St. Paul, a name read in an

invocation to the Apostle incised on a roof tile: "*Saint Paul and Germanus save the Blues and Papiona Son of George the lector*". Alas the confirmation of the Church's name could not be found in the inscriptions in the mosaic floor. It is interesting to note that quite a number of tiles had various incisions amongst which the anonymous craftsman who enjoyed himself engraving a peacock, a snake and a terrified girl who holds her left hand raised up while keeping the right one on her hip.

The church was buried under a heap of rubble which some points reached higher than three metres. On this rested, in a northerly direction, the countless stones of the aligned fallen arches and those of the moulded ashlar of the calotte of the apse in the presbytery area

The Building

Once the stones of the arches were removed it was found out that part of the church, when still standing and after being abandoned, was used as a dwelling place. To do this, the people who occupied these spaces, adapted two distinct areas in the northern nave and another one in the southern. It was later that the roof, covered with stone slabs on the lateral naves and tiles on the central nave, gave in falling on the completely abandoned area. The pottery sherds collected go back to after the eighth century as they are similar to those which were under the debris of Saint Stephen and the Church of the Lions. There came to light also some "Bedouin" pottery, characterised by its roughness and dark clay which we identified here at Umm al Rasas. This belonged to the families who reoccupied the edifices after their abandonment by the original population. From the asiles strewn in the north-west corner of the church we can say that another fireplace was used here for a long period of time. In the adaptation of the south-west area as a dwelling place, having its entrance in the southern wall, a long stone lintel was used upside down as part of the western wall. This lintel is decorated with a central cross flanked by two handled vases and two medallions with a whirling motif. Among the fallen rubble, directly on the mosaic floor, the marble lid of a small reliquary was found.

Roofing doorways and niches

The roof of the single-apsed basilica was supported by two series of wide arches. The lateral naves were covered by long stone slabs (sometimes measuring over two metres) of fossiliferous limestone extracted from the local quarries. The building had three doors on the southern wall. The easternmost one led to a room which had a slit window. A portico

supported by a central arch stood in front of the other two external doors. The church had another door in the facade. This was out of the central axis, rather to the south and led to two rooms, one of which had a northern door. The central door on the southern wall had its lintel still in place. The other lintels, all decorated by crosses contained in circles or squares, were found near the doors. The church also had a slit window in the western corner of the northern wall.

On the eastern end of the two naves a step delimited a small space which is characterised by a niche with stone or plaster jutting moulding on the eastern walls. Most probably both spaces were covered by a barrel-vault or by a calotte. Some ashlar from the aforementioned elements remained in situ in the Southern nave while in the northern one they were found among the debris. Worth noting are some holes found on the splay of the apse which probably are to be put in relation to a jutting edifice of plaster of which were recovered some elements from among the debris of the fallen stones. Among the moulded elements are to be listed the capitals of the two side pillars of the semi-dome of the central apse.

The mosaic floor

The general mosaic plan can be outlined together with its figurative details in the central nave notwithstanding the mutilation procured by the iconoclasts and the damage sustained.

The presbytery area is surrounded by a ribbon band and is decorated by a field of small flowers on a white background. An amphora between two facing birds and two bulls facing a fruit laden tree were inserted with the former towards the apse splay while the latter towards the balustrade. A one line inscription separated the field of flowers from the balustrade. Of this only the beginning introduced by a cross and the end survived. A small panel with a geometric motif was inserted between the ribbon and the northern side of the balustrade.

The mosaic plan of the central nave was divided in three autonomous panels with an autonomous alignment in respect to the alignment of the presbytery step which results deviated in some degrees towards the south.

Dating the mosaics:

The inscriptions lack the name of the bishop and the year when the mosaic was completed. In view of this dating could be based on stylistic criteria. The mosaic fits well among the works carried out in the City and in the diocese of Madaba at the time of bishop Sergius. The "twelfth indiction" which can be read in the inscription along the step of the

presbytery takes us to the years 578 or 593. In the context of the other mosaics of Kastron Mefa'a, the former date is preferred.

5:-The Chapel of the Peacocks:

Excavated in 1992. Together with the church of St.Paul this chapel compose a central ecclesiastical complex between the St.Stephen Complex in the north and the Castrum in the south.The one apsed chapel has been roofed with a series of five arches with long beams.The ecclesiastical structure has been collapsed by an earthquake during the early Abbassid period. The chapel had the apsed presbyterium raised of one step with the chancel screen dividing it from the main hall. The stone base of the altar with four sockets for the columnets was still in situ against the round wall of the apse. A cupboard was opened on the south wall of the apse. Its walls appear to be of the common type with double irregular lines and internal pocket. Large roughly cut blocks alternate with layers of small size stones laid in irregular manner. Most of the pieces from the roofing were found during the excavation: capitals, pieces of the arches, covering slabs... from which an anastylosis will be possible. The single apse is constructed as usual from more compact and regular brickwork, on site more or less similar blocks.

The floor of the chapel has been paved with mosaics .The central carpet of the mosaics has been removed in antiquity before the collapse of the chapel. Geographical motifs decorated the intercolumnar panels .The chapel had a main door on the west façade and two other doors on the north wall.

III - The North Tower Complex

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The North Tower complex ,which is located at a distance of 1.5 km.from the Castrum, includes a high standing Stylite tower 13m.high , a small three naves church with simple plastered floors with annexed premises and different dwellings around: a wine Press cisterns, ancient quarries, two story building... Excavation have targeted the small church

near the standing tower, and areas around it. Conservation work has been conducted on the two-story building north to the tower, and is currently in progress on the church (directed by the Madaba office of the Department of Antiquities).

The most important structure in the remote northern side of the open quarter stands as the most outstanding and important example of its own type at that period of the early Christianity is the Stylite tower. As it is still standing and well preserved in a unique condition of architecture with its full height (of 15 metres high) and domed room on the summit, it is considered as the most indicative example of that type of solid structures.

1:- The Stylite Tower

Um er-Rasas stands as the first site in Jordan, and it is said in the world that had an almost complete and intact solidly stone constructed, 13 meters high, tower that has served as a meditating platform for stylite monks, ascetics who lived on top of pillars seeking solitude. This tower was built in the middle of a square courtyard, beside huge water cisterns hewn in the rock in the north of the ruins, in the Byzantine period. It had no stairway but had a domed room at the top with a door opening on its southern side, facing a church located to the south of the tower. A channel ran from top to bottom on the inside of the tower's wall. It is expected that this channel had been used as a toilet. The discovery of a church, used in Byzantine and early Islamic periods, in the south direction at the base of the tower in 1987 supported that functional view, that this is a Stylite tower—a hypothesis proposed by C. Wilson in the nineteenth century. This Stylite tower is shown, as a column, within a courtyard relating a church with three hanging lamps depicted in the mosaics of Saint Stephen's church. A Stylite tower is epigraphically mentioned at the mosaic inscriptions of the church of Al-Mukhayat, 40 km. north west of Um er-Rasas. The Stylite tower is mentioned as located in the diocese of Madaba region, of which Mefaa was a part. And since no other tower has been discovered in Madaba region or even in all of Jordan, that epigraphic mention should have referred to tower of Mefaa (Um er-Rasas).

Stylite (Grk.: stylos, pillar)

In the early Church a solitary who lived on top of the a pillar .Their pillars would vary in height, and the platforms ,sometimes made more habitable by a small hut, were generally provided with a parapet against which the Stylite would lean for his scanty sleep. Food was usually supplied by disciples or admirers. Apart from prayer, Stylites gave much time to spiritual instruction ,to reconciling enemies ,and often to theological controversies. They considered St.Simeon Stylites their founder .There are mentioned instances of such ascetics from the 5th. cent. to the 10th. cents They flourished esp. in Syria, Mesopotamia ,Egypt ,and Greece .But as an architectural intact evidence of this type of pillars (Stylites) the one in Um er-Rasas is considered as the first known example.

Monasticism had become an important and well-developed movement within the church, and its power was increased and extended by the remarkable examples of men like Simeon.

There are still extensive remains of the church and monastery that were built around his pillar (modern Qal'at Sim'an). He is not to be confused with his 6th. Cent. Namesake ,also a stylite, who took up residence on Mons Admirabilis ,just to the west of Antioch .Feast day,1 Sept. in the E.,5th.Jan in the west.

Simeon (Symeon)Stylites (AD.408-459).

It was during this time that Simeon ,the first and most famous of the pillar saints, was winning the veneration for his extreme self mortification ,which gave him such enormous influence not only in the vicinity of Antioch which claimed him as its own, but through the empire ,and made him a familiar figure in later times .Monasticism had become an important and well-developed movement within the church, and its power was increased and extended by the remarkable examples of men like Simeon.

Saint Simeon Stylite the first of the stylites or pillar ascetics was born on the Syrian border of Cilicia in 389 Or 390. After some time as a monk in the monastery of Eusebona(at Tell 'Ada, between Antioch and Aleppo),he went as a young man in AD 410 or 412,to Telanissos,about thirty miles east of Antioch,in the mountains, bordering the road to Berea which was not far.There he began his ascetic training and commenced his stylite existence about AD.417. . Here ,after several years of anchoretic life ,he mounted a pillar ,at first low ,but gradually

increased to a height of sixty feet high ;he lived on the top of it until his death in AD.459,occupied in adoration and intercession.

This novel austerity attracted to him a continuous stream of pilgrims from all over the Christian world , and was widely imitated .Many citizens of Antioch ,both officials and private persons of all ranks made the journey to saint's column to consult him,Or ask for his prayers or receive his blessings .Many stories of healing or aid in cases of evil were recorded. Both by personal intercourse and by correspondence, Simeon exercised considerable influence upon the world of his time ,converting pagans, awakening the careless, reconciling enemies ,and urging the cause of Chalcedonian orthodoxy .There are still extensive remains of the church and monastery that were built around his pillar (modern Qal'at Sim'an). He is not to be confused with his 6th. Cent. Namesake ,also a stylite,who took up residence on Mons Admirabilis ,just to the west of Antioch .Feast day,1 Sept. in the E.,5th.Jan in the west.

2:-The Church of the tower:

A small three naves church with simple plastered floor with annexed premises and different dwellings around. Being excavated in 2001 by the Department of Antiquities no mosaics were found to form any part of its floor .What was found consisted of compacted white plaster. The plan of the church was created as a small basilica with one apse, oriented East-West .It has three small naves separated by two rows of two arches. Central nave with apse and elevated presbyterium flanked by small rectangular chambers completely open on the lateral naves. Two out of three doors in the north wall were opening to the inside large enclosure surrounding the tower. The third one gave access to an annex. Remains of a door(which was blocked during antiquity) in the axis of the western wall ,are still visible.

A vertical shaft ,two meters deep, empty burial was found in the middle of the church .About one meter of the height of its walls existed. The walls have been constructed with roughly trimmed local limestone blocks .The falling remains of long slabs show that the arches have been supporting its roof. Pottery collected date to Byzantine and Umayyad periods.

3:-AREA AROUND THE TOWER

a. A Square Building:

To the North of the Stylite tower there exists a square of two storey building built with trimmed local limestone blocks .An exterior set of steps climb to its upper floor on the eastern side. Another set of steps merge from its interior façade of its western wall .These steps possibly climbed to a another missing floor or to the missing roof of the second floor. Even the function of this building is not quite understood but possibly it was used as a watching post constructed in that remote direction from the main Southern mainquarte of the town of Mefaa to control the Reservoirs and water tanks and the agricultural fields and even to give a kind of protection to the semi isolated Stylite and to the adjacent church .

There is a need for registration and study of the existing remains before implementing any restoration work.

IV- The Ancient Agricultural Fields

Created in antiquity by terracing the wadis (valleys)flowing towards the North, North-east and North -west of the castrum. This unit comprises two groups of buildings The first is a watch tower and a small church with associated quarries and cisterns, and the second is a building whose function is still undetermined, with an associated cistern

Cultivated terraces were built by damming the bottom of local wadis with low terrace walls. The bulk of the terrace in fill consists of colluvium composed of angular gravel in a matrix of fine sandy silt. In most cases the colluvium is topped by a 30 cm thick cover of fine Sander silt. The colluvium is very similar to the dirt originating from the excavations.

This dirt could be used to restore the cultivated terraces providing a cover of fine material on top of the dirt layer is applied, after comprehensive study and documentation of the whole system and identical reconstruction of the ancient walls..

Restoration of such structures(terraces) will be easy while simultaneously being a good solution for recycling the debris found during the excavations: rubbish stones could be used to rebuilt the walls and the earth to fill back the fields. Under the condition to keep their ancient configuration and utilization this action will:

- 1- illustrate tourists' understanding of an antique village's agro -economy in arid lands,.
- 2) improve site cleaning and avoid summer dry fallow land fires,

In relation to the antique fields, groups of ruined buildings are visible. Two of them are presently being excavated by Madaba Office of the Department of Antiquities (May-June 2001). The first is a tower. or guard post, with an internal bottled shaped cistern and a nice 1,60m large circular stone as door lock, associated with a church (?) (it may be an antique: oil press, quarries, and at least one large open-air rectangular cistern. The function of the second building is still unknown .A cistern still in use is associated with the latter. Most of the fields are in the protected area (outside the two sanctuaries), hut several also lie down beyond its boundary, especially to the west and north-west of the castrum.

V-The Reservoirs and Cisterns

They are of two groups ,the one group that surround the entire site and include bell shaped rock-cut cisterns, a large rock cut rectangular open-air basin, several large rectangular underground water tanks covered with arches and slabs and large debris mounds created by accumulation of the cisterns' silt removed from them, and of the towns refuses.

The other group is that is located at the Stylite complex area. These ones are huge reservoirs rectangularly hewn in the bed rock.

Material of Dating:

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History of Development

A-Before Byzantine Era

The material evidence collected in the complex during the archaeological campaigns fits with the historical data which comes to us in the written sources regarding Mefaa.

There was an occupation in the outer quarter of Kastron Mefaa beginning in the Iron II period ;to that era belongs the basalt column base ,a scarab and a group of pottery sherds found below the Chapel of the Column.

In the Late Roman period,3rd.to 4th.centuries A.D. there may have been an official building at the site indicated by a Latin inscription found in the eastern courtyard of the Church of Saint Stephen; from that same period there are also Thamudic and Nabataean inscriptions reused in the eastern wall of the same church and of the Church of Bishop Sergius, a sculptured ram, part of a lintel found reused in the apse of the Courtyard Church, and coins ,as well as other reused architectural elements.

Despite their extremely fragmentary state ,the many sculptured liturgical furnishings such as altars ,reliquaries ,chancel screens, small pillars, columns and capitals, contribute significantly to the history of the complex. The original liturgical furnishings were removed after the iconoclastic crisis. Several fragments bear evidence of the removal of sculpted figurative motifs. These were replaced by a second group of furnishings carved in oil shale with abstract motifs characteristic of the range of designs used by the local tradition.

The dating of A.D.756 for the upper mosaic pavement that decorates the presbyterium of the church of Saint Stephen gives an absolute chronological date which is fundamental for establishing our knowledge of the material culture of the early Arabic period .Since the pavement gives evidence of numerous vicissitudes before the building was abandoned, we propose a ninth century date for the pottery that is associated with the last phases of life in this sector of the city.

B- The Byzantine and Later Era

The first Byzantine building built in the area can be identified in the structures unearthed below the Church of Saint Stephen. In the second half of the sixth century(A.D.587), the Church of Bishop Sergius was built and paved with mosaics. To the same period can be dated the construction of the Church of Aedicula.

The complex underwent major changes in the Umayyad period ,and the area in front of it was restructured with the construction of a baptistery to the north and a funerary chapel to the south. Almost certainly the Church of the Courtyard was built in concomitant to the construction of the Church of Saint Stephen(8th.century A.D.),and served as between the outside and the Church of Bishop Sergius, from which it was separated by a simple balustrade in plutei of bituminous schist rather than a wall. The construction of the Chapel of the Column is dated to the final phase of the Umayyad period. In the year A.D.756,the mosaic floor of the presbytery inside the Church of Saint Stephen was laid anew.

One of the main questions raised by this astonishing discovery is : when was the Complex of Saint Stephen at Um er-Rasas abandoned by its inhabitants and why? To answer this central historical question it is important not only for Um er-Rasas but also for urban life in the region ,that we are still working at Um er-Rasas.

To date, there is still no absolute evidence to fix the time of the final abandonment of the ecclesiastical complex of Saint Stephen. However ,it would not be far from the truth if it is suggested that the ninth century A.D. for that event.

COMPARATIVE STUDY

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1-The Abundance Of Churches:

Population and Settlement intensity reached its peak in most of Jordan during the Byzantine period ,as abundantly attested by the archaeological record and field results of excavations and surveys in many parts of the country. Um er-Rasa provided a strong market and religious centre in this period .Circumstances provided the security for population to expand and flourish throughout the countryside .A healthy economy, utilizing the available resources and capitalizing on established trade routes covered the region, supported this population and prospered within the zone of imperial security. A religion that had a local genesis became a prominent social and cultural force within the Byzantine empire ,endowing the region with status and attention .An expandind religious

community enjoyed the highest political support and attracted pilgrims as part of the Hoky Land itinerary, albeit on the periphery. The healthy economy and that force of the religion is epigraphically and archaeologically attested by the abundance of churches constructed by donations of individuals or groups of individuals, sometimes from one family. Sometimes a village was a donor. Wealth donors possibly sought divine favour through such bequests, encouraging this proliferation. In this aspect the abundance of churches, the important liturgical and ecclesiastical rank and status of Um er-Rasas could be understood by the high abundance of its churches, than other sites in Jordan well known as of having multiple churches, more than adequate for their population base. Umm al-Jimal had fifteen, eight have been discovered at Khirbet as-Samra, and eleven in Madaba. In the case of Um er-Rasas sixteen churches and chapels have been detected, many of them were excavated. (MacDonald 2001:466,495).

2- Of the Mosaics:

From the comparison between these Mephaaite (of Um er-Rasas) mosaics and the mosaic floors of the churches in Madaba and the Memorial of Moses on Mount Nebo (40 kms. far west), we can deduce that several mosaic workshops were working in the diocese of Madaba at the same time. But even though they seemed as if they used the same sketch book circulating among them, they differentiated from each other in the final result. The best example of this sketch book is the gazette that seen in the church of the Lions church at Um er-Rasas and in the chapel of the Virgin Mary in the Memorial of Moses on Mount Nebo. But the churches of the diocese of Madaba or elsewhere did show that geographical documentary record as that depicted at St. Stephen church of Um er-Rasas. One more point is that the mosaic floor of St. Stephen, with its numerous inscriptions which accompany the decorative composition opened a new vision for the historical knowledge of the Christian community during the first two centuries of Islamic domination in the region. The mosaic in fact was finished in 756 AD, according to one of the two dedicatory inscriptions, and depicts the cities of Jordan, Palestine and Egypt.

3-Of the Stylite Tower:

Monasticism had become an important and well-developed movement within the church, and its power was increased and extended by the remarkable examples of men like Simeon the Syrian .A partial list of the Monophysite monasteries in the Province of Arabia, dating to c.575, survives in the 'Letters of the Archimandrites'. There were 137 signatories, all heads of monasteries in the province. (MacAdam.1994:59). The Stylite Pillar or tower was an Eastern (Syrian) phenomenon. Although its founder was the North Syrian Saint Simeon the Stylite in Antioch region about 417 A.D and even though this phenomenon (Asctics) extended to other countries such as Egypt ,Greece and Mesopotamia during the Byzantine era till the 10th.century but as an architectural intact evidence of this type of pillars (Stylites) the one in Um er-Rasas is considered as the first known complete example. It is mentioned that in Antioch there are still existing the remains of the stylite pillar of St.Simeon and the remains of its church .But those remains do not make it as complete as the one in Um er-Rasas. On the other hand the tower of Um er-Rasas is expected to be that one referred to in the mosaic inscriptions at Mukhayyat Church(5 km. west of Madaba). This inscription is mentioned as the first epigraphic evidence for a stylite in the Madaba region and since there has been no other tower of this type detected in all of Jordan this hypothesis is strongly proved as real. This hypothesis is enhanced by the depicting of this tower ,as a column mediating a small church at the mosaics of Saint Stephen of Um er-Rasas properly.

4-Of the Castrum (Camp):

As it is known the camp of Um er-Rasas was one of the series of the military camps of the Eastern Roman Frontiers. Of those camps one can mention the Lejjun camp(40 km. far to the south, the camp of Alhumeima(about 200 km. far to the south),and the camp of Udhruh(about 170 km. far to the south).

In comparison they all served the same purpose of accommodating the Roman troops and cavalry. The camp of Um er-Rasas extended its life in the Islamic(Umayyad and Abassid) Periods since it was related with the civilian ecclesiastical and Monastic quarter and its use was turned to become civilian rather than military in those later periods .The life of the other camps stopped or deteriorated after the Byzantine Period. The importance of that Monastic fame of Um er-Rasas in the end of the Byzantine period in the area is well attested in the literature texts. The story of the meeting of Prophet Mohammed ,while he was trading between Mecca and Syria with monk Buheira of Mefaa is well known.

Monks of Mefaa were known as dedicated to Christianity and its affairs in a way that gave them the fame of believed knowledge and predicting .

5- Of the Ancient Agricultural Fields

Impressive network of terraces, which covers much of the land to the north of the town of Um er-Rasas, were terraced or perhaps lying behind dams crossing the small wadis that flow from this plateau where the castrum is located. The assumption of small dams is validated by the presence of small rectangular structures in the middle of each wall possibly water weirs , rather than for collecting water. However such dams were built to trap silt and enough water to allow a slow soil impregnation, an effective substitute to irrigation. Eventhough none of these features have been so far excavated or properly investigated in Jordan, the group of Um er-Rasas ancient fields (such dam-like structures can also be observed along each wadi around the site. within and around the archaeological park perimeter) are the best preserved of this type in Jordan and constitute a comprehensive ancient agricultural system.

AUTHENTICITY AND INTEGRITY

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The including the camp and all of its components has been highly preserved in a unique way by being deserted and unoccupied after the Umayyad and Abassid (Islamic) periods for about 1200 years. Thanks to its being far from any urban planning or adjacent to centres of urban communities its integrity and authenticity has been well preserved . Fortunately ,the neighboring modern village is developing outside the ruins along the asphalt road which joins Um er-Rasas with Madaba.

The ancient components have not been impacted by any actions of modification or modern building, and the function of the majority of these components correlates to their original old use and authenticity.

The two main periods of the history and integrity of the city of Um er-Rasas(Mefaa) are still well preserved. The Roman era being the first

period is well represented by the fortified camp, and the Byzantine era being the second main period is well represented by the different components of the open northern quarter besides to some elements added to the fortified camp as a requirement of the new official religion (Christianity) .

Even though the Roman/Byzantine fortified camp is still thoroughly unexcavated its original architectural and designing fabric could be clearly seen on the surface since it has never been covered by accumulations of any later community after it was deserted in around the ninth century A.D.

The authenticity of the open Byzantine quarter was confirmed by the excavations and field studies implemented during the last two decades .A lot of Byzantine/Umayyad churches have been uncovered. Their original architectural and artistic fabric of mosaic pavements proved authentic testimony. The other scattered well preserved Byzantine architectural elements and structures confirmed that authenticity and integrity including the Stylite tower ,the reservoirs and the church of the tower.

Ownership of the Site And Zoning

The archaeological sanctuary is owned by the Department of Antiquities.This Department is in the process of acquiring the land around the archaeological area and the area extending from the tower to the fort, thereby solving zoning issues related to site protection.

This buffer zone is being defined on the basis of the cultural , ecological and socio-economic diagnosis.The various topographical surveys outputs of UAR site are now available.A map of the Archaeological Park and its buffer zone is being designed as part of the preliminary management plan. Thematic design maps will be produced as well (landscape, plantations.....)

Urban Development and Physical Planning- and Urban Zoning

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Site Zoning

Zoning is considered as an essential mechanism for the management of a protected area whatever it is ,natural or cultural . Site zoning forms the basis for any further conservation and tourism development. It is a prerequisite to an efficient implementation of the project and the future site management plan. Zoning being adjusted to the cultural, ecological and socioeconomic situation of each type of land.

Periodic findings will necessitate zoning adjustment over time. For example, if new key archaeological discoveries occur in the agricultural and grazing zone. a new sanctuary might be established with specific regulations and possible tourism development (with subsequent increase of site carrying capacity).

The proposed zoning of the UAR site is based on the distribution and importance of the archaeological remains, on the current land use and on the landscaping values of the site. The land tenure constraint is in the process of being defeated through the DOA land purchase.

The Department of Antiquities has declared to the local population that it will buy the entire land within the archaeological Park boundaries including current buildings. Given the archaeological restrictions put on this land by the DOA owners are interested to sell. For example, they can no more build any houses or any type of constructions or planting trees. All land reclaim being under the control of the Department of Antiquities local owners' alternatives are restricted.

An urban planning has been designed in 1996 for UAR by the Ministry of Planning, including zoning of already built areas and urban extension, which has initially been planned on each side of the road, but which still finally be limited on the opposite side to the archaeological site.

In 1999, the Ministry of Planning and Public Works prepared a general Master Plan of the extension and reorganization of the neighboring modern town of Um er-Rasas . That document stated authorized constructions to be built on both sides of the Madaba road and in the south-western part of the area of the site. Currently, only construction to the west of the road are being developed (eg. new Baladyeh building). All constructions planned on the east side (archaeological park) are apparently cancelled and the land put under the archaeological Law.

Um Er-Rasas (Mefaa) Archaeological Park(AP) Project of Protection /Management

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An EU-funded '**Protection and Promotion of Cultural Heritage Project**' is being in the process of implementation. A proposal of the project and management plan has recently been finished.

The main objective of the project is to promote the cultural heritage of Jordan and encourage the tourism to the region and to the country in general thus opening the area to new ideas and ways of living and consequently promoting the cultural, social and economic development of the local population

The "Umm-Ar-Rasas component" is part of the sub-project << protection and promotion of Jordan's cultural heritage through direct site preservation and presentation at Umm Ar-Rasas and the nearly adjacent site of Lehun . Um er-Rasas is intended to be turned into a national Archaeological Park. The Management plan is being in process and the implementation will start very soon in the works of preservation and presentation.

Stakeholders Involvement

As mentioned in the TORs, the development of UAR site *is expected to bring a source of income that will contribute to the economic well being and development of the local population*"

For such reason and in order to ensure sustainability, the UAR conservation & tourism development project should involve local stakeholders including local population in the project design and management. Taking into account local population may avoid possible conflicts in the next future regarding land use (not only archaeological area) and socioeconomic development of this area.

A workshop would be organised by the relevant Jordanian authority (MTA) in collaboration with the consultant to inform local population and local stakeholders, of the objectives of the new AP and the need of a consensus in the acceptance of this project.

Although this area is quite of the desert, the consultant shall consider the existing human activities in and around the UAR site. As a matter of fact a few families presently live close to the UAR site

Therefore, the consultant will assess human activities in such area, links between local population, their production system (agriculture; livestock breeding/grazing handicraft) and the archaeological site preservation .He will analyse the socio-economic conditions required to this AP protection and the flay in which population could benefit from tourism development . As a result, a zoning shall be proposed in order to define specific areas for monuments conservation , tourism development and socioeconomic activities control .

MANAGEMENT PLAN AND OBJECTIVES:

The Purpose of establishment of a Management Plan for the Old City Of Um Er-Rasas are:

1- Preservation of the unique character of the Site in terms of its unique identity and integrity as including different components of fortified military type, open civilian habitation ,liturgical and ecclesiastical complexes and old agricultural technology of fields terracing and water collection and damming.

2- Preservation the unique character of the site in terms of cultural ,architectural ,religious and aesthetic values.

3- Preservation of the character of the Site in terms of its unique artistic and historical values. Good evidences are available in the components of the site indicated that the art of mosaicism was lengthened one century more to the ,already, known history end of that art in the east. (Extension from the end of the seventh to the end of the eighth century) .

The mosaic of Saint Stephen provide further evidence of the existence of an organized Christian community in the diocese o oof Madaba, at the end of the 8th Century. The late date of the mosaics of the Church of Saint Stephen opens what was closed chapter of Jordanian history relative to civil, religious and artistic interests. We now know that at the end of the eighth century A.D. an urban flourishing community still existed at the site. That community was religiously and administratively organized and exhibited an unexpected artistic vitality. That Christian community was governed by a deacon with a bishop and local clergy .

- 4- preservation of the physical fabric whilst adapting to modern life
- 5- The development of tourism and turning it into an active economic contribute in the area and to the local community.

Content Of the Management Plan

The draft management plan will comprise :

- 1-Investigations / diagnostic outputs.
- 2- Synthesis of site values, problems (threats and constraints), selected strategies for site conservation and development
- 3-Delimitation (boundary development) and zoning of the AP (+ buffer zone) .
- 4-Specific actions in archaeological areas I (Castrum and open Quarter Complex) and II (Stylite tower complex) (six basic zones)
- 5- Overall site presentations physical measures, landscaping design, tourism infrastructure (roads and trails network, Visitors Centre, entrance gate, parkings,..)
- 6- Proposals for the management structure of the AP and its buffer zone(manager, guards, ticket collectors, activity organized guides, extensionists, ...)
- 7- Proposals for tourism development (incl. positive Socioeconomic impact and mitigation measures of negative impacts)
- 8-Tentative time schedule and cost estimate of proposed actions.

AGENCY/AGENCIES INVOLVED WITH MANAGEMENT AUTHORITY

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- 1. The Ministry of Tourism and Antiquities is the main umbrella.
- 2-The Recent Main Agency that forms the umbrella of implementing protection and Management is the Department of Antiquities in carrying out its authority of

doing the requirements of the Law of Antiquities .

- 3-The Forthcoming Local Unit of the Management of the Um Er-Rasas Archaeological Park will be entrusted with a mandate from the Ministry of Tourism and Antiquities to implement the protection ,management ,controlling ,monitoring and conservation issues.
- 4- The Municipality of Um Er-Rasas is involved in controlling the urban planning of the adjacent modern town and community .

Recent Level of Management and Contact :

- 1-The Main Headquarters of the Department of Antiquities in Amman
Amman : Third Circle , Queen Misbah Street ,
Director General , Tel. (00 9626-4644336), Fax :(00 9626- 4615848).
- 2-The Department of Antiquities of Madaba :

Protective Measures and Means of Implementing them:

1. The Law of Antiquities of Jordan No.21/1988.
2. The Group of Instructions of Archaeological Excavations and Field Surveys Issued from the Department of Antiquities.
3. The Forthcoming (Law) Regulations of the Um Er-Rasas Archaeological Park (Reserve).
- 4- The Inspection of the Department of Antiquities for Enforcing the Antiquities Law and its Regulations of Building
5. The Municipal Inspection for Enforcing the Law of Building and Urban Planning.
- 6- The Tourist Police .
- 7- The Local Police Station.

Approach and Ethics

The works design proposals for UAR should be consistent with recognized international principles and recommendations (UNESCO, Venice Convention).

The project will be conceived according to a global vision of conservation, restoration, enhancement and development based on site specific characteristics and identity;

The proposed works will take into account the preservation of the physical integrity of the area and their archaeological and landscaping values, with respect of the local socioeconomic balance

The present study should design preliminary measures which aim at inhibiting any construction projects both private and public in and around the site without consideration for the presence of archaeological vestiges (this matter being of extreme concern from a cultural resource perspective);

The project will constitute a major component for the local, and even regional, sustainable development apart from tourism handicraft and agricultural (grazing) activities might be recommended or encouraged in the site vicinity, complementary to the overall objective of the project. With this view a labeling for local-made products could be created,

5- The project will prepare the basis for the establishment of a management structure for conservation visitors management, maintenance and for coordinating site and buffer zone activities (channeling income-generating activities to the local community)

Boundary and Fencing Issues

Once the AP still officially settled and gazetted boundaries are needed to provide it with a permanent visible demarcation and to facilitate regular control. In addition and as required in the terms of reference, archaeological areas I(Castrum and open Quarter) & II (Tower Complex area) deserve a specific physical protection (monuments buried, remains and objects, vegetation). However, one can hardly vanish for fencing the whole site, consultant has to assess the real possibilities of separated fencing. Fencing has to be light and well adapted to the site's features. Topographic elements, existing stone-made terraces, shrubs and plantations have to be used, as well as the agricultural and range land areas (between Archaeological area I and II) in order to reduce landscaping impact. Whatever the fencing design, it is suggested to hide most visible stretches with vegetal hedges wherever the soil is deep enough to allow the growing of desert-adapted shrub species (for reducing the cost of maintenance)

Landscaping

A rapid landscape analysis of the Archaeological Park and its surroundings will be carried out , based on concrete criteria (cultural and natural components, human activities, visual analysis) .The purpose is to assess and roughly map the site landscape values and sensitiveness. From this analysis, the visual impacts of the proposed physical works will be evaluated: positive (enhancement of the landscape) and negative impacts (obtrusive constructions, networks, ...); in that case re-designing or moving such works will be needed.

Positive impacts of the site landscaping design will be mainly achieved through the enhancement of some landscape components such as rock forms, topographical slopes and terraces, certain ruins, natural and/or artificial ecosystems). An important aspect of the landscaping design work still be the use of autochthonous vegetation and plants.

Reduction of dust and soil erosion and dissimulation of some obtrusive engineering works are secondary . Important objectives to be achieved in particular through landscaping. Soil potentialities will be rapidly assessed within the Archaeological Park in order to identify areas where and which indigenous specks of plants (herbs & grass, shrubs, trees) as well as vegetation types (hanging creeping,..) could be grown with these different objectives in mind .These assessment outputs will be taken into account while zoning the site. The study still therefore indicate the species to be planted and the rehabilitation areas, depending on the micro-ecological conditions and the goal to be reached .Drought resistance and rusticity will be determinant criteria in order to reduce water consumption as much as possible (restricted to the first years of the plantations).

AGREED PLANS RELATED TO THE PROPERTY :

The Proposed Plans for the Archaeological Park.

1-The Main Zoning Plan for the Archaeological Reserve of Um Er-Rasas that was already approved and ratified by the Ministry of Tourism,the Ministry of Municipalities ,the Ministry of Planing and the Ministry of Public Works in 1996 and 1999.

2-The New Management Plan ,which is still in the process of approval and ratification.

Sources of Finance:

- 1- **The recent Funding** for the Old City of Um Er-Rasas comes from the government budget ,and is directed through the Department of Antiquities (Government) .
- 2-**The Funding for the Forthcoming** Um Er-Rasas Archaeological Park in the Beginning and in the short term will be allocated from the EU, and will be intended for studies and the works of the real establishment of the infrastructure of the Park and for the urgent field works of cleaning ,excavating, consolidation, conservation ,protection , training on management .
- 3-Funding for the long term management will be Self Generated by visitors ticketing and other related pending activities.
- 4- Any Funding Donation or contribution from any agency will be welcomed and accepted and will be referred to on the Donors' Board of the Park.

SOURCES OF EXPERTISE :

- 1- Recently ,the management of the site is in the hands of the Department of Antiquities of Madaba.
- 2- For the long term , the management will be in the hand of the local Management Unit which will be establishment according to the requirements of the proposal of the forthcoming Management Plan.
- 3- The Conservation will be implemented by the Conservation Unit of the Department of Antiquities .The Unit includes conservation architects ,engineers , archaeologists and specialized conservators. Any Assistant from any other local or international agencies will be welcomed and accepted .
- 4- Training will be allocated locally ,if adequately available , at the local institutions and at or by international institutions.

VISITOR FACILITIES:

A .Recent Situation :-

- 1- Recently very limited ,available in the form of
 - a- A locally posted small police station for the protection of the site and security of visitors.
 - b - A modest small visitor facility building, including toilets.
 - c- Tap water is available .
 - d- Part of the archaeological structures is sheltered.
 - e- Access roads of good quality are available.
 - f- A post office is posted there ,provided with telecommunication and mail facilities .
 - g- A health governmental center is posted there to serve both the local community of modern town of Um Er-Rasas and visitors .

B. Planned to be :-

- 1- The Management Plan of the Park includes the conditions of establishment of a Standard modern Visitors' Center Provided with all required facilities including a presentation unit and Tour Guides.
- 2- Sign Posts will be constructed in different locations throughout and around the site .
- 3- Vehicle's Parking areas will be constructed.
- 4- Rest house will be provided.
- 5- Souvenir Shops will be available.

ESTIMATED TOURIST STATISTICS:

- 1- The recent situation and the available facilities of the site make the number of visitors very modest. The recent average is about 9000 visitors a year.
- 2- According to studies included in the Draft Proposal of the Management Plan the number of visitors will be doubled many times. The site is very pending with its varied and interesting components, especially when it is included with other neighbouring sites on the map of visitors' route after being developed and well qualified as a touristic attraction and destination.

STAFFING LEVEL:

Recent Staffing :

1- The recent situation of staffing is modest, consisting of one official in charge of showing the site components and four site guards .Added to them a small police station, posted to help guarding the site and ti insure security of visitors.

Planned Staffing:

The Proposed Management Plan enforces the need for the training and employment of a highly qualified staff that may guarantee and meet the requirements of standard protection and management.

FACTORS IMPACTING THE SITE :

a. Development Pressure:

- 1 - In the recent situation, two houses with modern gardens exist on the western side of the land parcel that separates the two governmental owned archaeological sanctuaries. This small problem does not affect the archaeological sanctuaries properly. But since the terms and conditions of the Park require the entity of the site, the Department of Antiquities is in the process of acquiring those two private properties.
2. The modern town of Um Er-Rasas is fairly far from the two Sanctuaries and from the limits of the proposed buffer zone of the Park. The factor of urban development of the modern community does not constitute any problem.

b. Environmental Pressure :

- 1- The Site is not close to any factors of pollution.
- 2- The rainfall at the site location is limited (average about 200-300 mm. a year).Little snow is very rarely attested in some sparsely separated years in the site region .

c. Natural Disasters And Preparedness:

- 1- No disasters of any type is witnessed.
- 2- The two archaeological sanctuaries are off way of any floods .No threatening streams exist in the area. Besides that the sanctuaries exist on a raised plateau.
- 3- The proposed Management plan will deal with the issue of preparedness.

d. The Visitor/Tourism Pressurs :

- 1- Average of visitors/tourists to the site is still very modest.
- 2- The proposed management plan will deal with this issue in detail if it becomes a problem in the future.

e. Number of Inhabitants:

- 1- No inhabitants do stay or live within the archaeological sanctuaries or within the proposed buffer zone ,except the two gardened houses which are to be acquired by the DOA very recently .

MONITORING

Key indicators for the measuring the state of Conservation:

1-The Principal indicators :for the state of conservation in the site are a number of buildings requiring medium to extensive interventions such as the the Stylite Tower, the adjacent Square building, the southern wall of the enclosure of the fortified castrum and some pavement floors.

2-Other indicators are:

- The Annual Budget
- The Number of Persons involved in implementing of the conservation of related projects.
- Number of periodical Documentation and recording of the state of buildings and projects.
- The Continuation of excavating other portions of the site.
- The number of visitors.
- The need for the construction of more infrastructure.

Administrative Arrangements for Monitoring:

a-In the recent situation

- 1- the Department of Antiquities in Madaba make spaced inspection tours on different sites including the old city of Um Er-Rasas .
- 2- The local guards make little unscientific monitoring while inspecting the case of security of the site from time to time .

b- The proposed management plan:

enforces the need of scientific regular monitoring by the trained local unit of management .

Results of Previous reporting exercises of Monitoring

The results of the follow up for the last few years showed that:

1-There was a need for the documentation of the Stylite tower since cracks and deterioration were noticed on the facades of the tower ,especially the northern one.

2-The ecclesiastical complex of Saint Stephen was sheltered to protect it from weathering and deterioration and to achieve the show of its components as a touristic attraction.

3-In the absence of adequate conservation the mosaic floors of other excavated churches were deliberately covered with loose sand to keep them in situ and protect them from deterioration and flaking .

4-A project of zoning the area of the old city and turning into a protected area in a system of Archaeological Reserve or as a Zone of Special Regulations of Urban Development was created in the last six years ,and lately the project was promoted to the status of An Archaeological Park

Bibliography

- Brunnow, R.E.: A. Domaszewski, *Die Provincia Arabia*, II, StraßBURG
1905 1905, 63-72
- Bujard, Jacques and Piccirillo M.: Les Eglises Geminees D'umm Er-
1992 Rasas (Foundation Max van Berchem), *Annual of the
Department of Antiquities of Jordan*, XXXVI, 1992, pp. 291-306.
- Ch. Clermon-Ganneau, "L'inscription de Oumm er-Rasas" *RAO*, II, 185-
1898 188, 1898
- Downey, Glanville, *A History of Antioch in Syria, from Seleucus to the
1961 Arab Conquest*, Princeton, New Jersey, 1961, p. 453-
455, 459-461, 465-466.
- MacAdam, H.I.: Settlements and Settlement Pattern in
Northern and Central Transjordan, ca. 550-750, in
G. King and
A. Cameron (eds.), *The Byzantine and Early Islamic
Near East*
. II, *Land Use and Settlement Patterns*, NJ: Darwin.
- MacDonald, Burton, Russell Adams and Piotr Biekowski : *The
Archaeology of
2001 Jordan*, England, 2001.
- Michele Piccirillo and Taysir Attiyat: "The Complex of Saint Stephen At
1986 Umm Er-Rasas-kastron Mefaa, First Campaign, August
1986" *Annual of the Department of Antiquities of
Jordan*, vol. xxx, 1986, pp. 341-351
- Oxford Dictionary of the Christian Church*, "Simeon Stylites, and
Stylite", ed. F.L. Cross, second
1974 edition, 1974, p. 1276-77, 1317
- Palmer, E.H.: *The Desert of the Exodus*, II, Cambridge 1871, 498-500.
1871
- Piccirillo, Michele: "The Mosaics at Um er-Rasas in Jordan" *The Biblical
1986 Archaeologist*, vol. 51, Nov. 4, 1988, pp. 208-213, 227.
1986 *L.A.* XXXVI, 1986.

- 1997 : "Umm Er-Rasas" *The Oxford Encyclopedia of Archaeology in the Near East*, ed. Eric M. Meyers, Oxford, Oxford University Press, 1997, vol. 5, pp. 279-281.
- Tristan, H.B.: *The Land of Moab*, London, 1874, 140-143.
1874
- Wilken, Robert L. : "Byzantine Palestine, A Christian Holy Land", *The Biblical Archaeologist*, vol. 51, Nov. 4, 1988, pp. 214-218.
1987



Aerial photo of the Town of Um er-Rasas



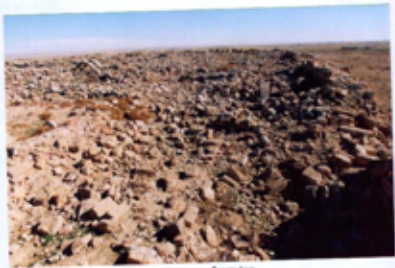
The Southern Main Part Of Um Er-Rasas as seen from the north before works of excavation. In the foreground is the Church of St.Stephen (1987)



The Two Quarters of Um er-Rasas
As see from the north. St. Stephen Church in the foreground



The Walls of the Castrum



The Castrum as seen from top



People at work in StStephen Church



Terraced Agricultural field (or a dam)



The Square double Storeyed Building in the middle ,the Stylite Tower in the background, the Reservoirs in the foreground as seen from north.



Reservoirs hewn in the bedrock in the foreground
Dammed rain water in the background



Detail of the reservoirs, one still roofed with arches and slabs



Aerial View of
The Tower with its Church to the South



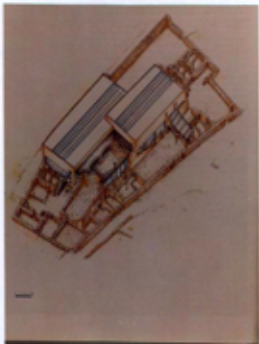
The Tower of Um er-Rasas



A watch room with rolling stone door among the agricultural fields



Another watch room with farmstead



The Reconstruction of St. Stephen Complex



The Church of the Stylite Tower



The Church of Ardicula



An Aerial View of the Church of Ardicula



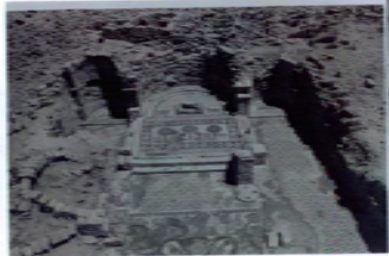
The Twin Churches Inside the Castrum



As seen from the North, St. Stephen Church in the Foreground



The Twin Churches



The Church of the Lions in the
Quarter-Outside the Castrum



The Church of the Holy Well



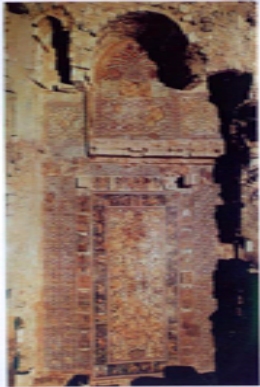
Central panel of the sanctuary around the Altar : Work of the Mosaicist Staurachios, son of Zada from Hesban , and Eusebios (AD 756)



A Niche and cross on the Eastern facade of the Stylite Tower



St. Stephen Church :-The eastern end of the northern aisle with the Portraits and names of the donors



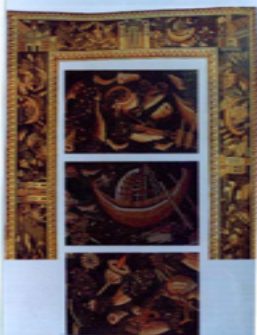
Mosaic floor of the Church of St.Stephen



Dedicatory Inscription and Series of donors (St. Stephen Church)



Double Architecture representation in the carpet of the Nave of the Church of Bishop Sergius(AD 587)



Details of the Nilotic Scenes (St. Stephen)



Esbozo (Bosquejo of modern Jordan)-St. Stephen Church



Lindisfarne (Lindisfarne of modern Jordan)-St. Stephen Church



Philadelphia (St. Stephen Church)



Malabo (Saint Stephen Church)



Caserta on the Sea (Keserli)



Lydla (Dostluq)



The Holy City of Jerusalem



Al-Karak

Elisav Sengler
Church—Detail
The Earth



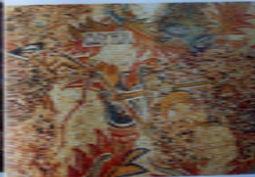
Elisav Sengler
Church—Detail
From View:



Elisav Sengler
Church—Detail
From the same
mosaicking
the art



Elisav Sengler
Church—Detail
From View:
Pivoting





Bishop Sergius Church (Detail of the carpet
The Central area of the Nave



Bishop Sergius Church (Detail of the carpet
The western area of the Nave

Sergius Church-Double Architrave representation

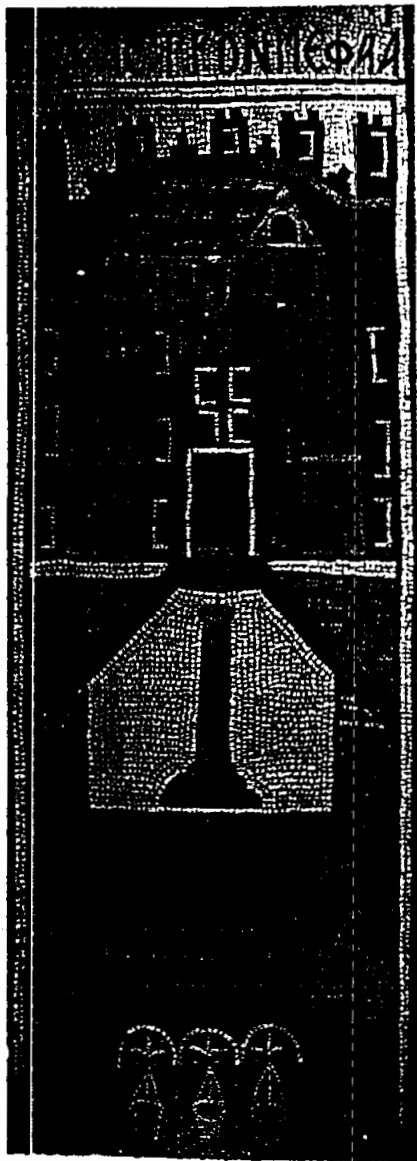


Sergius Church-The Eastern Area of Carpet



Sergius Church: Architectural representation

The Hashemite Kingdom of Jordan



European Commission

Project n° JOR/B7-4100/IB/1999/190

Protection and Promotion of Cultural
Heritage Project.

Preliminary design for Umm-Ar-Rasas

FINAL TECHNICAL REPORT

September 2001

COPY



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I. Executive Summary

All answers to the questions concerning the site were obtained from various interlocutors and available documents

One important doubt remains however, concerning the land property, yet a fundamental issue for the future safeguarding of the Umm ar-Rassas vestiges. In spite of a variety of formal steps and requests this issue is still not clearly addressed. This is maybe due to the purchasing procedure which has been initiated by the Ministry of Tourism and Antiquities. However, the simple fact that this procedure of land acquisition is on going ensures there is a will to implement it. The formulated proposals, which are gathered in the chapter 'Management Prescriptions', will thus be based on the assumption that the entirety of the area of the so-called " Archaeological Park " has been purchased and owned in the name of the Department of Antiquities.

Works already undertaken on the site demonstrated the geological homogeneity of the underground which is made up of sub-horizontal layers of limestone rock of good mechanical qualities. However, the examination of the ruins and their surroundings reveals the existence of many artificial underground cavities, even under the pavements of mosaics (cisterns, graves...). The presence of these fragile zones are potentially dangerous for the visitors (fall risk) as well as for old and modern constructions (possible cracks, collapse). They justify the establishment of a detailed mapping of their location (this work being also of interest for archaeologists). This work should be carried out by the sole use of adapted, non destroying techniques (radar, magnetometer,...), making possible, in particular, to determine the volume and the state of conservation of the cavities. No work of restoration, installation or construction should be undertaken without such a detailed mapping of the immediate underground, especially within the St Stephen complex where prove of a large bottle type cistern under the Bishop Sergius mosaics and underground cavities (tombs ?) under St Stephen church, were provided.

Concerning site management issues, a consensus was achieved to consider the fencing of the whole "Archaeological Park " as not desirable. The selected option will preserve the open aspect of the landscape and allow a controlled land use by Bedouins in-between the two archaeological poles. Continuing traditional grazing and cropping activities in this area is essential for economic and human reasons, as well as for safety and site maintenance. Would this option jeopardise conservation of the archaeological vestiges and/or the tourist development in the near future, the decision will then be taken to enclose the protected area. If this occurs, 'natural' technical solutions with lower visual impact will be considered, such as a hedge of prickly pear.

In the same way, extrapolation from the current amount of visitors leads at the beginning to propose only limited tourist infrastructure for the site. This infrastructure (visitors' centre and annexes) will be designed according to a modular principle, therefore being developed if needed. The visitors' centre complex will be established to the west of the Castrum, along the Madaba road side. This area appears as being the most suitable, offering the greatest number of assets : accessibility, proximity to the modern village, presence of various technical networks (water, MT and BT electricity, telephone...), over viewing the whole site as well as far beyond. Apparently, there is no antique structure in this area.. Moreover, the construction of the VC should be an opportunity to concentrate and reorganise a number of public service buildings for the modern village, such as the hospital and the post office. Existing obtrusive buildings within the archaeological perimeter should be destroyed.

The major problem relates to the safeguarding, restoration and presentation of the archaeological vestiges, more particularly the mosaics. Outlines emerges from the present study :

- respect of the international conventions and reversibility of installations (except whenever the safety of the visitors is concerned),
- as large as possible integration with the site environment by the use of local materials, colours, etc ;
- definition and specifications of a construction system for the shelters covering the mosaics : flexible and transposable, if needed, to all structures already excavated or to be excavated,
- respect of the general volumetry of the ancient monuments to be protected, without overlapping the bordering zones,
- appropriate technology for the light roofing structures for the shelters : easy made and inexpensive, feasible by Jordan manufacture.

Consideration of the preservation of the general aspect of the site, including the remarkable however dangerous " fields of ruins ", leads to emphasise the development of a precise and limited itinerary network, in order to secure the visit of the ruins. The civil liability of the Jordanian Service of Antiquities should clearly be restricted to these itineraries. Such itineraries will adjust as much as possible to the ancient urban physical structure, be adequately signposted and panelled, in consistency with the information dispatched in the VC. In particular, their design will allow to resist bad weather conditions, as well as human-related degradation.

II. Foreword

The SECA experts group, entrusted of the elaboration of the Preliminary design for Umm ar-Rassas, within the frame of the Protection and Promotion of Cultural Heritage Project in the Hachemite Kingdom of Jordan financially supported by the E.C. was composed with:

Mrs Anna OHANESSIAN, anthropologist
 Mr Zaki ASLAN, architect, conservation design specialist
 Mr Bernard BOUSQUET, tourism & management planning expert
 Mr Morgan de DAPPER, geologist, geomorphologist
 Mr Laurent DUFOIX, architect, heritage curator
 Mr Rémi GROVEL, buffer zone socio-economic specialist
 Mr Gaetano PALUMBO, archaeologist, conservation specialist,
 Mr Nicolas PAULI, civil engineer, light structures specialist
 Mr Jacques SEIGNE, architect restorer, team leader

III. Acknowledgements

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The members of the team want to thank the different officials and experts met in Jordan :

E.C. Representation in Amman
 Mr Fernando GARCES DE LOS FAYOS, First Secretary
 Mr Mario RIZOS, Expert MEDA TEAM
 Land and Survey Department
 Madaba area Gouvernor
 Mr Qasem ABUL-HEIJA
 Meteorological Department at Amman Airport:
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 Mr Ahmad SHARANI
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 Mr Hijazi SA'UD ASSAL
 Umm ar-Rassas Municipality
 Mr. Jazzaa al- Dleiman, Mayor, and members of the Municipa

Representatives of the Police and different local institutions in Umm ar-Rassas

The Umm ar-Rassas community members

All the friends and people who helped us during our mission, especially Mme Affaf MARAKAT and Mr Ghazi HIJAZI

... and, of course, Mr GARBO at Mount Nebo.

IV. Comments about LEHUN - UAR possible duality

Within the frame of the present project, the mission was requested to evaluate a possible tourism "integration" of two archaeological sites in the Jordanian Eastern Badyya : Lehun and Umm ar-Rassas. At a distance of only 17 km from each other, both sites have been widely excavated for years by Jordanian and European archaeological missions (Belgium at Lehun, Italian and Swiss at Umm ar-Rassas) making a priori feasible their integration within a common visit tour.

A. LEHUN

The potentialities for tourism development of the site of Lehun does not appear as obvious to the members of the mission. The offset situation of the site, at the end of a «bottom road», far from any active circulation axis (during last month of may none a visitor went to Lehun.), the limited «visibility" of the archaeological vestiges to non specialist visitors, (constructions of different periods only preserved at ground level) and the unfavorable general environment (uncontrolled development of the modern village completely surrounding the archaeological zone), do considerably reduce the interest of Lehun for tourism. In addition the site is very wide, fragmented, rocky and uneven, not easily worth visiting by inexperienced walkers and old people. On the other hand, it has an exceptional setting at the edge of the wadi Mujjib canyon which constituting a paramount asset whether specialised tourism is organised in Jordan (mountain walk, trekking, gliding????, ...). Lastly, the already existing very detailed development plan, related to this archaeological site, brings the mission's members to concentrated their attention on Umm ar-Rassas.

B. UMM AR-RASSAS

On the contrary, there are obviously a number of tourism development possibilities for the site of Umm ar-Rassas (The "Mother of the lead"). The field of ruins offers here the seizing spectacle of a one thousand and a half years old village, quite untouched by modern urbanisation and constructions.

The antic settlement of UAR is known from excavations results as *Kastron Mefaa*, a toponym attested from the Roman and Arabic sources and from the Bible. The actual visible remains of a fortified camp of about 10 ha correspond to the fortress of *Mephaat* mentioned by Eusebius (*Onomasticon*) as the place where a unit of the Roman cavalry was stationed on the edge of the desert.. The military nature of the site is emphasised by the name *Kastron*, recorded four times on the mosaics recently uncovered in the churches. The walled area is limited to the north by an open quarter, the "Northern settlement", roughly the same size. Eleven of the fourteen churches of this tangle of archs, pillars, wall and blocks, were excavated. Several have delivered extraordinary pavements of mosaic, which make the fame of the site today. Additionally, an exceptional monument, the *stylite's tower* with more than thirteen meters height is still well preserved.. Located at 1,5 km north to the *castrum*, this monument is the only witness known still preserved monument of the monasticism movement symbolised by *St Simeon " the Stylite "*. This tower is associated with a small church and a serie of additional constructions. Between this group of buildings and the *castrum*, all old agricultural fields are exceptionally preserved.

UAR main tourism assets are : homogeneity of a sizeable site, immediately identifiable monuments (*castrum*, churches, houses, wine press...), importance of preserved elevations, quality of the discovered vestiges, aesthetic, scientific and historical interest of mosaics and liturgical installations uncovered, *stylite's tower*, antique land use in a steppe environment, and last but not least, the site is established at the top of the highest point of that part of the plateau, offering a beautiful sight over the steppe of Moab. What is offered to the visitor is thus a unique archaeological testimony of the way of living in a small village at the edge of the desert, at the era of the finishing time of the Byzantine glory and the first centuries of the emerging Islam.

Located at the crossroads of two asphalt main roads connecting Dhiban and the old traditional Kings Highway to the new Desert highway and to Madaba, Umm ar-Rassas can be very easily integrated to overall archaeological tours in Jordan. For example, on their way to Petra, many busses do already stop at Umm ar-Rassas to visit St Stephen's mosaics. But, it might also be one of the keystone stops of a thematic tourist tour dealing with late Christian early Islamic times, including Madaba and Macheronte well-known sites and the newly discovered Nitl, (a small settlement, half the way to UAR on the road from Madaba) where a large paved mosaic church was built by the first Christian Arab prince.

V. PHYSICAL CONDITIONS OF THE SITE

A. LOCATION

Umm-Ar-Rassas is located 26 km to the south-east of Madaba, 13 km to the east of Dhiban, 9 km to the north-east of Lehun and 34 km to the east of the Dead Sea. It lies on the fertile plateau of Madaba at an elevation of + 760 m in between the Wadi el Wala and the Wadi el Mujib. Small local wadis drain towards the Wadi el Wala. The Wadi el Mujib, which empties in the Dead Sea at an elevation of - 400 m below sea level, has developed a complex of very deep canyons. At Lehun, (13 km to the south-west) which is located at the rim of the plateau at an elevation of + 720 m, the canyon reaches a local depth of 580 m, offering spectacular views. (figs 1 to 5 - § X).

The site of Umm ar-Rassas, situated at the highest point of the plateau, is visible from the distance.

B. GEOLOGY AND SEISMOLOGY

1. Lithostructure and stratigraphy

The geological substratum at Umm-Ar-Rasas consists of sub-horizontally layered marine sediments belonging to the Maestrichtian Stage of the Late Cretaceous Period. Those sediments were deposited some 80 million years ago in a calm, shallow marine sub-tidal environment. Two litho-stratigraphical units occur near the surface (fig. 6 - § X):

1. The upper Qatrana Phosphorite Member (QP): 18 m thick; composed of alternating thin layers of marls, micro-crystalline limestone and chert and thicker banks of phosphatic chert. The latter are very hard, contain 14 - 21% of P_2O_5 and provide an excellent building material.
2. The lower Bahiya Coquina Member (BC): 30 - 40 m thick; composed of thick banks of shelly limestone alternating with thin layers of marl; the limestone is composed of mega cross-bedded layers of bivalves (oyster) and gastropods and shows a mega-crystalline structure; the coquina contains 60% of carbonates and 40% of phosphates and silica; the coquina is easily hewn and provides an excellent building material.

2. Hydrology

Umm ar-Rassas is located on the highest point of that part of the plateau, at the edge of the desert steppe, between two main wadi's structures, wadi Wala and wadi Mujib deep valleys. There is no permanent running water, nor spring. The only important underground water originates in an important aquifer developed in the 125 m thick Wadi as Sir Limestone Formation (WSL) resting on the marls of the upper Shu'ayb Formation (F/H/S) that play the role of aquiclude. The aquifer/aquiclude boundary is exposed on the escarpment of the Mujib Canyon at an elevation of around + 420 m and there gives rise to a number of springs and Late Pleistocene travertine deposits. A deep well in the vicinity of Umm-Ar-Rasas draws water from a depth of 300 m with a capacity of 120 m³/hour.

At Umm-Ar-Rasas an important local and seasonal aquifers may develop in wadi bottoms. However they are not sufficient for a large population. For that reason the water supply must be assured by the construction of watertight cisterns and by water conservation practices such as the construction of culture terraces in wadi bottoms. Both structures are very well represented all over the antique site. The enormous number of underground cisterns shows that water collection was one of the main problem of the site in the antiquity.

All these cisterns were supplied during the rain season, which was, most probably like today, short and unpredictable. Most of the water was generated by storms, short in time but strong in sudden quantity.

The network of cisterns (for human uses) and large open air water tanks (for animal use and eventually for agriculture) was an efficient solution to solve the problem of water supply.

3. Seismicity

Umm-Ar-Rasas lies 34 km to the east of the North-South oriented Dead Sea Transform fault zone. The Siwaqa Fault, a significant east-west fault, which has been associated with basalt extrusions, lies 12.5 km to the south.

The Dead Sea Rift, along with its associated perpendicular faults, such as the Siwaqa Fault, is the predominant earthquake generator of the region. The majority of these earthquakes have low magnitudes, although infrequent events occur with a local magnitude in excess of 6 on the Richter Magnitude Scale. All earthquakes with a magnitude in excess of 6 have occurred along the Dead Sea Rift.

According to the 'Map of Natural Hazards' of the 'Munich Reinsurance Company', the area of the Mujib Dam, which is currently under construction and which is located at 11 km to the south-west of Umm-Ar-Rasas, belongs to 'Zone 3' with intensity VIII on the Modified Mercalli Intensity Scale. Intensity VIII, corresponds to 6.2 - 6.9 on the Richter Magnitude Scale and is described as follows: "Panel walls thrown out of frame structures; fall of chimneys, factory stacks, monuments, walls; heavy furniture overturned; sand and mud ejected in small amounts". The risk is defined as "the probable maximum intensity with an exceedance probability of 20% in 50 years, equivalent to one occurrence in 225 years (return period) on average, for medium soil conditions" (Jordan Valley Authority-Amman, personal communication).

As an illustration the earthquakes with a local magnitude of 6 or more on the Richter Magnitude Scale registered by seismographs in the region for the period 1900 - 1998, as well as all earthquakes (major and minor ones) for the sample year 1998 are listed in Annex 1 (Natural Resources Authority-Amman, Seismological Department, personal communication).

A list of yearly tremor intensity is given in annex 1.

4. Subsoil

In all observation points the hard unweathered geological substratum was at shallow depth. In most cases the geological substratum is covered by a thin saprolite (= rotten rock) of 1 to 1.5 m thick. The soft and loose saprolite is the result of chemical weathering of the geological substratum. In most cases the saprolitic layer is covered by a hard calcrete of 0.5 to 1 m thick. The calcrete originated from superficial carbonate concentration by superficial and subcutaneous waterflow. In case of exploitation of the bedrock, the calcrete often forms overhanging roofs ensuing typical rocky shelds offering shelter for man and cattle.

C. CLIMATE

Situated at the edge of the Arabian desert steppe, Umm-Ar-Rasas benefits from a dry continental climate with two seasons: summer, very sunny, dry and hot and winter, cold and rainy. Spring and autumn are limited to a few weeks. Even those The rains are very scarce: the limit of the 100 mm isoyet pass just near, allowing only very specific cultivation, sometimes without success for a succession of years (see socio-economic chapters).

Rains occur in December, more frequently during January/February and cease in may, sometimes earlier. They are mainly issued from sudden storms. Snow is expected to occur (a few cm in one hour, once in 30 years).

Winds mostly blow from west. They can be violent (40/50 knots). Blowing from the east, more exceptionally from the south, they may be dusty, sometimes carrying red soils from Egypt.

Temperature varies from about 0°C in winter (frost is exceptional) to 40°C and more in summer. Temperature will be one of the most important parameter to take into account for the sheltering and restoration of the different churches.

Graphics of the yearly rainfalls, highest and lowest temperatures, humidity and winds are displayed in annex 2

water tanks covered with arches and slabs and large debris mounds created by accumulation of the cisterns' silt removed from them, and of the towns refuses

4- **The agricultural fields created in antiquity** by terracing the wadis flowing towards the North, North-east and North-west of the castrum. This unit comprises two groups of buildings. The first is a watch tower and a small church with associated quarries and cisterns, and the second a building whose function is still undetermined, with an associated cistern

5- **The Tower complex**, which is a discrete unit, 1,5 km North of the castrum, comprising a huge well preserved tower and a small church annex, two ruined buildings, quarries, cisterns and a wine press

6- **The cemetery**, which has not been located, but according to de Savignac existed to the west of the castrum. Old aerial photos possibly show its presence to the west of the road to Madaba, where the modern village is presently growing.

2. Chronology of excavation works

Excavation works focused on vestiges of area 1, 2 and 5 (with more or less intensity since 1986), by Jordanian teams (DoA), Italian (Studium Biblicum Franciscanum) and Swiss teams (Foundation Max von Berchem). The chronology of the excavations is provided in annex 3.

3. Description and provenance of ancient building materials

Following types of building materials were observed in different places of the site. These materials were used separately but most of the time mixed together. Characteristics of materials are given in annex 4.

Coquina, phosphatic chert and limestone are found in abundance in the geological substratum at Umm-Ar-Rasas. They were extracted from numerous large and small quarries all over the site area. *Black shale and gypsum* are not found at Umm-Ar-Rasas. The *gypsum* is found at the boundary of the lower Wadi as Sir Limestone Formation and the Upper Shu'ayb Formation. The *black shale* occurs in the lower members of the Shu'ayeb Formation. Both stone types are quarried in the canyon of the Wadi el Mujib. We observed f.i. a modern gypsum quarry at position X = 0768057, Y = 3483532 at + 330m.

4. Construction techniques

a) Structures

Apart from some very specific buildings (eg., the Tower) and parts of some other ones (eg., central apse of some churches), the walls built at Umm ar-Rassas were made with undressed raw materials of all kinds and nature put one over the others without any lime mortar. The internal filling, between the two faces of the walls, were made of simple earth mixed with chip stones. The solidity of such structures was therefore ensured only by the roof protection (for the heads of walls) and the general side gypsum plaster coating. Nowadays, all the buildings have lost their roof protection and most of their mortar coating. Rain and still more wind erosion have destroyed the unprotected walls earth filling. The protection/restoration of the excavated structures is one of the most urgent and important works to be implement at Umm ar-Rassas.

The doors jambs, the arches supporting the stone roofs (or wooden ones in most of the churches), the churches conchs, were made of well cut rectangular stones. All these blocks were put together in dry masonry construction way.

Most of the roofs (even for some lateral naves of churches) were flat, stones arches supporting rows of stone slabs and earth covering.

b) Floors

Different types of floor were found during the excavations:

- simple earth floor type,
- plastered floor type, such as in the Tower church,
- stone slabs paved floor type, such as in the annexes of St Stephen church (irregular uncut stones) or in the Aedicula church (rectangular alabaster slabs),
- mosaic floor type, such as in Bishop Sergius, Lion, St Stephen, ... churches and in the wine press.

VI. CURRENT SITUATION, ANALYSIS

A. BRIEF HISTORICAL REMINDER

The modern village, actually known as Umm ar-Rassas (« The Mother of the lead ») gathers a few tens of houses, of breeze blocks and concrete, aligned along the road from Madaba to Jizza passing by Niti. The village is drawn up not far from the vestiges of an important antic site, known from excavations results as **Kastron Mefaa**, a toponym attested from the Roman and Arabic sources and from the Bible. The military nature of the site is emphasised by the name **Kastron**, recorded four times on the mosaics recently uncovered. The remains of a fortified camp of about 10 ha correspond to the fortress of **Mephaat** mentioned by Eusebius (Onomasticon) as the place where a unit of the Roman cavalry was stationed at the edge of the desert. This walled area is limited to the north by an open quarter with roughly the same size. The most visible monument of the site is visible 1,5 km far from the north of the Castrum, where a tower, probably built for a stylite, still stands more than 13 meters high.

B. SITE MANAGEMENT

The UAR site is under management and control by the Inspector of Antiquities for the Madaba Region (figs 7 Plans 1 & 2 - § X). There are 5 guards on site, part from the MTA, part from the UAR village Police Station.

Guards are accommodated, on a rotational basis, in the small nearby very obtrusive concrete building. The task of guards is to control the visit of the St Stephen mosaics by visitors and to ask them fulfilling the visitor book at the exit. There are no guide. Entrance is free, as the MTA considers site enhancement not sufficient to justify a fee.

At the moment the UAR site is currently under-exploited by tourism. On the other hand there is only very poor tourism infrastructure (the St Stephen shelter) and management (see §. 'Socio-economic and tourism context').

Occasionally, the Inspector authorises (or asks for) archaeological excavations at UAR. At the period of the mission one Jordan team was working on the restoration of the small Byzantine church and altar near the stylite tower (Zone II) and started two new excavations in the ancient fields area (small tower an undetermined building).

Despite gaps in site management and equipment, the key UAR archaeological remains are only slightly degraded by human activities. For example, out of the sheltered St Stephen complex very few mosaics have been looted (Peacock's church, Lions' church, ...), albeit the protective earth cover is very thin in some areas. This situation demonstrates the local will to preserve the UAR cultural heritage, not only because it is protected under the Antiquity Law, but also because local people (Beni Sakhr tribe) considers this site to be an opportunity for the future.

C. ARCHAEOLOGICAL REMAINS

1. Site Typology

The archaeological area of Umm Ar-Rasas is about 2 km² (fig. 7 Plans 3 to 11 - § X). It includes several components that will be considered separately because of different issues and constraints affecting their management, conservation, and presentation. Proceeding from South to North these are :

- 1- **The castrum**, an almost square fortified settlement which includes relatively well preserved fortifications and towers and a densely built interior area where three excavations have already been conducted : the south-east area is the most extensive, comprising the so-called Twin Churches. The other two excavations have exposed the North and South gates.
- 2- **The northern settlement area** (300x200m) consisting of collapsed structures, where 4 areas have been excavated. The Church of the Priest Wa'il and the Church of the Tabula to the South-west; the St. Stephen complex to the North-east, and the area including and around the Chapel of the Peacocks, Church of St. Paul and the Church of the Lions to the East.
- 3- **The cisterns and town debris**, which surround the entire site and include bell shaped rock-cut cisterns, a large rock-cut rectangular open-air basin, several large rectangular underground

Only standard and well-known techniques were used. A special attention should be given to the mosaic floor supports : they were likely built rapidly, using mortar of poor quality, over uncompacted materials. The conservation of these important testimonies will need attentive care and precise investigation studies before implementing any restoration work.

5. State of conservation of the remains

a) The Castrum

The fortress of *Kastron Mefaa*, built at the end of the III^o or the beginning of the IVth century A.D., appears as a large quadrilateral of 158m by 139m, surrounded by a solid wall 2m thick, reinforced by quadrangular towers and with only one gate on the northern side. The walls, of cyclopean size, are made of large undressed blocks of stone, without any mortar and wedged with stones of smaller size.

At the beginning of the IV^o century, an indigenous wing of cavalry is stationed there. After the demilitarisation of the camp, during the Vth century, a settlement remained within the enclosure. Then, the internal fortress organisation originally structured around two orthogonal ways is gradually modified by constructions built above courtyards and streets. Out of the four churches within the enclosure, have been excavated (Twin churches). There are two other excavated spots : the North gate and the South gate areas.

(1) Walls and gates

The top courses of the fortifications are lost. Nowhere has the original height of the wall been preserved. In annex 4 are grouped observations related to the physical condition of fortification stretches. The single number refers to a tower (number 1 is the north-east corner tower), while the hyphenated numbers to the portion of wall in-between two towers. Both are represented on the plan, with recommendations for presentation.

No restoration work was done on the whole enclosure excepted limited work by the Swiss team near the Twin Churches.

The excavations of the North gate were conducted by Swiss mission in the years 1991 and 1992. Excavations have exposed the passage and the guard rooms. Consolidation of walls has taken place in the form of repointing, but it is insufficient as regarding the use of insufficiently prepared cement and lime mortars. As well have the debris been thrown around the outside walls and presently hide large parts of the external ramparts. Earth mixed with architectural fragments and blocks is visible among the debris. The gate provides access to a street which is now completely blocked with ancient collapse (2-2.5 meters of depth).

That street should be the normal access to the Twin Churches complex.

This structure is different from the North gate, as there is a small postern gate to the left of it, and a less clear use of the towers controlling access to the castrum. It is clear from the excavation that that gate didn't exist in the initial setting. There has been some consolidation of this structure, but the site needs considerable conservation efforts would the intention be to open it to the public.

A detail state of preservation of the castrum walls and towers is given in annex 5.

(2) The Twin churches complex

Successive excavations of this complex were conducted in 1988-1992 by Swiss archaeological expedition founded by the Max van Berchem Foundation and directed by Jacques Bujard.

Both churches have mosaic floors, poorly preserved, now covered by a layer of earth, although some shrubby vegetation is growing on it, raising doubts on the current conservation condition of the mosaics. There are traces of plaster on the wall, which is detaching and generally in a bad state of conservation. The north church has capitals and columns in the portico area that show advanced weathering phenomena in the form of cracking, spalling and exfoliation.

Large restoration work were done in that area where all the exposed structures were consolidated (even the general remarks on the quality of mortar used are also valid here).

Vandalism or clandestine excavation have taken place in this area, namely in a small room south of the southern church, and in one of the rooms to the north of the northern church.

A detailed state of preservation conditions of these churches is given in annex 8.

The Northern Settlement

The Northern settlement includes most of the excavated areas. The area extends over 6 ha and is covered by the «extra-muros» part of the town (it is however possible that a secondary wall enclosed this section of the site). It is densely built, containing number of churches, houses, handicraft dwellings, ... Some Bedouin families have occupied this area, living during the past 100/150 years, in some of the structures with their animals sheltered beside. In some cases the reused structures are the ancient ones, readapted through the construction of extra walls or the plastering of internal surfaces. In some other cases typical arched houses (characteristic of Jordanian vernacular architecture) have been completely rebuilt using the ancient foundations and construction materials. 37 recent traditional houses are remaining on site. No detailed plans and/or elevations exist for these structures, which form an important element of a little investigated component of Jordan's cultural history. One of our proposals is to preserve and, if possible, display to the public a small group of these structures. Unfortunately, most of these small and narrow houses are in a bad state of preservation. Whereas all of them could (and should) be studied, only few will be open to the public after restoration.

(1) The Churches

There were 9 churches (8 excavated) and 2 chapels (both excavated) lying in that part of the ancient city. Constructed in all parts of the settlement, these religious buildings are sometimes grouped by two or more, in large complexes. Their architectural development covered hundred years and most of the churches are remarkable due to their mosaic pavements, some of them dated from the Abbasid period according to clear and readable inscriptions.

All these churches were destroyed by collapse of their upper structures (earthquake?). All their walls, more or less built according to the same way, suffered different structural disorders.

A detail statement of the different churches is given in annex 8.

(2) The others structures:

General observations on St. Stephen complex:

Although this is one of the best known sectors of the site of Umm ar-Rasas, this complex is not fully excavated: the three rooms and the courtyard east to St. Stephen are only partly excavated and many areas around the churches need final clearing (especially St. Stephen's south side and the area east of Bishop Sergius' apse). The entire west sector of the complex is not fully excavated. There is a large debris area abutting and partly covering the north east corner of the complex, another to the west of the complex, and two large open soundings along the northern wall.

Baptistery:

This sector of the complex is unfortunately in a very deteriorated condition: the mosaics are now covered but were found with many lacunae; the basin is visible only as a trace (also covered), and the walls have lost their cohesion.

General observations on St Paul's area:

This is still an open excavation which is confusing and difficult to interpret, but also extremely dangerous as some of the pits are more than 7 meters deep. In the western sector between the two churches, there is an area 3 floors deep which is being excavated. Without proper dismantling or consolidation of the upper structures, the entire pit is threatening to collapse. Immediately to the west of the complex there is a courtyard area with three structures used until recently by the local Bedouins.

This is a well preserved «modern» complex, which should be properly documented and possibly displayed.

③ A large debris area, partly covering the vernacular structures, is accumulated to the west of the excavation pits. Open soundings are also found to the south of the church of St. Paul.

Wine press:

This is a unique structure, very well preserved, composed of nine small cells, three per each side of a central courtyard, all covered with a white tesserae mosaic floors, where grapes were pressed, with the juice then flowing to the courtyard and then into vats. The structure is not completely excavated and is in need of consolidation, as both plaster and walls are in precarious conditions.

The area between the Church of Saint Paul and Chapel of the Peacocks

Michele Piccirillo between XXXX and the present has conducted excavations at this location, which covers an area of approximately 1200 m². Excavations are still being conducted at the location, which includes several features: a church, a chapel, a unique winepress, and a deep subterranean feature, partially excavated, which likely corresponded to a three storeys underground store rooms.

c) Cisterns And Water Tanks

Some cisterns are still visible and a few are still in use in the settlement's surrounding area. In this area can be found most of the cisterns as well as a large rock-cut pool that collects water from a small wadi. It has been recently fenced by the Department of Antiquities. Several elongated and half-circular mounds surround the settlement, especially in its northern and eastern sides. As far as we know, no explanation, has been provided related to these mounds, some supporting Bedouin graves at their top. In our opinion, (confirmed by the geological analysis of the deposits carried out by Dr De Dapper) they are constituted with the town refuse and the result of centuries of cisterns cleaning. We feel that the most obvious ones, with a ring of debris surrounding a central depression where water accumulates in winter, hide a filled or collapsed cistern (visible for some of them).

A GPS survey of these structures has been conducted. The UTM coordinate given in appendix corresponds to the centre of the depression, or the mouth of the cistern with a +/- 5m accuracy. 74 of these structures have been mapped : 48 are depressions that may hide a cistern, 6 are completely filled cisterns with a still visible mouth; 7 are empty cisterns, 6 cisterns still in use contain water, 4 are collapsed cisterns or tombs, 1 a cave (tomb?), 1 is a cistern supported by built arches and 1 is a pool covered by arches and stone slabs.

Many of these structures are lying within the protected area, but the fact that they have not been neither fully recognised nor studied is a major problem for the conservation of the vestiges (risk of collapse) and for the security of the visitors. We should also consider that not all of them have been located. From a security point of view, most of them do represent a potential danger as they are unchecked underground cavities, their size is unknown as well as the structural resistance of their roof.

Some of them have been discovered inside the churches (Bishop Sergius, Lions...). They were operational at the time the churches were utilised as cultural places, as this is demonstrated by the fact that mosaic pavements adjust cisterns' mouths. They may represent a major risk for the future conservation of the churches mosaic floors (see also the problem of the tombs under the mosaic of St Stephen, St Paul, ...).

The list of coordinates in annex 6 derives from a quick GPS survey of the water collection structures observed around the castrum and northern settlement area. Depressions surrounded by debris have been interpreted as filled cisterns surrounded by silt resulting from their regular cleaning. For practical purposes, 5 types of cisterns are catalogued:

1. Bell-type cistern with plaster, in use and containing water
2. Bell-type cistern with plaster but without water
3. Bell-type cistern filled almost completely to the rim by debris
4. Possible cistern, largely collapsed
5. Centre of depression surrounded by debris.

d) Man-Made Hills

A number of low man-made hills lie in the southern part of the site around the Castrum and the city (fig. 7 Plan 4 - § X). Their origin whether natural or artificial (partially or entirely) was longly discussed. Their restricted distribution just around the antique site is a first element in favor of their human origin.

Some of them are also clearly related to underground cisterns or open air water tanks (for example the ones located to the east of the castrum). Examination of their debris shows a fine sandy silt mixed texture with many ceramic sherds and angular stone fragments. This heterogeneous material most probably originates from cistern cleaning or/and other activities of waste dumping from the village.

e) Ancient Fields

No proper documentation work (with the exception of a topographic survey) has been conducted on the impressive network of terraces which covers much of the land to the north of the town of Umm er-Rasas. The fields were terraced or perhaps lying down behind dams crossing the small wadis that flow from the plateau where the castrum is located. The assumption of small dams is validated by the presence of small rectangular structures in the middle of each wall possibly wasteweirs. Rather than for collecting water, however, such dams were built to trap silt and enough water to allow a slow soil impregnation, an effective substitute to irrigation. None of these features have been so far excavated or properly investigated in Jordan. As far as we know, the group of Umm-ar-Rasas ancient fields (such dam-like structures can also be observed along each wadi around the site, within and around the archaeological park perimeter) are the best preserved of this type in Jordan and constitute a comprehensive ancient agricultural system

Erosion is a matter of fact, since in many cases the small wadis have cut channels through these dam-like structures. On the other hand, easy stratigraphic studies of the «dams» can be undertaken.

In the same area, and in relation to the antique fields, groups of ruined buildings are visible. Two of them are presently being excavated by the Madaba Office of the Department of Antiquities under the direction of Hazem Jasser (May-June 2001). The first is a tower, or guard post, with an internal bottled shaped cistern and a nice 1,60m large circular stone as door lock, associated with a church (?) (it may be an antique oil press), quarries, and at least one large open-air rectangular cistern. The function of the second building is still unknown. A cistern still in use is associated with the latter. Most of the fields are in the protected area (outside the two sanctuaries), but several also lie down beyond its boundary, especially to the west and north-west of the castrum.

Some remarks are given in annex 9.

f) The North Tower Complex

The North Tower complex includes a high standing «Stylite tower» (more than 13 m high), a small three naves church with simple plastered floor, with annexed premises and different dwellings around: wine press, cisterns, ancient quarries, two story building... Excavation have targeted the small church near the standing tower, and areas around it. Conservation work has been conducted on the two-story building north to the tower, and is currently in progress on the church (directed by the Madaba office of the Department of Antiquities). The tower was never restored.

Plans and elevations of most of this area's buildings are available.

A description and detailed state of preservation conditions of the Tower Church is given in annex 8.

A detailed state of preservation of the Tower is given in annexe 10

g) Cemetery

The discovery during the XVIII^o/XIXth centuries, of lead made coffins in the cemetery may explain the actual name of Um ar-Rasas ('Mother of the lead'). The precise location of the large cemetery (entirely looted during the 19th century) is not known today. According to de Savignac, it was located to the west of the castrum. Aerial photos may confirm that location at the west side of the actual asphalt road to Madaba. That part of the antique site, now under construction with the new village, might well be considered as lost.

h) Semi Subterranean Houses

Since the last century the local population has occupied several houses in the site.. We spotted them on a general layout (figs. 7 - Plans 5 to 7 - § X)). Such dwellings mainly reused ancient structures, in the way they were for some of them or sometimes only partially reusing former Byzantine structures (mainly

still standing arches). The usual distribution of these permanent nomad houses is quite simple: one or two independent rectangular rooms, exceptionally four or five, are spread around a large courtyard, closed by a perimeter wall. Rows of arches supported the terrace roof, covered with a layer of earth. Each room has one door; a unique opening to the courtyard, the building being buried along three other sides.

These subterranean houses are not in a good state of preservation: walls and terrace roofs, except in a few cases, collapsed as well as the supporting arches. Even for the few not too much degraded, access is difficult and dangerous for workers and archaeologists, a fortiori for tourists.

Quite not a single study has been carried out on such traditional modern reoccupation of ancient structures. The second interest of Umm ar-Rassas is to have preserved a complete village of that recent dwellings.

Complementary information is supplied in annex 11.

D. SOCIO-ECONOMIC AND TOURISM CONTEXT

1. The region and the lack of economic resources

The UAR district with its Bedouin population is situated in the middle part of Jordan, south of 'Amman. Due to this localisation, the district is on the periphery of main and important tourist sites like Madaba (40 km,) Karak, the Dead sea or the Jordan valley and even Petra and thus it has no profits from this tourism economy. In the same way, the district lies on the periphery of the country's main economic and industrial regions that are mainly concentrated in and around Amman-Zarqa, the north and Aqaba in the south.

The southern regions of the country have encountered important economic development these last decades and specially on a tourist ground with sites like Petra, Wadi ar Ram, Aqaba etc. In the eighties important development projects, mainly agricultural, but also socio-economical and the Bedouin's sedentarisation projects have also drawn into this region changes and some economic wealth.

On the other hand, Madaba and the northern parts of the high plateau are witnessing important economic development these last ten years due to the valorisation of the archaeological and historical sites and the creation of the archaeological park. For instance, Madaba counts today some ten hotels since 1994. Before, the town had none.

Surrounded by other regions and towns that are living economic development, the district of UAR is quiet isolated, peripheral to all. It is also a place where tourists pass by and seldom stop. Too close to Madaba to create its own interest, too far from Amman-Zarqa to take part in the industrial movements, and also, too far from the south in order to have some profit from the tourists activities. The inhabitants of the district are lacking all these economic opportunities.

With the absence of any economic activity and job possibilities, UAR's tourism development appears as the only opportunity and economic potential for the local population to rely on.

2. Administrative context

UAR Archaeological site is located on Um ar Rassas municipality territory (Baladiyya). UAR municipality has been recently created (in 1999) and 6 villages belong to this municipality: Saliya, Mousaytbet, Thrayya, Rujm fheid (including Nahda district), Abou Hlelifet, Rujm 'Ogueib (including Mujamma' Akhou Sheinet district).

The UAR village is both chief town of UAR municipality and chief town of the governorate (Qadha'). UAR governorate encompasses 4 municipalities (that is 22 villages or settlements), including UAR municipality (encompassing UAR archaeological site) and Rama municipality (encompassing Lehun archaeological site).

UAR village shall be considered as the real centre for the governorate development, including a variety of archaeological sites to be enhanced; promotion of a regional development planning searching for a complementary between UAR, Lehun and the other archaeological sites spread over the district territory.

There are only a few administrative structures within the UAR Municipality territory :

- the social development centre (created in 1999),

- military and civil schools,
- post office,
- Royal Police center
- forage supply center.
- Administrative representations in Umm Ar-Rassas:
 - ⇒ Ministry of Interior : the governorate of the area, the police, the Municipality of Umm Ar-Rassas and the Post Office (postal services are to be privatised in July 2001 in Jordan),
 - ⇒ Ministry of Social Development: the social development centre
 - ⇒ Ministry of Health: the clinic.
 - ⇒ New offices for the Municipality are under construction (may 2001) along the main road, facing the archaeological site.

An urban planning has been designed in 1996 for UAR village by the Ministry of Planning, including zoning of already built areas and urban extension, which has initially been planned on each side of the road, but which will finally be limited on the opposite side to the archaeological site.

The mayor referred to a 50,000 JD loan obtained from the Bank of Urban and Rural Development. He also referred to the 58,000 JD granted by the Social Security Program Unit of the Ministry of Planning, which will be devoted to the improvement of road conditions and lighting.

There is no plan illustrating the future extension of the Municipality infrastructure.

Water is mainly supplied by the Swaga wells near Qatraneh. Water is available for human residential consumption on daily basis and for surrounding villages on a weekly basis.

Key data on UAR municipality and six villages are indicated in annex 12.

3. Population

The population of the UAR municipality amount about 4000 inhabitants, composed with 790 families shared among the six villages. Local populations living in UAR municipalities can be divided in two groups:

- Bedouins which have been recently settled in UAR village. from the Beni Sahr tribe ;
- Nomadic Bedouins from the 'Azazmet tribe.

Bedouins from the Beni Sahr tribe live in modern constructions (the modern village of UAR is currently developing along the site western boundary). They own all the land and the greater part of the sheep herds.

On the opposite, nomadic Bedouins from the 'Azazmet tribe live in tents and cultivate the Beni Sahr lands: Although they possess some livestock, they are extremely poor.

All inhabitants of the six villages in the UAR municipality belong to those two tribes, albeit members of the Bani Sakhr tribe are the most numerous. Azazmet tribe members are nomadic Bedouins throughout the district. No other tribes or families live in the district.

The Bani Sakhr :

It is one of the most important tribe of Jordan. Bani Sakhr's land covers most of the median part of the country stretching from the higher plateau in the west to the saoudian borders in the east.

The tribe is composed of 4 sections with an important number of descent groups.

The Hgueish form a descent-group belonging to the Al Ghufl section. All are established in the 6 villages of the municipality, which means the inhabitants of these villages are not only originated from the tribe of the Bani Sakhr, they belong to the same descent-group and forms a tribal unity. This is a very important fact, not only because the population is unified when internal problems are solved through customary law, but also an important solidarity exists among the inhabitants who are aware of their common origin. The region therefore represents a socio-economic-based unit to be taken into consideration ; the six villages are in fact only one.

This structural aspect of the social group has to be studied. Its solidarity and inherent social organisation will be the basis for the locally-managed tourism development.

The Azazmet :

It is an important tribe of Bir as Saba'a. They arrived in this part of Jordan in 1948 as refugees having lost all their lands in southern Palestine. As a result, the 'Azazmet is considered as a "landless" tribe in Jordan. The tribe is also composed with different sections and numerous descent groups. But, unlike the Hgueish, they are scattered all over Jordan and within the district of UAR, they do not form any additional unit if not the tribe as a whole, although they are the only nomadic tribe within the district. The link among the different families is the tribal one. The 'Azazmet are nomads. They move to the eastern parts in winter with their black tents and herds for pasture land. In summer, they exchange the goat-hair tent for a lighter one made of jute and they roam around the villages. The direction of their movement is east-west mainly, but the herdless move down to the Jordan Valley in search of daily work. In spring and summer they settle around the Hgueish villages for harvesting.

The 'Azazmet live in this region since 1948, practicing rain-fed agriculture as they used to do in Bir as Saba'a. They are also shepherds and have herds of sheep and goat. In Jordan, they crop within the tribal territory of the Bani Sakhr whose fields were surveyed in the fifties and registered as private parcels. The latter are the landowners. The Azazmet cultivate the Hguesh land on a share-holding system.

Nomads, shepherds but also daily workers, the 'Azazmet do not have any other opportunity. Landless, they do not have the financial capacity to buy land or to build their own house. They are obliged to remain nomad people, although their children attend village public schools and they participate to elections of the mayor.

Relations between Hgueish and 'Azazmet are those of "share-holders" (shouraka') only and not those of "harras" (who plough land). The latter type is quite frequent in the Jordan Valley being relevant of a strong social hierarchical situation, that is not found in the UAR district. It is important to point out that relations between shareholders and landowners are those of "sharing" and not of "services" or dependencies.

According to the local development potential and the keystone role played by the present archaeological and tourism UAR project in such a development, three types of stakeholders are distinguished :

- the sedentary Bedouins (Beni Sahr), living in hard dwellings in UAR village and owning the whole land, in and outside the archaeological site ;
- the nomadic Bedouins ('Azazmet), living in tents and cultivating the lands. Although nomads, they stick to the site and to the owners land in UAR ;
- all other inhabitants of the UAR municipality distributed in the 6 villages scattered around UAR village. They wish to benefit from the project.

4. Socio-economic background: farming, production system and income generation

The district covers great portions of desert that extends eastwards to the Saoudian borders. Since 1992-1993 the country is recording a drought cycle. Rain-fed agriculture that used to be a significant activity, together with pastoralism, are no more profitable with costs higher than benefits. Shepherds are continuously indebted. The region is overgrazed and the number of herds has considerably decreased alike the agricultural products. It is

revealing that Army and General Security have become the main economic generators in the UAR municipality. For example, within the Naef family, one of the two large families from UAR village, 10 have a member employed by the army, 7 in the Security and 6 other employees. 5 families altogether possess 100 donums of olive trees orchards and vegetable gardens.

The fact that there is no movement to towns nor any emigration to other countries is noticeable.

Employment opportunities are very scarce. Main sources of income for the locals are issued from agriculture and dairy products.

5. Land tenure

UAR archaeological park encompasses 120 ha, from which 24 ha belong to the Government (Ministry of Antiquities). This area is divided into two sub-areas :

- 132 donums (13 ha) around the Tower ;
- 107 donums (11 ha) around the Castrum. 13

This is the only government-owned land in the site, all remaining land being private (mulk) and seem to belong to 2 families of UAR village: Al Neifh and Al Mor families.

from a rapid survey and meetings with the local population, private lands likely belong to only one family composed with 8 brothers, Dha'ban's sons ('ial Dha'ban), the main part of the Al Mor family. People should be involved in land tenure in UAR archaeological park, albeit this information needs to be confirmed by the Land and Survey Department, especially because site boundaries are not exactly owned by local population. The mission members were unable to obtain precise and documented information from administrative services about the very pressing issue of land ownership in and around the site.

The Antiquities Department has declared to the local population it will buy the entire land within the archaeological park boundaries, including current buildings. Given the archaeological restrictions put on this land by the MTA, owners are interested to sell. For example, they can no more build any houses or plant trees. All land reclamation being under the control of the Department of Antiquities, local owners alternatives are restricted.

Urban development and physical planning

The village of Umm ar-Rassa is under construction. Some 10 houses are built mostly along the main roads, especially the road to Madaba. They are simple one or two storeys concrete houses mainly associated with a garden, or at least with a courtyard. They form a quite linear village built without pre-planning design. Only few buildings are located inside the archaeological perimeter:

- the post-office, near the main cemetery
- the first aid hospital, in the south-west corner of the archaeological park,
- the police station, on the north-eastern limit to the park, out of view from the site
- the guard house/toilets in front of St Stephen complex
- three private houses, one in the south-west corner, the two other ones near the Tower (all of these buildings are under purchase by the Ministry of Tourism and antiquities).

The two most important buildings of the area are the schools, located in front of the castrum to the south of the Dibhan/Jizza road. They are highly visible from the inner site.

In 1999, the Ministry of Planning and Public Works prepared a general Master Plan for the town extension and reorganisation. That document stated authorised constructions to be built on both sides of the Madaba road and in the south-western part of the site. Currently, only construction to the west of the road are being developed (eg., new Baladyeh). All constructions planned on the east side (archaeological park) are apparently cancelled and the land put under the archaeological Law.

4. Tourism

From the tourism point of view the UAR site is currently under-exploited. The lack of tourism management and organisation (except under the St Stephen's shelter) does not incite the (few) tour-operators and individual visitors to spend more than one hour at UAR. There are no signposting and the sanitary facilities are out of work most of the time. In addition, lack of security conditions does not encourage Tour-Operators to guide their groups across the ruins area. They generally restrict the visit to the St Stephen's mosaics complex.

The annual number of visitors varies between 8000 and 12000 (source: Inspector of antiquities). But from other sources the average number might amount 8500 visitors (700-720 / month, reaching 870-900 in May). Peaks are in winter and during vacations in spring and autumn. The table in annex 13 shows a breakdown of visitors spread over a 13 days peak period. The great majority of tourists only visit the St Stephen mosaics, staying less than one hour on site.

A list of Visitors data is given in annex 13.

On-site tourism-related commercial activities

At the moment there are no tourism-related commercial activities (no shops, no restaurants) and therefore no income for the local communities. Information policy is reduced to the poorly designed panels of the 'Museum without Frontiers' (general information on the Ommeyyads and very simple map on the Madaba region historical sites).

Existing tourism circuits :

visited sites in the region are presently Madaba (Museum, byzantine churches and mosaics,...), Mount Nebo (mosaics, view over the Dead Sea, ...), where Moise is supposed to have seen the "Promise Land"), Machheronte (where John the Baptist lost his head), Dhiban and the view over the wadi Mujib. Given the King's construction on the wadi Mujib (King's Road), tourism buses go to Kerak and Petra using the Desert Road. Quite all these sites are related to biblical tourism.

Today about ten hotels or/and Bed & Breakfast exist in Madaba. A four stars hotel is now under construction taking into account the growing demand for biblical sites. Nowadays, UAR is only rarely planned by Tour-Operators and Lehun is never visited (despite an outstanding view over the wadi Mujib), essentially because a difficult access road, its situation in a "cul de sac", and the poor state of preservation of its vestiges, in a very uneasy place for unhealthy people.

E. LANDSCAPE

The major and most interesting scenic points are situated at the top of the tumuli (especially the easternmost cemetery), the Kastrom (northern wall) and at the top of the Byzantine tower within sanctuary II.

The most preserved visual axis are towards the east. At the moment, the most obtrusive elements spoiling the landscape are : the existing shelter of St Stephen, the guard post near St. Stephen, the new post office, the first-aid building, the line of UAR's houses along Madaba road, the telephone and power lines along roads, buildings south to the Kastrom, various concrete-made houses within the proposed archaeological site boundary (see map), a warehouse near the NW boundary and the agro-industrial compound a few kilometres to the north (bright white roofs and walls).

VII. PRESCRIPTION FOR MANAGEMENT AND RESTORATION

A. SITE MANAGEMENT

1. Administrative Protection Of The Site

The first and key condition towards an effective site protection depends on land property. Currently, only two pieces of land belong to the Ministry of Tourism and Antiquities. Extending that ownership to the whole area, considering at least the whole Archaeological Park, is an absolute priority (see §. Executive summary). The whole land will be registered under the name of the Department of Antiquities.

It is also expected that a broader general landscape regulation could be implemented with the aim of protecting the overall view to the North and to the East, providing construction autorisation solely to the west of the site, where the new village is under construction.

2. Site Zoning

Zoning is considered as an essential mechanism for managing a protected area whatever it is natural or cultural (fig. 7 - Plan 12 - § X). Site zoning forms the basis for any further conservation and tourism development. It is a prerequisite to an efficient implementation of the project and the future site management plan. Zoning will be adjusted to the cultural, ecological and socio-economic situation of each type of land. The carrying capacity of the site and zones with archaeological concerns (sanctuaries) is discussed in the section 'Tourism development'.

Zoning related to tourism and to research activities can not be considered as a definitive statement. Periodic findings will necessitate zoning adjustment over time. For example, if new key archaeological discoveries occur in the agricultural and grazing zone, a new sanctuary might be established with specific regulations and possible tourism development (with subsequent increase of site carrying capacity).

The proposed zoning of the UAR site is based on the distribution and importance of the archaeological remains, on the current land use (refer to the socio-economic section) and on the landscaping values of the site. The land tenure constraint is expected to be defeated through the MTA's land purchase

therefore it is not taken into account in the present zoning proposal. The current land tenure is described in the socio-economic section of this report.

Boundary and Zoning map is tentative, designed from the consultant team's investigations throughout the site. The site boundary was initially proposed by the Franciscan excavation team directed by Father Picirello ('Archaeological Park'). Such a boundary is acceptable.

The proposed zones can be distinguished as follows :

<i>Type of zone</i>	<i>Proposed locations (see map)</i>	<i>Size</i>	<i>Objectives</i>	<i>Regulations</i>
Archaeological Sanctuary (core)	Sanctuary I : antic religious city, Kastrum, large fenced rock-hewn cistern Sanctuary II : Stylite's tower, Byzantine tower, rock-hewn cisterns	10 ha 5 ha	<ul style="list-style-type: none"> Conservation and restoration of the antic remains. Sustainable tourism development income generated through entrance fees 	<ul style="list-style-type: none"> Strict protected zone Restricted & controlled tourism development (carrying capacity, no walking off demarcated trails) archaeol. research controlled educative activities monitoring of tourism impact Restricted use of official service No other activities allowed
Archaeological & Research zone	Kastrum, central zone (byzantine tower and rock-hewn cistern), other ?	5 ha	<ul style="list-style-type: none"> Improve understanding of the site. Restoration of vestiges (enhancing site value, improving security) 	<ul style="list-style-type: none"> Human access, agriculture, grazing and tourism prohibited
Controlled zone	sanctuary I inside sanctuary II	15 ha	<ul style="list-style-type: none"> Natural recovery of vegetation 	<ul style="list-style-type: none"> Grazing prohibited Cropping prohibited
Living and Working zone	Central and Northern part of the site		<ul style="list-style-type: none"> Keeping the traditional way of rural life. Soil erosion control landscape improvement income to local communities marketing of handicraft and local products 	<ul style="list-style-type: none"> Traditional agriculture and pastoralism, research (archaeological, antic farming systems, ...) landscape architecture No infrastructure development (houses, power lines, ...) besides existing unpaved roads and paths possible stone-made restoration works (small dams, embankments, ...) Nomad tents allowed.
Intensive zone	Parking area, entrance gate, VC, market area	3 ha	<ul style="list-style-type: none"> Concentration of tourism-related nuisances in restricted areas: parking lots, ... Control of tourist numbers Income to local populations Information, public awareness 	<ul style="list-style-type: none"> Allocated to the sole licensed traders (local association to be created) Controlled access of parking lots Entrance gate and VC have specific internal regulations Strict protected zone (no human access, no grazing) Boundary: grazing prohibited until plantations get the right size
Sanctuary	Out of the AP	3 ha		refer to : Ministry of Aqwaf

A sustainable resource management zone should be defined in-between the two archaeological sanctuaries (core zones). This sustainable resource management zone which is called "cropping and grazing zone" can be divided into two sub-zones :

Extensive grazing management area: including potential archaeological remains in the ground, this area must be preserved from agricultural and plantation reclamation. That the reason why only grazing activities (during the spring grazing period) will be allowed here. Some cisterns located nearby can be used as watering point for livestock.

Agricultural terraces area: located in the bottom of the small wadis they have to be reclaimed because they represent the old agricultural field pattern which is part of the whole archaeological site management. Archaeologists agree that no archaeological remain could be found inside these old terraces (obviously, no building has been set in wadi bottoms, except little dams and cisterns). Reclamation of such agricultural terraces will help Bedouins (ie., 'Azazmet tribe) supplying some agricultural (food and livestock) based products and to sustain their livelihood.

For each zone specific regulations will be set up by the Ministry of Tourism and Antiquities.

* Regulation

3. Fencing and Boundary Development

At the moment livestock is freely grazing within the site, including within the two proposed sanctuaries. Some ancient cisterns are currently used by pastoralists to water their livestock. Overgrazing is general outside enclosures (walls or metallic fences delineating private gardens and olive tree plantations) and the soil cover very thin if non existant. As a consequence of soil erosion in this semi-desertic area, sand and dust winds are frequent. As already stated humans looting and vandalism is not a real problem at UAR given the solidarity and interest in conservation shown by the local society.

Given the strong traditions and links governing the social life in the area and the capacity of the local society for self-regulating movements, walls and metallic fences do not appear as the most efficient solution for protecting the UAR site. Nevertheless, some form of boundary development is necessary. Access restrictions should be limited to the sanctuaries, as well as to some other areas under cultivation in the multiple-use zone (this under the responsibility of the leaseholders).

A suitable form of land and zone demarcation could be :

- a **visual green demarcation of the site** everywhere land uses are radically different : along the Madaba road and the southern limit road (urban development). It is proposed to maximise the use of strip plantations (10 m wide) along boundaries, composed with local species of trees and shrubs (refer to §. 'Landscaping Preservation & Improvement').
- the establishment of a **vegetal thorny fence around the sanctuaries**, only in case arrangements with the local nomads cannot prevent animal divagation or other kinds of disturbance to sanctuaries (2 years testing period).

Once land will have been purchased by the Government (fig. 7 - Plans 13 to 14 - § X)), the site boundary needs to be delineated along some stretches, without physically becoming an enclosure. Most of the site area (central and northern areas) will be reclaimed or remain extensively used by the local communities, so that no obstacle to movements of people and herds is envisioned (with the exception of tree and shrub plantations during the earlier stages of growth). Preserving the landscaping value is another reason for avoiding the artificial fencing of the site and sanctuaries. Moreover, the total length of the site external boundary exceeding 8 km, the cost of such a fence would be high (investment, recurrent costs).

Several information workshops and meetings will be held in order to achieve an acceptable local control over the site during a pilot period of 2 years and to strengthen the social acceptance of site restrictions.

In case of poor implementation of the contractual specifications to be agreed upon by the community (a local association could be created -refer to socio-economic section-), in particular the failure of self-regulated movements control of humans and herds, it could be decided to establish a natural thorny fence around the sanctuaries (see map), and to effectively control such a fence during the sensitive period of 5 years (to reach plant maturity).

RESTORATION AND PRESENTATION OF THE ARCHAEOLOGICAL REMAINS :

Restoration and display of the archaeological remains face different problems that can be grouped in main sections, from the basic ones to the more elaborated, the last ones including part or totality of the commendations of the first one.

Consolidation, restoration, cleaning : a general policy and technical recommendations have to be elaborated and applied. For example no restoration will be implemented if complete architectural study has not been carried on, only specific mortar will be used, after composition tests implementation (the construction of a lime kiln is recommended), mosaic restoration will be monitored by specialists...

Works to be done : for each type of vestiges ;

Anastylosis : if many parts of monuments could be rebuilt as they were in the Antiquity (using original materials), only few buildings could be entirely anastylosed. The chapel of the Peacocks is one of them.

Shelters : most of the ancient monuments need modern sheltering structures to be safeguarded as well as correctly displayed to the visitors. St. Stephen complex, churches of the Lions, of Peacocks, of Priest /a'il of the Tabula are in this case.

Consolidation, restoration, cleaning

Overall policy and technical recommendations

Archaeological works have been conducted for years with great success at Umm ar-Rassas, then preparing a suitable basis for the present project. Nevertheless, while the archaeological discoveries were of paramount importance from the scientific, historic, aesthetic, ... points of view, the conservation of the uncovered remains was not undertaken as it could be expected. Great efforts were spent for the reservation and presentation of some monuments : shelter over St Stephen church and apse of Bishop Sergius church mosaics, systematic consolidation of Twin churches area vestiges, on-going work at the Lower church, ... Unfortunately, systematic post-excavation conservative and protective works were not carried out. For a site such as Umm ar-Rassas, all the walls and structures have to be taken into consideration. Would some particular vestiges be of great interest, the whole site becomes unique, therefore forcing to preserve it.

It is highly recommended to proceed to the systematic protection and consolidation of all the uncovered vestiges. That work will be conducted only after a comprehensive study and registration of the remains (work devoted to archaeologists). Then, case by case, each monument will be considered and the most appropriate conservation solution implemented (including restoration or anastylosis wherever these solutions are feasible). Tentative or permanent sheltering will be studied too. Taking into consideration the great number of structure in need of consolidation works (as a minimum), it is proposed to reduce as much as possible the number of new excavations, which will also have to integrate the requirements stemming from the proposed tourist management scheme, and in particular clearance/excavation of the antique streets the visitors may walk on.

The work should focus on the restoration of the already excavated parts of the site. It will need a permanent team of trained workmen (labourers, masons, stone cutters, and supervisors) working in coordination with archaeologists and with architects and other specialists whenever necessary. A substantial part of this staff should be originated from Umm ar-Rassas.

A general restoration policy and techniques will be prepared by specialists and a chart of restoration adopted before being implemented. For example, it is strongly recommended to precisely define the mortar to be used for the restoration (composition, ...), as well as strictly follow specified conditions for using it.

A particular attention will be paid to the security of the visitors and the monuments filling back all studied soundings and looted spots. A list of these «dangerous cavities» is given hereafter.

It is also highly recommended that a general policy will be adopted for the excavation dumps, in order to avoid the current situation of new debris hills all over the site (see hereafter a preliminary list of such

cavation debris to be removed from the site). While digging, it is proposed to separate earth from stones in the debris, both materials been reused, earth for filling back the antique fields, stones for the walls restoration of the site's buildings or the broken agricultural «dams».

List of archaeological soundings to backfill

(Fig. 7 - Plans 8 to 9 - § X)

Approximate size of sounding is indicated, in meters. It is assumed that proper documentation of the sounding has been made, but this need to be verified prior to backfill, as some of these soundings reveal important stratigraphic components essential for the understanding of the evolution of the settlement.

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List of the clandestine excavations to assess and backfill :

(Fig. 7 - Plan 11 - § X)

Included hereafter are clear clandestine excavations, leaving behind debris and traces of digging carried out with the purpose of discovering objects, and signs of activities, maybe vandalism.

List of excavation debris areas to be removed

(Fig 7 -- Plan 10 - § X)

In all excavation debris there are stone blocks that could be useful for conservation and wall consolidation purposes. These need to be retrieved and arranged in each area, to maintain a certain relationship with the original area. In some cases there are decorated stones and architectural elements that need to be recorded and correctly stored. The earth could be reused for filling back the ancient fields (after their complete study), as rubbish stones should be reused in restoration work and/or in rebuilding the «dams» of the old fields. Dump materials will have to be selected directly from the excavation (see general recommendations) and reused in a proper way.

Suggested conservation actions (ranked by priority per each area)

1) General remark

Most of the uncovered structures have not been fully recorded, especially as regarding their elevation. This preliminary work has to be carried out for all excavated structures, prior to any other work. In the same time, systematic study of all the architectural remains will be done («étude du bâti»). As a priority, further research work will have to concentrate on these two aspects.

2) Castrum

The walls:

1. Restore the entire wall, eventually with reconstruction, with the goal to prevent from any further collapse and to access to the interior not from the north gate.
2. Remove excavation debris and architectural fragments

North gate:

1. Complete excavation work
2. Remove excavation debris and sort stone blocks and architectural fragments
3. Complete walls consolidation

Southern gate complex:

1. Complete wall consolidation
2. Excavate postern gate to understand its relationship to the main gate.

Twin churches complex:

1. Monitor mosaic conditions
2. Assess and monitor wall conditions, especially in the southern church
3. Repair damage caused by clandestine excavations
4. Remove stones blocking the passage between the southern and northern church
5. Eliminate steps that facilitate visitors entering the excavation area from southern fortifications (between towers 8 and 9) and from room near tower 4.
6. Eliminate debris from along the castrum walls
7. arrange the «lapidarium» حوض الحجارة
8. raise the wall between towers 4 and 5 to make it inaccessible

9. excavate 3 more rooms and possibly a courtyard to complete the study of the complex.

(3) Church of the Priest Wa'il and of the Tabula

1. Consolidate the walls of both churches
2. Monitor the decay of plasters (especially in the church of the Priest Wa'il) and eventually substitute cement plasters with more compatible lime plaster. Provide better protection for the decorated walls
3. Remove chancels from the Church of the Tabula, as well as from other weathering decorated stones, and store them in closed atmosphere, except if a general protection of the church is proposed (roofing as for St Stephen complex)
4. Remove the debris from around the churches, and organise the stone blocks by type and size in an open area to the west of the complex
5. Restore the alabaster floor in the church of the Tabula (area of clandestine excavations in Northwest sector), and over the channel that during the antiquity brought water to the cistern
6. If the shelter project is developing, document the current conditions of the mosaics and conduct a full programme for their consolidation and conservation
7. Complete the excavations of the three rooms abutting the church of the Tabula and of the tower-like building
8. If the footpath proposed in this report is further developed, clear the rubble and consolidate the walls of the structures besides the passage, open the blocked passage in the south wall of the church of the Tabula, and reconstruct the arched passage.

(4) Church of the Lions

1. Consolidate walls
2. Backfill deep sounding in room to the south of church
3. Consolidate walls, arches and roofs of rooms to the south of church. Rebuild roofs
4. Monitor mosaic conditions and carry out appropriate conservation and maintenance programs
5. Consolidate tombs west of the church and replace displaced tomb slabs. These should then be appropriately presented or backfilled
6. Clean debris, complete excavation and consolidate walls of rooms to the north of the church
7. Complete excavations of annex to the west of the church
8. Properly document nave collapse. Study the feasibility of leaving it in situ, or complete excavation and reconstruct using the archaeological evidence for arch span and height

(5) Area of church of Saint Paul and chapel of Peacocks

1. Consolidate existing walls, especially in chapel and church
2. Fill up large excavation between two churches: walls are in very precarious state and in immediate danger of collapse (except if a complete program of excavation and restoration is planned).
3. Carefully eliminate vegetation growth above the buried mosaics, after verifying their actual impact on the decorated surface
4. Fill up clandestine trenches in both churches and restore damaged mosaics
5. Remove decorated stones and capitals, presently outdoor, and store them in a room.
6. Fill up soundings to the south of Church of St. Paul
7. Remove debris and avoid damage to the vernacular houses immediately to the west of the excavation area
8. Complete excavation of the wine press, consolidate walls and plasters.

(6) St. Stephen complex

1. Assess detailed condition of mosaic floor in St. Stephen and Bishop Sergius, including a geomagnetometry or radar survey to reveal channels and/or passages under the floor.
2. Consolidate mosaics and continue conditions monitoring
3. Stop water infiltration presently damaging the mosaics in the Church of Bishop Sergius.
4. Clean and stabilise the mosaics in Bishop Sergius.
5. Consolidate walls and complete excavation of area to the east of the St. Stephen.

- 6 Restore alabaster floor in Church of Aedicula
- 7 Repair damage for clandestine excavation in room south of same church
- 8 Fill up sounding north to the Church of Bishop Sergius and the long sounding located in the northern wall of the complex.
- 9 Restore or backfill the tombs and consolidate the small chapel at the end of the right aisle of St. Stephen
- 10 Consolidate the passage below Church of the Aedicula, restore floor.

2. Works to be carried out

a) Castrum

A general detailed study over the entire wall has to be done. All the sections which are in immediate danger of collapse should be restored and/or consolidated. In a more wide objective, the wall should be restored in such a way that any passage from outside to the interior of the castrum is prevented, except from its natural North gate. The temporary stairway set up by the Swiss archaeological team should be dismantled. It is premature and too costly to plan for a tourist visit inside the fortification, albeit developing a platform over the ruins (see Annex 5) following the ancient street axis is feasible.

All the excavation dump accumulated along the Eastern side will be removed and it is expected that the excavation of the North Gate will be completed.

The Twin churches complex

The walls of the church have been fully restored by the Swiss team. The general remarks about the quality of the mortar used and its implementation are valid here, but that church is one of the two monuments at Umm ar-Rassas which are already fully consolidated and actually in a quite good state of preservation. All the area has been fully excavated. Would the mosaics be shown to the public, the construction of a shelter is proposed (see technical proposal), although such a solution is not required for tourism purpose. Indeed, there is no direct access from the Castrum North gate. This shelter will not only aim at protecting the building, but also the mosaics which are, at the moment, simply covered by a few centimetres of earth.

Church of the Palm Tree

With the church of the rivers, it is one of the two monuments at Umm ar-Rassas actually in a quite good state of preservation, all the structure been fully restored by the Swiss team members. All the area has also been fully excavated. The general remarks about the quality of the mortar used and its implementation are valid for the restoration done on that monument. If the mosaics have to be shown to the public, the construction of a shelter is recommended (see above remarks on church of the rivers and general technical proposal).

Annexes

All the excavated structures were restored and/or consolidated, but many of the carved blocks found (lintels, capitals, some of them still plastered,..., special mention to a beautiful « alabaster » base of column datable from Roman time) were left in situ. They may be protected from weathering and visitors.

b) The northern settlement

The Churches

Excavation to be completed, mainly along the outside limits of the church : to prevent humidity and over weight from accumulated earth and debris on one side of the wall and to allow their restoration

Restoration of the walls

Removing ancient dump from excavation

Presentation of the surroundings

Second step : building a shelter in connection with the one necessary over the Tabula church,

Restoration of the plasters and mosaics

Restoration of the ambo and chancel

General cleaning.

Church of the Tabula :

Large restoration works have to be carried out in that church : wall conservation and restoration, clearance around the building, ... It is expected that all the church will be sheltered, the chancel and ambo anastylosed (after implementation of a stone consolidation process), the mosaics and stone floor presented after restoration... The restoration and sheltering of that church should be planned together with that of Priest Wa'il.

Until the sheltering becomes operational , it is recommended, as for the other mosaics of the site, that regular inspections are organised, such as cleaning the cover earth layer from herbs growth and animal incursions.

Church of the Lions

The archaeological exploration has to be completed, the fallen arches first dismantled then restored, or kept as they are but fully protected. A general restoration of the walls is required prior to the construction of the shelter. The North wall, and, in a smaller scale, the South one have greatly suffered , resulting in the collapse of the internal arches. The reconstruction of the arches is quite possible, yet unnecessary for the construction of the light protection structure. A general consolidation of the walls, built of pseudo square more or less similar blocks for the apse, and from the double irregular with internal pocket for the others parts, is needed . The construction of the modern shelter will follow the general procedure (see general explanation.)

Chapel of the Peacocks:

This monument is actually the only one at Umm ar Rassas which could be anastylosed. Sufficient elements and blocks insure the restitution on paper as a material one. There are nine capitals (out of likely 10) among some stones arranged to the west of the chapel, as well as many stone slabs belonging to the original roofing. This building could be theoretically reconstructed, as most of its original building material seems to be present, although the original height of the pillars is questionable () (archaeologists have been requested to provide this information). Reconstruction (anastylosis) of that monument will be proposed, after general consolidation of the *in situ* structures

Church of St. Paul:

A lot of work remains to be done :

- complete clearance of the neighbourhoods,
- excavation and dismantling of the collapsed arch still *in situ*,
- consolidation of the walls,
- restoration of the plasters and the mosaics...
- Rebuilding the walls and construction of a protection roof.

Church of St. Stephen:

- research and determination holes size under the mosaics (radar, magnetometry...), reasons of decay...
- protection of the mosaics and disassembling of the current shelter,
- completion of the excavation, in particular along the external wall of the apse,
- fill back the soundings (south-eastern passage), -
- restoration and consolidation of the existing structures, in particular the vault and walls of the south-eastern passage,
- general rejoining of the structures,
- construction of the new shelter,
- restoration of the mosaics, general presentation.

Church of Bishop Sergius

The northern wall, in critical condition, was partially rebuilt some years ago. The restoration should be pursued . The West wall and the closing partition, build between Bishop Sergius and St Stephen, are in a very bad state of preservation. Overall consolidation of the structure is necessary.

The whole church should be protected by a new efficient shelter. This new structure will take place on restored walls (see general layout for such structures) and will be part of an overall protection and restoration of the area which will include sheltering of the four churches and the baptistery of Bishop Sergius church. The St Stephen complex should be restored has a whole.

The main restoration problem will be the conservation of the mosaic pavement. As there is a cistern inside the nave, under the main mosaic floor, it is recommended, prior to any other work and as for St Stephen church, to undertake a non destructive exploration work (radar, magnetometry...).

Church of the Aedicula

The main problem concerns the restoration of the existing structures, in particular those of the southern wall, preserved on more than three meters high. This wall shows many clues of instability (swelling, cant, compressions, cracklings, disintegration of the rocks, broken lintel ...), amplified by the presence of the underground corridor and the aedicula. Recent consolidation works have prevented from the collapse of the structure but did not solve any of the structural problems. A shelter could not be built until the entire wall is dismantled and rebuilt, reinforced and rectified. The underground corridor should be entirely restored, as well as the whole of the pavement of the nave and the apse. For more legibility, the pillars of the nave will have to be rebuilt up for two or three rows.

Church of the Courtyard

- Consolidation of the walls,
- rebuilding of the two arches of the North nave...
- restoration of the stone floor.

As the building is directly connected to the church of Bishop Sergius, roofing is a need to insure the protection and the continuity of the volumes within the St Stephen complex.

The other structures

Wine press : The structure is not completely excavated and is in need of consolidation, as both plaster and walls are in precarious conditions

c) Cisterns and water tanks

- general survey and study, including research with non destructive adapted techniques (see churches of St Stephen and Bishop Sergius).
- Cartography of all underground structures

d) Ancient Fields

Cultivated terraces were built by damming the bottom of local wadis with low terrace walls. The bulk of the terrace infill consists of colluvium composed of angular gravel in a matrix of fine sandy silt. In most cases the colluvium is topped by a 30 cm thick cover of fine sandy silt. The colluvium is very similar to the dirt originating from the excavations.

This dirt could be used to restore the cultivated terraces provided a cover of fine material on top of the dirt layer is applied, after comprehensive study and documentation of the whole system and identical reconstruction of the ancient walls..

A general survey and study of the structures is a preliminary need. These structures have to be protected and possibly restored (including the excavated ones), and prepared with the view of future investigations, tourist presentation and agricultural use (antique rural life theme). After a comprehensive study, they could be used again as fields for agriculture and grazing to fulfill local Bedouins requirements.

Restoration of such structures will be easy while simultaneously being a good solution for recycling the debris found during the excavations: rubbish stones could be used to rebuilt the walls and the earth to fill back the fields. Under the condition to keep their ancient configuration and utilisation this action will :
1) illustrate tourists' understanding of an antique village's agro-economy in arid lands, 2) improve site cleanliness and avoid summer dry fallow land fires, and 3) generate income for local populations. Additionally, this action will maintain a local interest for Bedouins to control the area.

e) North tower Complex

The Tower

Although cracks do not effect any key stones but their joints, monitoring the tower is recommended, especially because a clandestine excavation has destroyed –and destabilised- the lower part of the inner core (large hole opened in the northern façade). This tower may be also the place where general and detailed in situ studies on local stone weathering degradation could be monitored. An overall and comprehensive detailed drawing and study should be carried out.

The Church of the Tower

The church has masonry work problems. Presently, the conservation works conducted by the Department of Antiquities consists of wall consolidation and reconstruction, but the use of cement mortars of untested type may create future problems linked to mechanical and chemical incompatibility with the used type of stone.

Area around the Tower

- registration and study of the existing remains before implementing any restoration work (for example the courtyard limiting walls were recently cleared without any prior stratigraphic expertise and recording).
- complementary excavations , mainly around the «farm» building
- restoration of the unearthed structures
- general cleaning of the whole area's dump
- restoration and protection of the stone slabs roofed cistern still under use.

f) Semi-subterranean Houses

A thorough examination should be lead on a selection of two houses prior to start any restoration work. Prior to this step, consolidation will be executed and excavation conducted. A general survey and comprehensive study of this recent conversion of the antique remains are also expected.

3. Anastylosis

Reconstruction of part or totality of a building in the exact way and shape it was before destruction, and using the original materials requires to:

- discover all the necessary elements during the excavation ;
- design the restoration project of the building demonstrating that anastylosis is possible ;
- be sure that, from a technical point of view, the remains will allow rebuilding (state of preservation of the discovered elements, conservation and solidity of the different components. ...).

Nowadays, out of all the excavated monuments of UAR only the church of the peacocks reasonably appears to be completely anastylosable (Fig. 7 – Plans 15 to 18 - § X). All information and elements needed for its reconstruction are likely available : pilasters capitals, voussoirs of the arches and stone slabs from the roofing are preserved. The graphic restitution of the whole monument seems possible. Therefore, it is recommended to prepare a complete and precise study of this building. Anastylosis (if feasible), of that chapel could be a very interesting opportunity to display to the visitors the ancient method of the roofing construction technique used in the city.

In some other buildings, only partial anastylosis is possible (see for example the fallen down arches of the church of the Lions). On an other hand, reconstruction in situ of the ambo, of the chancels... of the churches must be studied, especially as regarding the monuments to be sheltered.

4. Shelters

The St. Stephen's complex consists in a group of churches including the church of St. Stephen and adjacent areas, the church of Bishop Sergius, with the baptistery and the Diaconicon, the church of Courtyard, the Church of Aedicula, and adjacent areas .The floors of churches of Saint-Stephen and of the church of Bishop Sergius are paved with exceptional ancient Byzantine mosaics, the two other edifices being covered with paving stone.

The churches of St. Stephen and the choir of Bishop Sergius have been protected by a closed covered superstructure. So far, this decision has helped to protect and conserve the mosaics, but also to authorize visits. Constant and regular visits have emphasised the celebrity of the site as regarding its religious

ings and beautiful mosaics. The ongoing increase in the number of visitors from various
 phical origins demonstrates the wide interest shown by the international community.

Mosaics of the others churches (churches of the Lions, Peacocks, Priest Wa'il, and twin churches)
 wadays buried under 20 cm thick sand layer, protecting them from potential damage by weather
 sitors.

urpose of the project is to deal with tourist demand, by seeking a solution for protection, in the long
 rather than in the short term, in integration of the site and enabling discovery and conservation of all
 mosaics.

stently, the existing superstructure covering Saint-Stephen will be demolished and removed letting
 to a new and relevant structure.

Current situation

metal shade in place, a temporary installation, awaiting the arrival of a global project, has allowed
 public to admire the mosaics of Saint-Stephen, along with part of the choir of Bischof Sergius'
 ch (see Annex 8.8 & 8.9).

composed with a steel frame made with columns and lattice trusses, approx. 4 m from each others.
 covering is made of a saddle roof, in thin steel plates. The supporting columns are founded on the
 side of the original walls, within unexcavated zones. Elevations are pierced with large glass openings.
 y one access allows visitors to come in, using footbridges, 1.20 m distant from the floor. The building
 in the gable, 7.5 m high. All the shade are coloured in light yellow-green. There is no signposting
 de.

the shade is used to play a role protecting from bad weather conditions (winds, rains, etc...). However,
 er issues have not been addressed, such as water-tightness and air-tightness, air circulation and light.
 well, should the issue of the presence on the site of this huge and obtrusive shelter as well as the
 chitectural quality of the interior volume be addressed.

oreover, the presence of outer claddings of the antic walls, in unexcavated zones has so far prevented
 y archaeological work in the surroundings.

Other negative characteristic is that the indoor walkways are built too high and too far away from the
 mosaics.

beams are conventional lattice truss and iron corners. Parts are welded on the site. The ageing of the
 ter parts is noticeable (fallen lattices, broken welding, worn fixings) and replacement work will be
 uired in a very short time.

Proposal: general policy

eral constraints are guiding the choice of the shelter's shape and roofing r system :

Integration to the site obliges to adopt a construction system respecting the general volumetric of the
 protected buildings, and the use of materials whose nature and colour could adapt the ensemble of the
 vestiges, or/and to be dissimulated to the sight ;

respect of the archaeological, dense and complex environment, obliges to conceive structures
 which are strictly limited to the vestiges to be covered, only means of preserving any possibility of
 excavation and presentation of the possible vestiges bordering. This solution does not allow to
 operate on the underground basis since the old structures are used as foundations for new
 constructions. However, this system obliges to design a structure of a total weight lower than the
 overall mass of the destroyed parts of the old buildings ;

adjustment to any type of structure in potential need of protection (in the future it may be necessary
 to cover and protect the wine press, dwelling houses, shops, ...) obliges to adopt a simple and modular
 system ;

costs of manufacturing should be as low as possible obliging to conceive a simple system, with the
 use of inexpensive and at the national scale marketed materials ;

Implementation must be as simple as possible, without requiring highly qualified workmen nor an
 exceptional equipment (large crane special tools, ...). « Who more is this implementation has to be
 able to be done in difficult to reach zones (huge hip of ruins), which resulted in conceiving modular
 structures, easily transportable, easy to assemble and implement »;

and increasing discovery pleasure : , bringing tourists closer to the
 touching ;
 internationally-recognised recommendations of the Venice Convention and

antages

is plane lattice work system distant of 2.5m, carrying a large translucent
 covering above the central part and a corrugated thin steel sheet above the
 structure will be supported by simple masonry walls built over the antique
 minimises its visual impact on the site while simultaneously clearly
 structure from antique vestiges.

various interests :

central part ; no need of specific electric devices for the lighting
 from rigid bodies (steel plate) of small span of 1.75m max. (no need of heavy
 facilitating rain water drainage and supporting the sand and dust accumulated

ing in the vertical part of the frame

can be adapted to each buildings without extra cost of engineering

ing and erecting

the anchoring points on masonry walls in respect of their carrying ability

materials (galvanised steel – PES/PVC fabric)

using ditches down to cisterns.

is provided by archaeologists, it has been proposed to restore the load-bearing
 to cover them with a structure of light fabric. The difficulty being, in detail, to
 walls that may be reconstructed, and in the spacing of any windows to be bored.
 specific iconographical, or archaeological element, it is proposed that the lower
 structure will be at the level of the extrados of the nave arcades in case they are

ly proposals, designed to illustrate a concept. All works should be of course
 eological analysis of the remains .

to be installed, at about 50 cm above the finished floor. Such walkways (1.20m
 from the beams, so as to keep the floor clear and to cause no damage to the
 low over all the important and interesting features.

all installation such as electricity or water in those premises.

resolved is to supply the structure inside an archaeological area where
 ches of Lions, of the Tabula, Twin churches, etc.) (fig. 7 – Plans 19 to 36 -

lled inside each sheltered structure.

tu walls are in poor condition they are about 90 cm thick, in order that they
 off the existing copings. The existing walls need to be reinforced using the
 materials (stone and lime) .

it will be placed about 10 cm away from the faces. A simple trip of grey
 anastylis.

thick, and 30 cm high for the new stone layer.

antic stones to reconstruct the outer walls, with the same finishing lime

hewn stones, different to the old masonry, in rubble stone. While work is
 of face finish will be executed (sawn, polishing, ...). There will be no

of 25 cm can be created, the highest part also 25 cm thick.
 included in the facings, to air the enclosed volume. Sand and dust will be
 drain water to the outside from the cover. These waterspouts will consist
 of about 30 cm.

remains, the levelling of the new walls, and clearing of some elements
 needed to the setting up of a light covering structure.

sorting of materials, stock, nearby arrangements .

parts and occultation of holes in existing walls .

walls by reemployment of materials with mortar and light lime.

mortar, with a light brushing of the facings .

existing plaster .

tion : supply and installation of wood protections on the grounds .

of stone faces of local cuttings 0.50m thick, 0.31 high, 0.60m long, supplied
 and sawed ...Facing layed on all visible sides . On the higher points, wall of 0.25m
 al structure . Reservations in new walls to create waterspout, ventilations...

exterior and interior siphon groutings .

between the ancient and new parts of a terracota bricks 0.01m thick .

installation of scaffoldings .

different doors .

steel door, supply and installation .

after work is terminated.

installation of metallic footbridges on the ground or fixed to the beams, all elements,
 etc... being included .

installation of marge signposts . 1.20x0.80m.

installation of steel doors .

will be delivered with special anti corrosion paint, brown finish, with rusted protective

structure of the buildings : a modular concept

ular concept consists to use an unique truss system for all the buildings. However as the
 m (Church of the Aedicula) to 13.50m (Church of the Lions), it has been decided to
 ights for the vaulted central part in order to use a peripheral self-supporting corrugated
 y sub structure witch can be adjust directly on site on the peculiar borders of the stone
 n case of a delayed building, the initial engineering work will be still appropriate.

Height	Concerned building
	Church of Saint Stephen - Church of the Court Yard – Church of the Lions – Church of the Tabula
	Church of Sergius Bishop - Twin churches - Church of the Priest Wa'il
	Church of the Aedicula

Baptistery

cept of the baptistery is identical to the other buildings. It will receive a lattice work
 the adaptation of half type 3 truss. Its bay is also of 2.5m. Its peripheral edge is realised
 self-supporting with folded steel plate eaves for the rain water drainage to cisterns.

calculation, assumptions, proposal

mean speed from the weather report of Madaba, Q.A.Airport, Er-Rabbah, 1991 to 2000, shows a maximum speed of 20 km/h (10.5 knots) at Q.A.Airport

is a poor average, and in lack of peak values insufficient. Therefore, it has been taken into account the local regulations (Zone II corresponding to the whole inner land). In that system, 20 knots corresponds to a load intensity of 105 daN/m². The wind coefficients to be taken into account corresponding to an extreme uniformly distributed load of 85 daN/m². In snow loads, it is common to take into account a vertical gravitary load of 30

local regulations, the standard frame will be :

concerning wind speed and snow load: N.V.65 completed by N.84 modified 95, « Règles Techniques Unifiées », especially D.T.U.32.1 of June 1984

ENR, European Norms

« Centre de l'Art des Structures Membranes Textiles Tendues » (CRAST)

« Règles pour la conception des ouvrages permanents de couverture textile » - *Annales des Travaux Publics*, n°4, septembre 1997 + modifications septembre 98.

Structure : description

will be made of galvanized steel. All the different steel components will be welded in the workshop and bolted on site. No welded joint will be allowed on site.

Truss

is composed of :

Chord : Ø101.6x3.6

IPN200

303x2.9

to fasten at the bottom of the vaulted top chord allows the lacing of the peripheral

the corrugated sheet with light secondary structure.

of the truss allows the fastening of a venting system, U-bend type, to prevent condensation. This system is reinforced by a grid to avoid entrance of reptiles, birds and

up along sides using a folded steel plate aisles, welded to the bottom chord of

A hinge for the first and a sliding bearing for the second. This principle allows the building to be built on masonry walls and allows thermal dilatation.

in the plane of the bottom chord is adopted in order to transfer horizontal

Stephen complex

Stephen complex, some of the waterspouts can not be put in place because they are too high (St Stephen / Sergius - St Stephen/Courtyard - Sergius/Baptistery). The waterspouts are put into account the rainfall data and the surface of the incident covering.

between the two coverings

coverings (Church of Bishop Sergius / Church of the Courtyard and Twin Church) will be replaced by a masonry wall to be rebuilt in all other cases. The end of the covering will be supported by a masonry wall in order to absorb sufficient thermal dilatation.

to conduct rain waters to the extremities (gable).

...top chord by a Vierendeel type horizontal beam in order to ensure stability. Furthermore, it will be stabilised by a set of oblique bracing members identical to those already describe behind (U-bend + grid).

...building with 50 cm thick walls (see above). They must receive a special treatment to ensure stability under lateral buckling, and to support the weight of the membrane.

...anchoring has to be avoided.

...5 daN/m² (see § hypothesis of calculation) for a 2.50 m bay, is easily absorbed by the proper weight of the walls themselves (for the horizontal efforts) and by the admissible stone stress (for the vertical gravitary efforts).

...membrane is an inverse double curvature prepared technical product. It is designed to resist under climatic loads (reducing displacements of the membrane, fatigue and corrosion) with an excellent life span of over 30 years.

...product ensures a zenith type lighting, avoiding use of electric devices.

...must be at least :

...reference to «French Recommendations»

...Polyester

...PVC double face anti U.V. anti crypto

...1000 g/m²(NF G 37 102)

...Warp : 420 daN/5cm - Weft : 400 daN/5cm (NF G 37 103)

...12 daN/5cm (NF G 37 107)

...M2

...very technical product are exclusively from the western countries .

...according the specific design and drawings, ensuring a double curvature. The manufacturing process uses the High Frequency Welding technology, the product is manufactured in Europe, and carry to the site.

...adopts a simple principle of saddle shape textile carried on arches with a specific reinforcement for the contact area on arches and peripheral eyelets for

...Jordan

...risks (political will, accidental collapse of a membrane ...), a substitution is possible in Jordan. In fact, the concept of small 2.50 m bay, allows to use a membrane with a specific reinforcement against uprising of the membrane is placed under it. The disadvantage is the life span of the membrane to 5 - 10 years .

...ability

...the use of this kind of membrane in the Mediterranean countries with very high temperatures demonstrates the relevance of this choice which brings about a great comfort and durability (over 30 years)

...ensured through simple yearly maintenance (namely a stretching of the lacing ropes and for mending if needed). The full -day- presence of the VC keeper is a sufficient maintenance and monitoring.

(5) *Velum fabric*

The quality of this membrane is : Grid or Screen with a permeability of about 25% . It is stretched by lacing upon specific tubes welded under the bottom chord of the trusses.

The modularity Side / Nave / Side is adopted in order to enhance the existing shape of the mosaics. Translucent, this technical product ensures a zenith type lighting, avoiding use of electric devices.

Constitution of the membrane must be at least :

- Fabric Type Screen
- Support Polyester
- Coating PVC double face anti U.V. anti crypto
- Total weight 380 g/m²(NF G 37 102)
- Tensile strength Warp : 230 daN/5cm - Weft : 160 daN/5cm (NF G 37 103)
- Fire reaction M1

Manufacturers of this kind of very technical product are exclusively from western countries.

(6) *Secondary structure*

A secondary structure must be added to the mains elements :

- a set of « I » beam IPN 100 or corner L50 x 5 must be used for supporting the corrugated sheets.
- a set of tubes Ø101.6x3.6 with bracing must be used to ensure the vertical stability of the lattice works.

(7) *Erection*

The main trusses can be realised with 2 different ways, according to the erection principle adopted :

- The trusses are manufactured in one welded piece in the workshop, carried on site and hoisted in place using «semi-heavy» lifting device. The approx. max. weight of the heaviest piece is about 500 to 600 kg (Church of the Lions) inducing the use of a 6 to 10 tons crane for a 10 meters long span.
- The trusses are pre-manufactured in disjoint elements in order to be bolted on site with light lifting devices. The heaviest parts is about 300 kg, limiting the need to a light crane or even more hand carrying using hoist.

The choice has to be fitted at each building according to access criteria to the site, stationary area, man disposal, carrying time, ...

The membrane (weight : 400 kg in case of Church of the Lions) can be hoist as a bag upon the frame using the lifting devices or can be hoist manually if the lifting device are disable. Final lacing is done by hand.

5. Exhibition Of Valuable Architectural Pieces

Some nice and valuable architectural elements were found during the successive excavations. They are on display or stored in the Madaba Museum or/and at Mount Nebo Franciscan Institute. Some remain in situ.

Some of these pieces are very representative of the Umm ar-Rassas history, so that their exhibition is recommended on the spot. The different findings can be divided into two groups :

- Huge stone pieces, such as carved lintels, chancel ambons,
- Small pieces, such as polycandilon, bronze plates, bronze crosses, ceramics, glass, ...

Exhibition of these objects doesn't require a complete equipped museographic installation and structure. Heavy stones of the first group can not be easily movable and robbed, although they should be protected against weathering and other risks. They can be aesthetically displayed and cleverly interpreted. If archaeological evidence and architectural remains justify it they will be replaced at their original setting within restored and sheltered monuments (eg., ambo and chancel in churches of Priest Wa'il and of the Tabula). May the anastylosis operation be not possible, such pieces will be deposited all together in a protected area such as in the Bishop Sergius baptistery. Exceptionally, some of them will be presented together with the small pieces (e.g., Iron Age column base). A detailed proposal will be prepared only

after exhaustive inventory of the carved blocks by archaeological teams, analysis of their state of preservation and degree of interest for visitors, have been carried out.

Representatives of the second group could be displayed in show-boxes, in the exhibition room of the Visitors' Centre (see §. 'Visitors' Centre'). Illustrated with photographs, drawings and models, they will contribute to the visitors' information upon their arrival at UAR. They might be contemplated once more after the visit, stored in a safe place, under direct supervision of a guard. Only a few, carefully chosen items will be exhibited. Accompanying illustrations, such as on the daily life and the environment, the know-how of the ancient UAR's inhabitants. A showcase from the Byzantine-Omayyad collection of the future National Museum in Amman could be lent to the VC.

C. LANDSCAPING PRESERVATION AND IMPROVEMENT

In order to improve the quality of the site landscape, the following measures will be taken :

1. Destruction of obtrusive in-site buildings

See figure 7 - Plan 37 - § X

2. Use of vegetation

a) Climate constraints

Key climatic data for UAR (220 m elevation) show that (in average) temperature drops to 3°C in winter, raising up to 40-45°C in summer. Dominant winds blow from the West and the NW.

b) Objectives

Vegetation should be considered as a useful mean to achieve several objectives, but mainly for landscape improvement and zone demarcation. A variety of trees and shrubs are proposed not only for improving the landscape, but as well to reduce soil erosion, to reduce the wind consequences (wind break effect) - such as plastic bags blown from the NW (UAR village)-, to demarcate the site boundary and zones, to provide shadow to small market areas and parking lots, and to generate income to leaseholders of the socio-economic zone.

c) Selected species

For this area, most commonly adapted tree species are : cypress (*Cupressus sempervirens*), oriental pine (*Pinus brutia*), thuya (*Thuja orientalis*), *Casuarina equisetifolia*, caroub (*Ceratonia siliqua*), tamarix, olive tree, black mulberry tree, almond tree, pomegranate tree, juniper. In addition, oleander, jujube (*Ziziphus jujuba*, *Z. spina-christi*), prickly pear (*Opuntia*), vine (*Vitis*), are possible shrub species. Thorny shrub species (*Opuntia*, *Ziziphus*, *Crataegus*) are livestock-proof once reaching a certain density and height. Years after they are able to greatly limit human access.

Besides their landscaping role, fruit tree species have additional socio-economic advantages : olive, black mulberry, pomegranate, almond, apricot and apple trees, can usefully improve the local farming system in the socio-economic zone. However, apricot and apple trees are more expensive (2.5 JD/plant) and require regular watering over time (refer to socio-economic section).

required planting density :	300 plants / ha
1 plant olive tree (60 cm high, 1-2 years nursery) :	1 JD
1 ha plantation (10 donums) equipped with drip irrigation (not including soil preparation + labour):	700 JD
cost unit labour :	3-5 JD/day

NB : A private nursery is located at Madaba. Nearest state-owned nurseries are at Wala (60 km) and Yajouz.

d) Watering

Yet, given severe droughts, all plantations should be watered during the first years after planting. A locally commonly used watering system such as the drip irrigation is convenient. Once watered the plantation growth is relatively fast, as it has been observed in the UAR area (olive tree plantations, cypress and pine-made row plantations).

e) Thorny fence

Prickly pear (*Opuntia*) and jujube (*Ziziphus*) are ideal shrubs for restricting access to livestock and humans, so are able to provide an effective barrier protecting the sanctuaries provided they have reached the mature stage. They are thorny plants and drought-resistant when enough rooted.

The weakness of this kind of fence, while compared with metallic fence, is the time required to achieve this goal. Plants should be protected as long as they are young and watered during earlier growing stages. However, once effective (after 5 years minimum) this natural fence is maintenance-free and unobtrusive in the landscape.

The prickly pear has to be watered during the 2 earlier years every 2 weeks, then watering will be definitely stopped. Fruits (pear-like) can be collected but green succulent parts should not be cut (used as fodder for livestock, especially during droughts), as the plant growth must be fast. Propagation is by cuttings. Initial planting is about 100 cutting / 150 m and the cost : 0.3 JD/cutting.

Cost of 1 km of 1 single row (not including watering and labour for plantation) : 200 JD

f) Tree row plantations

They will be discontinuously developed along the western and southern boundaries of the AP, both to demarcate the Park (visual demarcation, not physical fence) and to hide the most obtrusive components of the landscape.

Mediterranean cypress (*Cupressus sempervirens*) mixed with oriental pine (*Pinus brutia*) are tree species to be planted. If correctly watered (drip irrigation system) they will reach 5-10m high at the age of 8-10 years. Such species will be planted preferably along the Madaba road and the southern boundary (see map) to hide obtrusive elements (discontinuous plantation). During the young stages herds (especially goats) should graze at a distance from this plantation getting in or out through non planted passages. Olive tree, black mulberry tree, almond tree, pomegranate tree can also be used along different stretches of the boundary where the height is not determinant. Olive trees are particularly well developed when 8-9 years old.

g) Aromatic and medicinal herbs

As grazing will not be allowed within the sanctuaries, it is expected natural vegetation to recover. Among the steppe species several aromatic and medicinal herbs may develop such as *Artemesia herba-alba*. Vegetation will be monitored after 2 years of protection. In case of failure, several species of aromatic and medicinal herbs will be planted. Most suitable herbs are : sage (*Salvia officinalis*), *Artemesia* spp., savory (*Thymus satureioides*), gaysun, camomile, lavender (*Lavandula* spp.), rosemary (*Rosmarinus officinalis*). The objective of such plantation is to cover the soil in and closely around the archaeological sanctuaries, to create a contrast between the mineral ruins and their natural setting, as well as to provide a source of seeds for surrounding areas. This plantation is to be distinguished from the cultivation of herbs by leaseholders on the terraces with meagre soil cover in the agricultural zone of the site (see map) (refer to socio-economic section).

1 donum plantation requires 800-900 plants (8000-9000 plants/ ha). *Artemesia* can be sowed at a reasonable price, but sage is very expensive (300 JD/kg of seeds !). Plantation of sage plants seems preferable. It is advisable to water plants during first years of plantation, yet in that case the cost of equipping several hectares with drip irrigation is excessive. Therefore, the solution is to equip the site with a mobile water tank (§. 'Site Maintenance').

h) Mixed tree and shrub plantation

This type of plantation will provide shadow to the market stalls and parking areas. Plantation shape will be irregular. A variety of species will be planted : olive tree, cypress, pine, juniper, almond tree, black

mulberry tree, pomegranate, caroub, etc. This plantation will be watered with a subterranean drip irrigation system (to avoid damages brought about by human movements).

(a) Table : Plantation characteristics.

Zone	(i) Objective of plantation	Action	Main species	Location	Size	Watering	Cost (investment)
Boundary I and II	<ul style="list-style-type: none"> • create a visual contrast with ruins • reduce sand blown across site • reserve of seeds 	no grazing ; plantation of aromatic, medicinal, decorative herbs (in case natural recovery fails)	sage, <i>Artemisia</i> spp., savory, gaysun, camomile, lavender, rosemary	around complex of vestiges	8 ha (exclud. vestiges)	manual (2 years) then rain-fed	8000 JD 1000 JD/ha
Boundary	<ul style="list-style-type: none"> • natural demarcation of site • hiding obtrusive infrastructure • landscape improvement 	triple row tree plantation (10 m wide)	cypress, pine, juniper, olive tree, ...	W and S boundary (discontinuous)	3km/3ha	drip irrigation	6000 JD (2000 JD/ha)
Boundary Sanctuaries	<ul style="list-style-type: none"> • visual demarcation of core zone • controlled access 	double row of thorny shrubs (700 cuttings/km)	Opuntia, Ziziphus	sanctuaries I & II	2.3km	manual (2 years)	1500 JD
Tourism intensive zone	<ul style="list-style-type: none"> • shadow • decorative plantation 	tree plantation	olive tree, cypress, pine, juniper, almond tree, black mulberry tree, ...	near entrance gate & VC, parkings and market stalls	3ha	drip irrigation	9000 JD (3000 JD/ha)
Cropping and grazing zone	<ul style="list-style-type: none"> • Keeping the traditional way of rural life. • Soil erosion control • landscape improvement • income to local communities • marketing of handicraft and local products 	<i>see SE section</i>	<i>see SE section</i>	Central and Northern part of site	<i>see SE section</i>	<i>see SE section</i>	<i>see SE section</i>

The cost of all plantations (investment alone) amounts about 25 000 JD. Recurrent costs are mainly composed with the salaries of the two employees in charge of watering and general plantation maintenance during the two first years following the plantation, then with only one labourer's full-time salary.

D. SOCIO-ECONOMIC DEVELOPMENT

1. Introduction

UAR archaeological site is unique, showing a large ancient village and its land on the desert fringe. Presence of these vestiges justifies some controlled tourism development that may represent a source of income, especially for the people living around the site and the landless tribes. Local population should probably be more involved in restoration and maintenance works than in direct tourism development activities, but this is uncertain due to the regional policy context.

On an other hand, the old agricultural field pattern located in the bottom of the small wadis has to be enhanced, specially because ruins are located on Bedouins tribal land which were recently sedentarised and because of the weaknesses of the local farming production system. In such difficult agro-climatic conditions, barley production and livestock feed (as supplement for the long bridging period) must be supported by the project.

This project for the Protection and Promotion of the Cultural Heritage of Umm ar-Rassas is expected to generate a major economic development in this semi-desert area. The proposed action plan put the greater attention on this issue, emphasising the necessity to understand the needs of the local community and municipality plans, with prior agreement of the local stakeholders.

The management plan has to focus both on restoring and enhancing the archaeological remains, as well as on the consideration of other stakeholders and plans of governmental organisations.

2. Land purchase of the whole site

Field pattern should be purchased by the MTA for the whole site.

The Department of Antiquities is in the process of acquiring land around the archaeological area and the area extending from the tower to the fort, thereby solving zoning issues related to site protection.

In the first step, land and property plans (cadastral field plans) have to be agreed by the landowners, the Municipality, the Department of Lands and Survey and the Department of Antiquities. In order to fit the needs, a local Committee will be set up including all the stakeholders after site limits designing. As the cadastral field plans do exist and because land owners agree to sell their lands inside the archaeological site limits, the purchasing process may succeed in a short term.

After landowners identification, the second step will define areas and costs for each field or plot.

However, one should pay attention to the following elements inside the archaeological park:

- the cemeteries still in use for one of them; they should be out of the agreement because they belong to the Ministry of Awqaf.
- cisterns and traditional water tank (stoned made) are private owned and used for livestock watering; their purchase should be justified in agreement with local shepherds.
- buildings and houses: 6 houses are located near the tower and one in the south-east (that is to say they are inside the limits of the park). Purchasing these houses need a previous design of their use and of their potential contribution to local development. for example, part of them could be used for archaeological park guards housing and for a restaurant managed by a local association.

Purchasing these land is very important for MTA as it will allow:

- a real control of human activities inside the AP in a sustainable way (escaping from private and economical pressures)
- to avoid conflicts between private owners and MTA about types of activities which could be allowed within boundaries and those which are prohibited.
- to substantially improve nomads' production systems, especially those for the Azazmeh (the poorest Bedouins tribe) located in and around the AP site, through contractual agreement for land reclamation.

Action :

- Land-ownership assessment and cadastral field pattern purchasing (MTA, Department of Lands and Survey).
- Purchasing all the AP site lands could be one of the Jordan compensation to the European funding for the tourism development of the site.

3. UAR municipality development plan and urban development

Planning guidelines for the villages inside the UAR municipality (physical planning) have been established.

The current zoning plan for Umm Ar-Rassas town, (prepared in 1997) ,currently used by the Ministry of Municipal and Rural Affairs, should to be updated.

In addition, referring to the Social and Economic Development Plan prepared for the country for the period 1999- 2003 (in Arabic), a new overall land-use draft policy is also under-preparation at the Regional Planning Office of the Ministry of Municipal Affairs.

There is a project for the area of Umm- Ar-Rassas funded in the range of 58,000 JD focusing on developing better roads and lighting fixtures for the inhabited areas of the town of Umm ar-Rassas, as well as dealing with social aid and training.

Some changes in the zoning of the area around the archaeological sites should be studied. Some of them are being under preparation by the MTA, although they should be fulfilled. Several aspects should be taken into consideration, not only buildings and tourism activities. For example, the adjacent cemetery to the archaeological area; where no action appears to be possible, unless another area is found in the town to replace it.

The UAR Baladiyya (municipality) is the appropriate entity to design an area's tourism development project. It gathers 6 villages of the same tribe (Beni Sahkr) and the same nomadic Bedouins (Azazmeh). Moreover, several archaeological sites are spread over the 6 village lands. All these small archaeological sites have to be considered as part of a whole and may contribute to strengthen and balance local and tourism development of this area, so far focusing on the exclusive UAR village.

Lastly, the fact that Lehun has a smaller community than Umm ar-Rassas and that tribal political influence is larger at Umm ar-Rassas, must be taken into account.

For all these reasons, a local development plan has to be set up for the whole municipality territory, taking into account the several tourism sites (including Lehun for its landscape and tourism potential), their potentialities and complementarity.

The purpose of this action is to propose guidelines and standards dealing with settlements and buildings in the UAR municipality, especially around the archaeological park of UAR and Lehun site.

An urban planning view would replace the present urban plan providing urban zoning for the villages and building regulations for each type of zoning: people and regulations are key factors in the development planning of the area.

4. Community development and contractual agreements for site management

Tourism development in and around UAR site (and Lehun site as well) should contribute to generate income for local population and stakeholders of the UAR municipality. To do so, local population has to be involved in all steps of the tourism project preparation and implementation. Moreover, they should benefit from tourism activities and from the revenue generated by visitors' entrance fees.

Several activities could be developed consistent with this local population participatory strategy:

a) A socio-economic survey as a mean to define a local community participatory process

A study based on the needs and values of the local community and stakeholders is proposed as the right approach leading to a successful site management. The goal of such study is to objectively address local needs, thereby, being less imposed by planners or decision-makers.

Local population participation in the planning process of the site development is a key issue. All also show great concern on the economic development and involvement of local Bedouin groups.

Namely, the local community and the municipality agreed upon to be the main stakeholders for the future success of the physical planning of the whole area.

Issues of local community participatory process has to be discussed in order to define and prepare the way of managing the site and the contractual agreements to be signed between the local stakeholders, the UAR municipality and the MTA.

b) Contractual agreement for agricultural plots management inside the AP

It is recommended to reclaim the old terraces system located in the bottom of the small wadis inside the AP (taking into account that no archaeological remains could be found in such areas). This reclamation plans to reach the three following goals:

- landscaping management of the archaeological site in order to insure land maintenance where no excavation will be carried out: agriculture should also be considered with the view of maintaining the landscape of the whole area.
- generating local revenues from agricultural development benefiting to the local population (especially the poorest)
- integrating the agricultural terraces to tourism development project through the terraces reclamation.

Other local revenues will be generated by the agricultural development within the archaeological site, through a land leasing contractual system between the MTA and the association and involving the Ministry of Agriculture (refer to socio-economic section). Similarly as with tourism, agricultural activities will be specified in the contract with the association, as agriculture should also be considered with the view of maintaining the landscape of the whole area. The proposed animal husbandry improvement system will mainly benefit the poorest, namely the Azazmeh nomads (refer to socio-economic section).

With this view, a multi-annual contract should be signed between the MTA (Department of Antiquities), new landowner on the one hand, and the people in charge of the development and the maintenance of these grounds on the other hand. The contract will envision investment starting phases (in particular trees and, fruit-bearing seedlings and irrigation equipment if needed) to the load of the project and carefully indicate conditions and responsibilities of the owners specifying methods for agricultural settings and maintenance obligations (in time and space). Products and by-products of the exploitation and the maintenance of these grounds will be left to the farmer.

With regard to the uncultivated lands or open areas a contract specifying the use conditions could be designed as well, allocating pasture lands being annually re-considered insofar if no new excavation is planned. The authorisation have however to consider resting and regeneration periods of the steppe vegetation.

c) Contractual agreement for tourism activities and income management

The local population should benefit more adequately from tourism. Regarding the revenue generated by the entrance fees paid by visitors the current antiquities Law is unfortunately not compatible with a sharing mechanism, as such fees are entirely allocated to the MTA.

In the current situation, local revenues can only be those created by employment (guides, guards...), shops (curios, handicraft, tea shops...), restaurants, on-the-spot services.

However, without changing the Law a possible solution should be to create a local association with the aim of developing tourism at UAR. This association would be agreed upon by the MTA and registered by the Ministry of Social Affairs. A contractual agreement will be signed between this association from UAR municipality and the MTA (Madaba Department of Antiquities) which will stipulate:

- the percentage of entrance fees to be allocated to this association,
- planning of tourism activities in and around the site,
- obligations and commitments of the tourism promoter.

Entrance fees will be allocated to the association assuming it respects prior tourism activities planning and commitments.

The association status seems to be the best legal tool for local community development and tourism activities management. This association should gather all representatives of traditional and legal authorities, technical and administrative services for this area and local population representatives as well. The aim and the field of activities of such association might encompass not only the tourism development but the agricultural, handcraft and social development as well. This association might be

under the umbrella of UAR municipality and managed by a steering committee gathering all 6 villages to be involved in UAR area tourism development.

Once a year the steering committee will assess and plan the tourism activities and define the way of sharing revenues for local project in the municipality area.

d) Participation in restoration and maintenance works

Future digging and excavation

The Madaba Mosaic school and its contribution

Restoration works done by the students.

Training of young persons from Um ar Rassas municipality for the conservation in situ of the mosaics.

e) Social development

Interest in collaborating for future work of micro social development for the area in an integrated manner

The UAR social development center :

This center, attached to the Ministry for the Social Development, was created in 1999. It does not rely on the Baladia albeit its range of intervention is the UAR district (gouvernorat comprising a core of localities). The objective of this center is to support young people and women for implementing small projects in various fields such as: health, family planning, school crib, bordery and weaving, data processing, hair dressing, etc.

Two training activities are in the pipe in that center, both with direct connection to the tourist development of the UAR site :

- Training of tourist guides in relation with the Ministry of Tourism : this formation address young UAR people in order to open them with a step of reception in the tourist places, in particular through English training. This formation contents and precise objectives would require clarifying.
- Training on the maintenance (and the conservation) of the mosaics : still at the idea level, it would allow UAR's young people to be initiated with cleaning maintenance and conservation of mosaics as a preparation to work for the UAR project. It would be carried out by the Madaba Mosaic School according to methods which remain to be defined. The center plans to train about 20 UAR young people (men and women).

Lastly, the center is also planning to develop in the area a domestic garden project (between 2 and 4 donums per family) targeting agricultural systems, practising agro-foresters and market-gardeners.

f) Local handicraft development and traditional know-how enhancement

Jordan is a tourist country insufficiently known yet for its traditional and professional handicraft, much lesser than Egypt or Syria.

Nowadays two types of tourist handicraft items can be found in Jordan. The first type concerns new objects made from ancient techniques basis—especially embroidery —, such as the products from the Queen Noor foundation, or the “Bedouin” carpets of the Bani Hamida. These products are often very beautiful and decorative, but quite expensive. The second type, more from individual initiative, consists in creative and modern artefacts of individual artists. This concerns objects made from pottery, embroidery, carpet weaving. An example of this is the “Handicraft Center” on the way to Mount Nebo, near Madaba. Usually, these artefacts are sold together with products like jewellery, copper objects and other, made in India.

In most tourist sites we find more often this second type of “handicraft” that is a mixture of modern creations and commercial “Indian” imported products. These latter are of course found in every other country.

This situation shows on one hand that there is an extreme poverty in this matter and on the other hand, it expresses the lack of giving any value or of recognising as of “tourism” value the Jordanian know-how, that are traditional, local and used in everyday life. This is because, as we mentioned above, there has not been any industrialised and specialised production of handicrafts.

For Um ar Rassas project, it is very important to make a study of the local know-how, the traditional handicrafts even if the region seems at first hand to be poor in this respect.

For example, the black tent weaving from goat hair can be reorganised and weaved in much smaller dimensions, as well as the saddlebags and all other weaving that is done by the Bani Sakhr. The same concerns the embroideries of the 'Azazmet women's dresses. There is an important embroidery making with the 'Azazmet that can represent important inputs as tourism goods. All these will soon be forgotten if they are not valorised

There are also important know-how related to medicinal and aromatic herbs, in this arid and desert environment.

The Bedouin way of life is based on pastoral economy. We underlined above the difficulties that these shepherds face today. A revalorization of the dairy products is necessary: yogurt, butter, cheese, goat-hair and sheep wool etc.

The Bani Sakhr were important camel and horse breeders and they still continue to have some. This may be also valorised on a tourist ground.

The valorisation of local know-how together with the tourist development of the archaeological site is important for it implies the valorisation of a whole cultural way of life – that of the Bedouins – and it also implies the recognition of a culture which is disappearing very quickly these last decades. This valorisation is important because it helps revive traditions through tourism. And even more, the integration of the local population through the valorisation of its own cultural artefacts helps create links and responsibilities with the site and insure, locally, its protection.

5. Land use and rural activities inside Archaeological Park

a) Reclamation of agricultural terraces

Agricultural terraces (see Archaeological park design from Piccirello) should be reclaimed and enhanced. These terraces can be divided into 3 areas each with a specific objective :

(1) *Aromatic and medicinal herbs terraces*

These terraces are lying on the bad and arid soil of the western part of the AP. Unoccupied, there are not very visible. They will be cultivated with aromatic and medicinal plants, such as sauge, Artemesia, sariette (thymus),... and will be managed and exploited by a women group within the framework of the UAR social development centre, « which will make it possible to imply more people apart from the village of UAR ». A contract should be passed between the MTA and the Social Development Centre. Harvested aromatic plants could be prepared and marketed by the women together with Bedouin embroideries.

(2) *Agricultural terraces*

Located in the middle of the AP at the wadis bottom and junction, such type of terraces encompasses the best agricultural land (deep and moist soil). An agroforestry scheme will be developed here associating a fruit tree plantation and cereals (wheat and barley). Fruit tree plantation will consist in olive, almond, fig, apricot, pistachio and possible caroub trees. A single row will be set up along the border of each terrace in order to control erosion and improve terrace stabilisation, as well as benefiting from moisture.

(3) *Fodder terraces*

There are located in the eastern part of the AP, where Bedouins of the Azazmeh tribe use to settle with their tents and herds.

Animal husbandry is the income generator for these Bedouins, who periodically know problems of fodder supply (high cost). Fodder species could be developed on terraces by the project for the benefit of their users. Fodder crops will be irrigated using the large ancient water tank located in the eastern part of Castrum. Fodder will be composed with (non exhaustive list) : " Balsim ", *Sesbania sesban*, *Acacia cyanophylla* and *A. cyclops*, *Atriplex halimus*, retam,

Concerning these two types of terraces (agricultural and fodder) a contract of exploitation should be signed between the MTA and the association. The cultivation development, maintenance and exploitation of the various crops and trees should be consistent with contractual specifications established by the

MTA and assisted by the Ministry for Agriculture. The association should therefore redefine the exploitation rights for the nomadic Azazmeh farmers benefitting in priority from the harvested products.

b) Use of water cisterns

Within the AP a lot of cisterns and water tanks are visible. Some are still under use by the nomads for the herd watering, whereas the majority of the cisterns are no more usable (filled collecting water channels and/or cisterns). However, there are 3 important cisterns that deserve restoration with the aim of being used again : 1) cisterns in the Tower complex (one still stores water and is used by Bedouins), 2) a large collapsed cistern in the central area of the site (near the north gate) and, 3) the large water tank located to the east of the Castrum.

The latter with a large-size (24m x 24 m) and impluvium is probably very deep also (6m, according various interlocutors). Although with no more plaster protection, it apparently never dries up and may contain as much as 3500 m³. The use of this water for agricultural purpose (eg., irrigation of the fodder plantation) is likely feasible water being pumped by means of an electric-driven pump (important head of discharge) and delivered by gravity to the fodder terraces thanks to a network of channels.

E. TOURISM DEVELOPMENT

1. Tourism potentialities

The UAR site undoubtedly contains a high potential for tourism development : mosaics of the churches and several other vestiges such as wine press area, three-stored cellar, subterranean rock-hewn cisterns, stylite tower, castrum area, houses... are the main components of this potential, to which we have to add exceptional antique fields and agricultural installations, preserved landscape and view on the desert steppes.

However, turning the archaeological site into a tourist attraction will raise several constraints. The tourism-associated infrastructure and amenities will take into account the archaeological remains which have not yet been excavated, as well as the dangerous areas where visitors' circulation may be risky without prior consolidation (e.g., castrum, cellar, ...).

2. Visitors' Carrying Capacity

Putting into effect the visitors' carrying capacity for the site will facilitate the implementation of the above-mentioned strategy.

The carrying capacity for a site (whatever it is natural or cultural) is the sustainable threshold above which visitors' impacts on the site are no more acceptable. It is recommended to start with a number of visitors over the site which is below the estimated carrying capacity and steadily adjust this number to the upper limit of acceptable change, given the cultural and natural values (cultural / ecological impact), the local population (socio-cultural impact) and the visitor satisfaction (psychological impact).

The method used is empirical. The carrying capacity is defined here as the number of visitors per time unit within each core zone of the UAR site.

Stemmed from the experience gained in other similar sites, the small size of the site and the restricted range of possible itineraries (with only one entrance gate for each core zone) determines the carrying capacity to be defined from the actual capacity of the most sensitive areas which, in the case of UAR, are undoubtedly the complex of 12 churches and their mosaics.

It will reasonably be difficult without significantly impacting the vestiges or stressing and frustrating the visitors themselves (large compact groups and short visit time) to accommodate more than 20-25 visitors together inside St Stephen's church, which is considered to be the core (and simultaneously the bottleneck) of the site. We assume the time to be allocated to an average visit is 20' (refer to annex 13 & 14 'Visitors Carrying Capacity'). Given that all visitors will more or less use the same itinerary, a time interval should be respected between the waves of visitors. We assume this time interval is 15' to 20'.

Assessment of the UAR site carrying capacity strongly relies on the number of entrance points. Two entrance points are a minimum, as the site is divided into two parts requiring two separated visits (Sanctuaries I & II : high protected areas).

There is no great advantage for visitors to walk from one sanctuary to the other, except if the central area reveals (after being excavated) interesting remains and/or if the ancient agricultural features (irrigation system, terraces, crops, ...) are enhanced and promoted. In that case new itineraries could be developed in-between and the duration of the visitation extended. Nevertheless, research activities should be carried out prior to any development in that area.

At the moment, and according to the logic of tour-operators which is to minimise the duration of the visit, tourists will most likely go by vehicle to sanctuary II after the visit of sanctuary I.

The magnitude of the tourism development as well depends on the socio-economic activities developed in the site.

3. Strategy for tourism development

a) Form of tourism

The strategy for tourism development to be encouraged for UAR will be based on the approach of sustainable cultural tourism. This form of tourism should prevail over mass tourism. The key characteristics of such a form of tourism can be summarised as follows :

- main motivation of the tourists is the observation and appreciation of antic remains and traditional cultures prevailing in the area;
- it contains educational and interpretation features;
- it is organised for small groups;
- it minimises negative impacts upon the cultural, natural and social environment;
- it supports the protection of the cultural area by : generating economic benefits for host communities and relevant authorities in charge of site management, providing alternative employment and income opportunities for local tribes, increasing awareness towards the conservation of cultural assets, both among locals and tourists.

b) Packaged regional circuits

The strategy will also take account of the current tourism operators' timetables and programmes (see above). A full day 'biblical circuit' from and to Madaba can be developed. Main stopovers would be : UAR (4 hours including the lunch at or near the Visitors' Centre), Dhiban with a view over the wadi Mujib, Macheronte and/or Mount Nebo. The R'Meil site (Moabite / Nabatean palace) on the road from Madaba to UAR may be planned in the future as an interesting stop over once enhanced. In this perspective, tourists will spend one or two nights at Madaba (20' from the international airport) where hotel number is growing (10 hotels at the moment) .

Given its location between the King's Road and the Desert Road, UAR can as well be easily added to the commonest circuits of most TOs in Jordan : Amman-Kerak-Shobak-Petra-Wadi Rum. In that case and for time constraint, only Sanctuary I would be visited.

c) Duration of visit

A half day visit is the appropriate time duration for a normal visit of the UAR site. It does not appear realistic for visitors spending overnight here, whatever the level of diversification of products that can be reasonably achieved. Therefore, the development of hotels should not be encouraged around the site. Madaba is the right platform for discovering the biblical sites of the region.

d) Groups' size

One of the main problem to be solved at UAR is the size of the visiting groups. Several TOs are using large buses with a capacity of 30 to 50 tourists, and for various reasons such groups will be difficult to split for the purpose of the visit. A compromise might be in the mid-term that TOs accept smaller group sizes (limited to 20-25 people) on some circuits, increasing the quality of the visit (cultural tourism vs. mass tourism). In the short-term, it is suggested to test various

e) Ticketing policy

Visitors will pay at the entrance gate to Sanctuary I. There will be no ticket delivery at Sanctuary II. The ticket will be delivered with a simple folded pamphlet and a map of the site (design and editing comprised in the fee). Guiding will not be compulsory for individual tourists and small groups (5 persons max.). For the same price visitors will be free to enter the various closed shelters. In order to avoid the same person to visit the same spot several times the ticket will comprise one detachable coupon for each key spot (1 guard appointed at each one). Trespassing will be strictly prohibited. Signs will be placed at different locations to inform visitors about the site regulations.

f) Expected local benefits

As a pilot project, a component of the UAR development strategy is that the local population should benefit more adequately from tourism and that the needs of tourism should be integrated with the aim of protecting architecture and landscape.

Regarding the revenue generated by the entrance fees paid by visitors the current antiquities Law is unfortunately not compatible with a sharing mechanism, as such fees are entirely allocated to the MTA.

In the current situation, local revenues can only be those created by employment (guides, guards,...), shops (curios, handicraft, tea shops, ...), restaurants, on-the-spot services.

A possible alternative solution to changing the Law might be to create a local association with the aim of developing tourism at UAR. This association would be agreed upon by the MTA stipulating the percentage of entrance fees to be allocated to this association, the planning of tourism activities in and around the site, obligations and commitments (see socio-economic section for more details).

Other local revenues will be generated by the agricultural development within the archaeological site, through a land leasing contractual system between the MTA and the association and involving the Ministry of Agriculture (refer to socio-economic section). Similarly as with tourism, agricultural activities will be specified in the contract with the association, as agriculture should also be considered with the view of maintaining the landscape of the whole area. The proposed animal husbandry improvement system will mainly benefit the poorest, namely the Azazmeh nomads (refer to socio-economic section).

Besides traditional Bedouin handicraft, specific local agricultural products could be sold to tourists by women, such as aromatic and medicinal herbs, dried fruits, olives, etc. (refer to socio-economic section).

4. Visitor Circulation within UAR Sanctuaries

The proposed visitor itineraries within sanctuaries I and II (see map) are designed for the discovering of the most valuable vestiges within a reasonable period of time. Walking off designated circuits should be prohibited. It is suggested that the itinerary within Sanctuary I plans a viewing point at the top of the tumulus (if the cemetery is removed to another place) (see map). From the Visitors' Centre, the successive key spots along the itinerary are displayed on the relevant map (refer to map section).

The itinerary within the tower complex will be much simpler as the area and the number of key spots are reduced here. The foottrail will start at the parking area to the small recently restored Byzantine church and altar, the stylite tower, the byzantine military tower, the rock-hewn cisterns, then back to the market and parking area.

Average time visit for Sanctuary I will be about 3 hours and ½ hour for Sanctuary II.

a) Principles of design for the footpaths

The team's members have agreed upon several principles as regarding objectives, design and installation of the footpaths. Among them are :

- Need of respecting historical ways (eg., implying the removal of recent unofficial paths in the eastern part of the Castrum and use of the castrum's original gate) ;
- Prevent traffic from unstabilised sections, especially the Castrum's enclosure, which would create important security problems unless security is put into effect ;

- Possible reversibility, with or without loop circuit (difficulty being proportional to groups size). Several circuits are envisaged, one of them avoiding the ruins of the church in the Castrum.
- Conservation of the external aspect of the Castrum's walls without modern additions .
- Creation of the shortest possible circuit towards the twin churches, where the mosaics are in very poor condition .

b) Circuits

The circuit will start at the visitors' center . Visitors will walk towards the north-west corner and the northern wall of the castrum, which are located in the outskirts of the old city . On the right, they will find the antique and only entrance to the castrum. From this point they will have to choose between :

- a round trip across the old quarter passing by the most interesting buildings : churches of Lions, of Peacocks, the Saint-Strephen complex, churches of Prior Wa'il and Tabula ;
- an extension to the outer Castrum's basis, with a high point at the top of the ancient cemetery, where an orientation table will be set up ;
- a second extension entering the Castrum, to visit the Twin churches (without loop) ;

(1) Castrum

Admittance of visitors into the castrum is questionable, given the constraints, the minor interest of visiting the Twin churches compared with the other churches and the poor state of the mosaic conservation here. Moreover, 90% of the Castrum grounds have never been excavated therefore deserving protection as a potential archeological site .

Several circuits are envisaged, one of them avoiding the ruined facade of the church. All these circuits are based on the assumption that the external shape of the city walls are conserved without any modern additions .The shortest possible circuit towards the Twin churches, where the mosaics are badly damaged, is given priority. Layout of the ancient streets in the castrum will be restructured. Bearing in mind that streets are filled with fallen ruins and the need of reducing works magnitude in this sector (scientific and financial reasons), it is proposed to create a separate two-way footpath. A platform over the ancient street is suggested, to be easily constructed using light modular elements (materials : wood and steel). The work will be carried out in two steps : ground preparation, platform manufacture, assemblage. For the first step , several possibilities can be envisaged :

- remnants clearing on 1 m max..., to give the visitors a better view of what existed before. To the right of the church, maintenance of the ruins with the creation of treads. The footbridge will be wedged on a stable support, levelled either with sand bags or packed directly with sand, which is more difficult to put into practice . No mechanical system is possible .
- or maintenance of the current levels : The ruins area will be packed away as above and the footbridges installed without clearance or excavation .

For the second stage, work will be made easier by prefabrication, fitting, and assembly of the parts outside the site . The footbridges can be delivered in pieces of about three metres long . Particular attention will be paid to fitting the levels of the contact points .

The width of the passage will be approx. 1.40m . Protective fences will ensure safety and mark out the passage . All metall parts will be treated against corrosion .

(2) The circuit across the open quarter

Few works are needed to open the passage to visitors walking across the centre of the old residential quarters. Such works will mainly consist in removing the old boulders and ruins from the antique streets. Additionally, given the dangerous presence of a lot of very deep cisterns at ground level along itineraries, a added metallic cover on each opening will be set up.

The looping circuit links together the well known buildings of Umm ar Rasas, crossing the ancient residential quarters. Some subterranean houses are to be found along the itinerary, so that visitors will be able to discover an example of this kind of dwelling.

(3) Circuit around the Castrum

This circuit is feasible only if the prior delocation of the old cemetery is achieved (to a nearby hill). Using this circuit, visitors will access to the overlooking point over Umm ar Rasas site, where an

orientation table will be installed. Visitors will then be invited to walk around the Castrum back to the visitors' centre. No works are planned except signposts to guide visitors and a well-trodden way.

(4) Circuit across the Tower complex

This circuit is simple and short. From the car parking area, the visitor walks around the stylite tower, looking at the small church nearby, then visits the "farm", the cisterns, the quarries and come back. The "farm" needs to be excavated and the area cleaned. The roof of the water cistern (still used by people) will be restored including a protective disposal preventing people from falling down into the cisterns or the quarries.

c) The Visitors' Centre

(1) Purposes

The Visitor centre will be :

- the unique entrance gate to the site (for the visitors)
- a resting place
- a place where visitors will buy their tickets
- a place where to find necessary information on the site, before or after the visit.

The poor legibility of the antique city is a fact which must be remedied, as it leads to misinterpretation. The most important themes which should be explained in this centre in order to acquire a frame of reference for understanding the site, are :

- the regional geographical context : UAR plateau, Wadi Mujib canyon;
- the successive periods of occupation;
- the modern sociological context : the Bedouins' tribal distribution and tribal way of life;
- the explanations of the UAR urban religious settlements;
- the water supply network and management : antique (subterranean cisterns, rock-hewn cisterns, ...) and modern (forages, cisterns,...) vis-à-vis the needs and the physical / ecological constraints
- the characteristics of the Byzantine religious buildings and mosaics;
- the Byzantine religion;
- itineraries for archaeological discovery and for discovery of natural sites (eg., wadi Mujib).

The possibility for hiring a local guide (individual tourists and small groups) whatever the goal : interpretative visit of the site, visiting an archaeological dig, will be indicated precisely in the VC (possibility of reservation).

The major themes would be developed in the form of maps, panels, showcases housing selected objects from each historic period. The VC would be equipped with a permanent audio-visual show (12' long video tape).

d) Revenue Estimate

Refer to table in annex 15.

The revenue estimate can be derived from the carrying capacity (3 assumptions) and the assumptions that can be made on the distribution of visitors (age class, nationality).

A possible 500 000 JD could be reasonably expected annually from entrance fees alone. Plus an additional 15% income from indirect activities (75 000 JD).

e) Visitors' Monitoring

The level of visitation should be monitored and visitor impacts evaluated. Visitors number can be monitored at the entrance gate. Forms should be fulfilled every day providing data on the number of groups, groups' size, daily number of tourists, nationalities, and age classes (this kind of information which is already collected by the guards on the visitor's book). One of the two controllers appointed at the entrance gate will be responsible for collecting the information.

Whether the impacts on the site are considered to be too high and the sources of impacts identified, measures will be taken such as : reducing the daily number of visitors, modifying their overall distribution, reducing max. groups' size (e.g., splitting the groups), increasing the number of guards, etc. The index of visitor satisfaction should be known. A random sample of visitors will be enquired over the year.

Dissatisfaction among visitors should be evaluated and the reasons identified : overcrowding, too large group, security conditions, scarcity of activities, lack of tourist services and facilities, abuses, etc.

Monthly data will be entered into a data base then processed and interpreted at the Madaba office. A short training session (two staff) will be conducted by the project.

f) The Guides

Local guides should be trained including on deontology in order to avoid abuses (minimising time and service to increase turnover and maximise profits). A maximum of 5 local guides will be appointed.

Guiding will not be compulsory to individual visitors and small groups. Groups of 5 or more than 5 persons should be guided. Compulsory guiding (local guides) for accompanied tourist groups is questionable.

g) Publications

Cheap brochures and pamphlets as well as fold-out map and guide with itineraries need to be developed. A comprehensive individual guide book of a high-standard could be designed as well although with less urgency. We must point out that such a guide could be rapidly designed from the available information sources (Father Piccirello's 'Mosaics of Jordan' and 'Gli Scavi del Complesso di Santo Stefano', the latter edited with E. Alliata).

Handicraft

See : Socio-economic section.

5. Site Maintenance

Although the area's dryness alleviates the problem, plastic bags and other materials (scraps of metal, old rags, refuse, ...) are polluting the site. Part is generated by the nearby village of UAR, part by in-site dwellers (nomad tents). As dominant winds blow from the north and the north-west, it is expected that in the future proposed row tree plantations will make an effective barrier. Simultaneously, and despite recommendations related to the visitor's behaviour, there will be as well daily rubbish left behind in the site.

The maintenance of the site's cleanness is therefore an important issue to be dealt with. One full-time labourer would be appointed to this task, equipped with a donkey towing a simple trailer. A solution must be found at the municipal level as regarding this problem : garbage dump, public awareness of the UAR inhabitants, etc.

One full-time and one part-time (summer) gardeners will be hired during the first 2-3 years of plantation. The site will be equipped with a water tank trailer towed by a tractor.

From year 3 onwards only the full-time gardener will be employed with the task of plantation maintenance.

F. Infrastructure Development

1. Design Of The Visitors' Center

a) Architectural Concept

Prior to the site development and reception of a growing number of visitors and to manage it, suitable infrastructure will be developed, especially in the entrance gate area. The keystone element of such infrastructure will be a small sized visitors' centre (Fig. 7 - Plans 38 to 50 - § X). This size will correspond to lower assumptions on visitors frequency (see : §. 'Visitors' carrying capacity). At the moment, there is no justification to oversize infrastructure, albeit the proposed programme is planned to be enlarged if needed (possible extension of the infrastructure). Components of the VC are :

- Waiting room, ticketing office, with craftshop approx. 120m²
- Exhibition room 100m²
- Administration office 13m² x 2
- Public toilets (handicapped included)
- Store room 30m²
- Laboratory office with a working unit 20m²
- First Aid approx. 12m².
- Guard house (to be a separate building) approx. 100m².

Questions have been raised, such as whether to install a cafe, restaurant and shops in the visitor centre or leave such activities initiated by the local community as a source of income.

The visitor centre will be located at the edge of the protected area, near the urban area and the main roads (reduced costs, respect of site integrity). The VC must be clearly visible. It should be noted that the south-eastern extremity of the site is also the junction area of the Madaba, Dhiban and Desert roads.

Subsequently, all amenities and facilities for visitors will be grouped near main roads. The existing obtrusive buildings (post office, first aid hospital, ...) will be demolished and re-built outside the AP, or on the contrary build in connection with the Visitors' Centre (café, restaurant...).

Advantages of this choice are :

- Better respect of the site integrity, avoiding building in several different types of area. Any construction in this exceptional site raises questions about surrounding areas and the landscape vis-à-vis the architecture and the natural environment ;
- To develop an area of unobtrusive institutional presence adhering to instead of breaking the site historical continuity ;
- To provide a contemporary solution developing a functional working environment with suitable welcoming and information conditions towards the public. A modern way of life will be displayed through a balanced architectural design .
- To unify a range of various activities, thereby facilitating the site management through a clear and well-adapted layout ;
- To limit investment costs, while offering quality services through clear technical choices ;
- To integrate the tourist facilities with the modern settlement making easier potential contacts between tourists and local inhabitants.

The design of the building is deliberately modern. Indeed, there should be no confusion between ruins and new buildings. The construction will fit the landscape through a balance between mineral and vegetal, between artificial and natural, rather than imitation or camouflage. The slightly undulating horizon will be reproduced in the building design. Accordingly, walls will fit into the ground, as a melting process where architecture and nature separately exist, each one enhancing the other. Straight lines will cut through the land and sky with purity, like vast parallelepipeds, with higher geometric outlines, without any curves, similar to Bedouin tents rooted into the ground. Visitors and users would have the feeling of merging with the environment, rather than being enclosed in the monument.

Buildings will be deliberately low, developed on one floor, creating various atmospheres :

- On the south end entrance side, the building like a wall will open onto an olive grove and a formal garden. A partition, sometimes vertical, sometimes horizontal, will serve as a guide or conducting thread, with few openings, to show the way to the building's entrance ;
- On the north end, the building will open widely onto the site, offering a broad view over the remains, thanks to large outlets.

The visitor centre will occupy a strategic position, between the roads and ruins. From here, the public will have an outstanding view, over the roman Castrum, the open quarter and the tower in the distance. At this point, the visitor has entered into history .

The personnel will also take advantage of a pleasant environment, with several views overlooking the site, not the parking area.

The architectural design option combines large vertical and horizontal planes, with opaque and transparent surfaces, on which light and wind play. The edifice spreads and stretches downwards, differentiating the various zones open to the public. It will generate a feeling of comfort, of peace and quietness.

The VC will contain an area to answer the public requirements, an administration zone, a first aid and accommodation zone. The restaurant service zone will stand apart, being considered separately as to ensure the greatest flexibility in the overall operating conditions. The information building will include : a reception hall with sale counter, ticket office, access control, exhibition room and washrooms. From the hall, visitors will have a panoramic view over the site. The reception counter will play a central role linking the various areas, making easier to staff their management and control. The exhibition room will open straight onto the hall, as well as onto the site beyond its terraced extension. The administration offices, laboratory, and services are grouped in the east wing building aisle with separate access to each, and oriented to let entered as much light as possible:

b) Rooms area size

- Visitor center :	401.74m²
- Entrance Hall	93.53m ²
- Public Toilets	51.92m ²
- Exhibition room	106.78m ²
- Entrance office	25.90m ²
- Office 1	11.57m ²
- Office 2	16.73m ²
- Firstaid	11.74m ²
- Laboratory	21.53m ²
- Reserve	33.70m ²
- Toilets	5.68m ²
- Guard Housing Premises :	101.99m²
- Living room	31.48m ²
- Kitchen	10.30m ²
- Bedroom 1	13.76m ²
- Bedroom 2	15.44m ²
- Bathroom	9.20m ²
- Restaurant :	129.28m²
- Reception	71.27m ²
- Kitchen and toilets	29.96m ²
- Storage	28.05m ²

c) Materials and Construction

Proposed key materials are stone and uniformly treated glass. The selection criteria are : material, patina, durability, and local origin (as far as possible).

Stone, the statutory building material in Jordan, is extracted in the very country at Ajlun (pinkish colored) and at Hallabat (grey-beige), Maan, ...a colour and a pattern better fitting the natural landscaping composition. Stone will be used for its resistance and inertia, both indoors and outdoors. It will be operated in accordance with the traditional methods, which mainly consists in a single thickness of 50 cm appropriate to local temperature conditions. Various stone facings will be produced : surface finish, joints, size of blocks.

Glass is used in large sheets which are heat and burglar-proof.

The use of mosaics in modern architectural context underlines an attachment to local materials and skills.

Gun-surfaced concrete can be used as a complement. Its composition will be clearly defined to produce a final colour as close as possible to that of the local stone, along with specially treated steel, in relation with local climatical conditions.

The colour of the building will reproduce the landscape's general colour, the whole complex in grey-beige and enhanced by the mosaics.

Textile, which reflects the local nomadic presence will be used as a complementary material in the outdoor areas, forming an interface between the building, the vehicle parking and the site sensu stricto.

d) Technical summarised description

Indoor exhibition arrangement and equipment is not considered here. Works will be broken down into different lots:

Concerning the visitors' centre, restaurant, and guard-housing premises, all are built using the same techniques.

The following lots are grouped in annex 16 : 1) excavation and masonry, 2) carpentry, 3) metal work, 4) painting, 5) mosaics, 6) plumbing, heating and air conditioning, 7) electricity, television, telephone networks, 8) green areas and outdoor areas. 9) the covered way in the Visitors' centre.

2. Public equipment

It should first be stated that no plan or drawings of the supply networks within the AP were available. The present study has therefore been conducted on the basis of visual information gathered in situ.

Electricity telephones and water supplies:

There are electricity poles along the roadside and exposed main water piping near the site boundary. All houses on both sides of the road are connected to the existing supply network. The site can similarly be supplied. In order to alleviate the visual pollution of such installations, it is recommended : 1) either to move the poles to the other side of the road, or 2) to bury networks along the archaeological site boundary.

All poles and main pipes within the site will be withdrawn. Only the buildings close to the road will be connected (reception building, restaurant, accommodation, post office, clinic). The archaeological remains will not be supplied. The church shelters will be lit using daylight.

a) Drainage network:

There is no drainage network to collect wastewater and sewage from the planned buildings (reception building, restaurant, accommodation, post office, etc.). Therefore, assuming archaeologists agreement, a septic tank with a disposal field could be set up.

Networks supplied to all buildings and burying of the main water network beside the site (alteration of above-ground electricity and telegraph network costs are not included in this project). Water supply connection should be provided for the Tower complex vehicle parking :

- all kind of preparatory work (clearing, earthworks, installation)
- earth working and excavation for trenches in dry ground
- supply and installation of prefabricated concrete manholes with cast iron covers, connections, etc.... Diameter 1.00m, depth 2.00 max approx .
- Trench filling and ground levelling .
- Loading and removal of excess earth over a 1 km radius.

b) Sewage drainage piping :

- Supply and installation of PVC piping, waste water and sewage series, cuts, fixing, settings, points, etc... Diameter of 153/160 .
- Supply and installation of septic tanks, including earthworks, piping and connection of all equipment for 25 users, x 5 units (visitor centre x2, restaurant x 2, accommodation, + post office + clinic x 1), grease removal tank, purifier .
- Construction of disposal field .

* Cold water supply :

Supply and installation of piping for cold water supply, all fixings, joints, settings, connection to existing network, in high density polyethylene, pressure - 10kg , diameter 42/63 . For all buildings + ten water outlets for car parks .

* Low voltage electricity network :

- Supply and installation of PVC ducts (diameter 130/142), all clamps, supply and spreading of sand for cable installation, warning grid .
- Supply and installation of aluminium + neutral conductor cables .
- Supply and installation of meter boxes (1 per building) .
- Street lighting network, pedestrian crossings, supply and installation of cables .
- All adjacent network connections .

* Telephone network :

- Supply and installation of PVC ducts, supply and spreading of san, warning grid, cable chambers, manholes with cast iron covers, etc....

On access roads : Two-layered asphalt surface and construction of natural stone-coloured concrete pavements .

- Cavities for trees with borders .

c) Vehicle parking

Umm ar-Rassas is divided into two distinct sanctuaries, about 1.5 km far from each other. Designing two vehicle parkings near the remains is therefore advisable to limit the duration of the visit and risk generated by the very hot summer weather. The main parking is planned to the right of the visitors' centre, at the entrance gate and the other one near the Tower complex area (Fig. 7 – Plan 51 - § X).

Space requirements for each are limited : 3 for buses and..... for private vehicles. The parking areas will be greened with trees planted to provide the maximum shadow and coolness, while being environmentally integrated. No gate entrance checking is planned at the parking level (free access).

Work description

Works will include :

- Excavation works on road and vehicle parking areas
- Asphalt road work
- Tracing of buried networks
- Concrete ground work for footpaths
- Tree planting (see : §. landscaping)
- Signposts (panels) providing general information on the whole site.

d) Access ways

Various access ways are planned on and around the site :

- Asphalt road towards Madaba , Dhiban and the Desert
- A permanent paved road to be created linking the tower with the north west
- in-site unpaved roads, currently used for maintenance and servicing
- Footpaths.

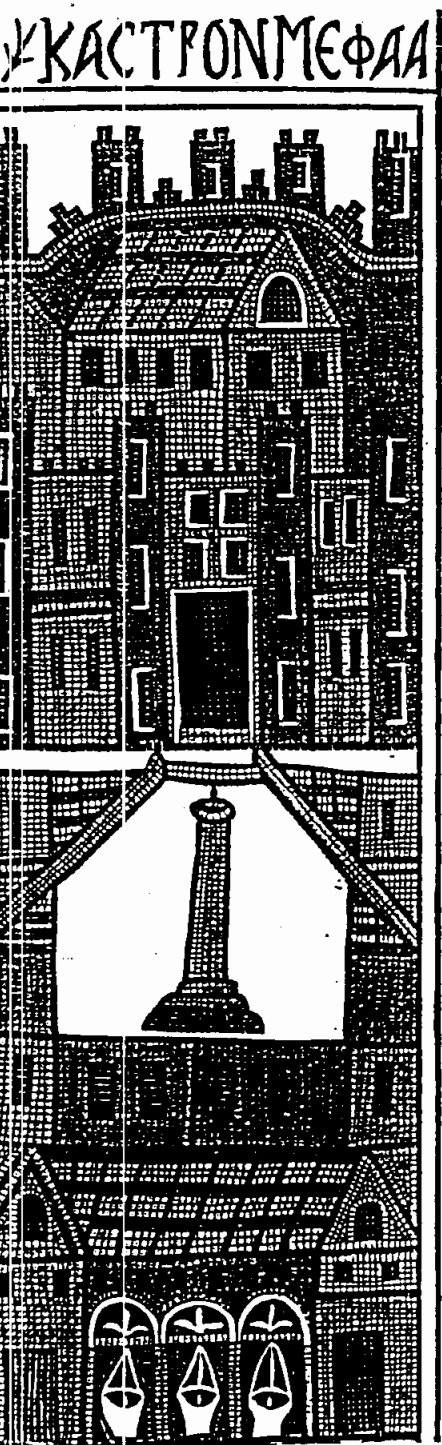
It is advisable to keep the natural shape and surface of in-site existing ways, without introducing any additional environment-unfriendly surface materials. Existing tracks will be maintained and a new double lane paved service road will be constructed parallel to the main road connecting the Tower area and the VC.

3. Footpaths

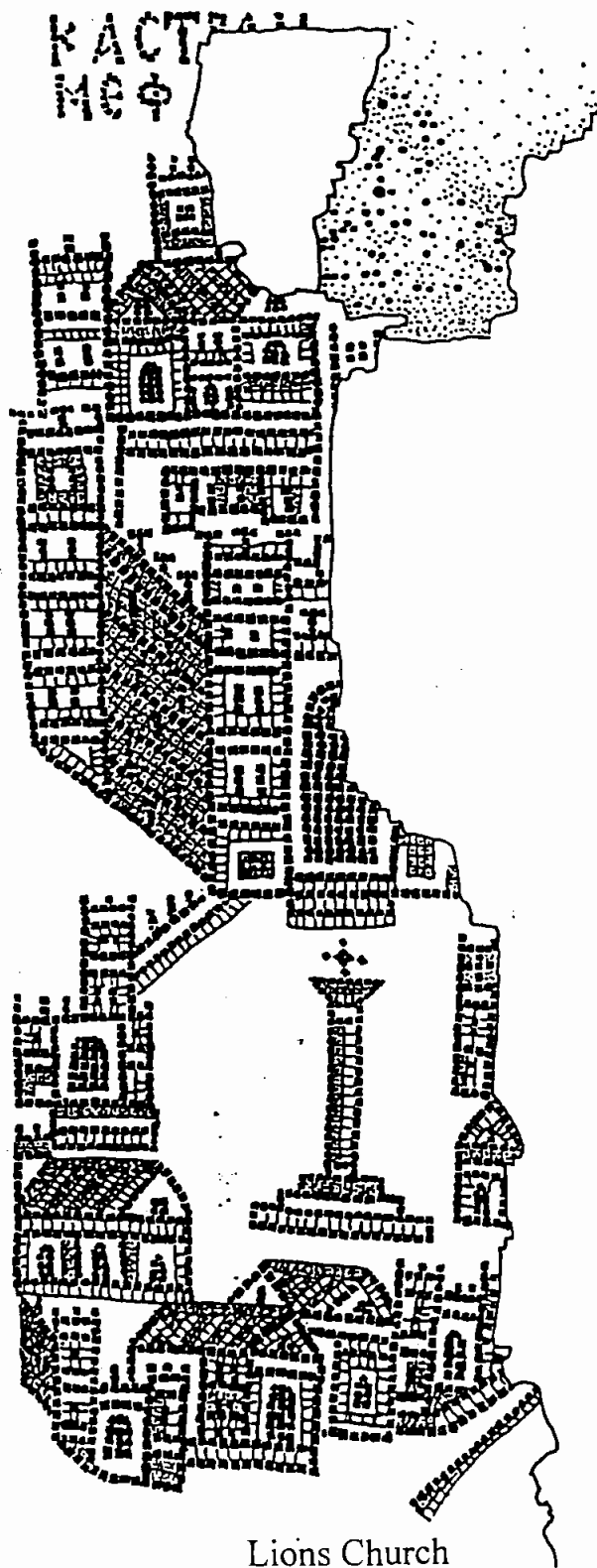
The whole site is free and accessible as no fence encloses the monuments. Visitors are therefore free to roam across the ruins, including the most dangerous ones such as the semi- subterranean houses and the Castrum (Fig. 7 – Plan 41 - § X).

Objectives to achieve are to channel visitors, to inform them while adequately protecting the major remains, and proposing a comprehensive visit opportunity. With this view, the walkways will be enhanced through the clearing of some stretches, avoiding level changes, setting up light removable equipment, facilitating access (such as entrance into the Castrum). The linking way between the information point and the site sensu stricto can be surfaced with concrete (local sand colour) about 1.40 m wide, to better guide visitors towards the starting point. Sun protection made with a light textile structure is also planned along this way. These structures will reproduce the grey-beige textile material used for tents. Metal poles will form the framework and stake out the path.

IX. Annexes



St Stephen



Lions Church

From M. PICCIRILLO

A. Annex 1 : Seismicity

Earthquakes (dates, geographical co-ordinates of the epicenter) for the sample year 1998
(all registered local magnitude values on the Richter Magnitude Scale)

Date	Latitude	Longitude	Mloc
8 01 05	29,374	34,926	3,29
8 01 07	29,383	34,908	2,72
8 01 07	29,365	34,922	3,2
8 01 08	29,178	34,846	2,38
8 01 09	29,173	34,836	2,42
8 01 09	29,383	34,955	2,85
8 01 10	29,226	34,694	2,68
8 01 10	29,353	34,947	2,3
8 01 13	29,363	34,94	2,52
8 01 14	29,924	35,172	2,57
8 01 14	29,379	34,926	3,23
8 01 18	29,002	34,833	3,37
8 01 20	28,816	34,745	3,23
8 01 20	28,735	34,814	3,12
8 01 24	29,187	34,898	2,49
8 01 25	28,962	34,876	2,47
8 01 25	28,921	34,882	2,81
8 01 25	28,899	34,877	2,99
8 02 01	28,818	34,795	3,04
8 02 13	29,18	34,908	2,8
8 02 13	28,808	34,78	3,16
8 02 14	28,763	34,765	3,11
8 02 20	28,917	34,792	2,95
8 02 26	29,521	35,005	2,94
8 02 27	28,431	34,699	3,5
8 02 27	28,649	34,946	2,99
8 03 01	28,891	34,755	3,27
8 03 02	28,819	34,839	3,14
8 03 04	29,235	34,787	3,1
8 03 04	29,293	34,807	2,36
8 03 06	29,709	35,214	2,53
8 03 07	29,974	34,488	3
8 03 11	29,222	34,756	3,16
8 03 22	29,233	34,736	2,46
93 04 03	29,482	34,939	1,85
93 04 07	28,781	34,57	4,09
93 04 10	28,19	34,514	4
93 04 13	28,962	34,86	2,83
93 04 13	28,995	34,844	3,01
93 04 13	28,93	34,922	2,62
93 04 16	28,873	34,848	3,07
98 04 17	28,835	34,748	4,19
98 05 02	29,399	34,867	2,36
98 05 02	29,821	34,567	3
98 05 04	28,809	34,828	2,83
98 05 09	29,45	34,954	2,81
98 05 10	29,943	35,154	2,26
98 05 12	31,638	34,662	3,09
98 05 21	28,988	34,774	3,78
98 05 24	30,216	35,048	3,26

98 05 31	28,353	34,686	3,64
98 05 31	30,207	35,075	3,3
98 06 02	29,363	35,018	2,11
98 06 04	29,259	34,791	2,86
98 06 04	29,201	34,8	3,7
98 06 05	29,127	34,869	2,86
98 06 05	29,169	34,883	2,4
98 06 06	29,396	35,334	2,58
98 06 07	29,865	35,113	2,45
98 06 12	29,408	34,965	2,24
98 06 12	29,412	34,978	2,34
98 06 12	29,413	34,949	2,18
98 06 12	29,41	34,945	1,76
98 06 12	29,416	34,946	2,07
98 06 14	29,766	34,634	3,02
98 06 14	28,711	34,579	3,52
98 06 14	29,199	34,797	2,72
98 06 14	29,242	34,794	3,08
98 06 15	28,812	34,767	3,44
98 06 18	29,15	34,876	2,64
98 06 19	29,157	34,876	2,93
98 06 19	28,976	34,894	2,56
98 06 24	29,007	34,873	3,1
98 06 25	29	34,915	3,52
98 06 26	29,351	35,017	2,78
98 07 07	29,479	34,986	3,14
98 07 12	31,831	36,519	2,8
98 07 20	29,256	34,987	2,76
98 08 17	31,921	35,56	3,07
98 09 03	28,396	34,737	3,58
98 09 06	31,68	35,624	2,21
98 09 27	28,83	34,734	3,61
98 09 27	28,83	34,795	3,03
98 10 09	28,783	34,76	3,57
98 11 03	29,799	34,54	3,28
98 11 06	29,187	34,816	3,58
98 11 06	28,881	34,849	3,27
98 11 19	29,642	34,489	4,11
98 11 29	31,114	35,166	3,17
98 12 01	28,823	34,831	2,99
98 12 14	31,117	35,202	2,93
98 12 14	31,314	35,562	2,09
98 12 14	31,323	35,582	2,46
98 12 14	31,335	35,602	3,38
98 12 14	31,332	35,537	3,46
98 12 15	32,712	35,81	3,33
98 12 25	29,389	34,884	3,2

3. Annex 2: Climatological parameters

Graphs of yearly rainfalls, max. and min. temperatures, winds, humidity...

201 MEAN MAXIMUM TEMPERATURE°C
 202 MEAN MINIMUM TEMPERATURE°C
 203 MEAN TEMPERATURE°C
 203 TOTAL MONTHLY RAINFALL (MM)
 253 MEAN MONTHLY RELATIVE HUMIDITY %
 534 MEAN WIND SPEED (KNOT)
 263 MEAN SUNSHINE HOURS
 533 PREVAILING WIND DIRECTION °

STATION_	YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEPT	OCT	NOV	DEC
ADABA	201	13,2	15	20	26	27,9	30,8	30,5	30,6	29,8	27,8	22	10,7
ADABA	201	7,9	8,2	14,5	22	28,3	29,9	30,6	32,7	30,1	30,3	19,6	10,8
ADABA	201	11,3	11,8	17,8	24,9	26,6	32	31,4	33	31,4	29,8	19,3	18,2
ADABA	201	14	13,7	17,4	26,8	29,3	30,4	31	34,2	32,1	29,4	16,4	10,5
ADABA	201	12,4	13,1	17,1	20,6	27,3	30,2	29,9	31	30,2	25,6	18,7	13,3
ADABA	201	11,7	14,9	14,9	21,2	29,1	30,2	32,1	32,1	30,3	25,5	20,5	16,7
ADABA	201	14,1	11,5	13,7	20,8	29,4	30,4	31,3	28,3	28	26,5	20,1	14,1
ADABA	201	11,5	16,1	15,5	24,4	28,6	30,3	32,5	34,2	32,1	30	26,3	17,9
ADABA	201	16,2	17,2	21,4	24,8	31,2	30,2	32,3		30,2	27,2	21,4	18,6
ADABA	201	11,9	14,7	17,3	24,6	26,5	30,2	34,1	30,5	29,1	24,3	20,9	14,8
ADABA	202	3,6	5	9,1	11,9	14,7	16,4	18,5	18,7	16,5	14,4	9,4	3,6
ADABA	202	1	2,1	3,7	8,3	14,4	15,9	16,4	17,9	15,8	12,9	8,2	3,6
ADABA	202	1,1	1,9	6	9,1	13	17,4	19,1	20,5	18,4	16,2	9,4	8,6
ADABA	202	6,3	4,8	7,1	12,5	15,4	17,3	19,3	20,5	18,5	15,7	8	2
ADABA	202	1,6	2,6	4,1	6,1	12,2	15,9	17,1	17,3	16,3	11,7	6	2,4
ADABA	202	3,1	4,5	4,6	7,3	14,6	16,6	20	18,6	16,4	12	9,5	4,1
ADABA	202	2,7	0,3	3,4	6,7	13,8	16,6	19	16,2	14,7	11,7	7,4	3,9
ADABA	202	2,6	3,8	4,2	9,2	14	16,3	18,7	20,6	18	13,5	10,2	5,2
ADABA	202	3,2	3,9	7,2	10	16,1	17,3	19,9		16,9	14	7,8	4,7
ADABA	202	2,3	2	4,1	9,9	12,7	17,3	21,7	19,4	17	12,8	8,6	5,2
ADABA	203	8,4	10	14,6	19	21,3	23,6	24,5	24,7	23,2	21	15,7	7,2
ADABA	203	4,5	5,2	9,1	15,2	21,4	22,9	23,5	25,3	23	21,6	13,9	7,2
ADABA	203	6,2	6,8	11,9	17	19,8	24,7	25,3	26,7	24,9	23	14,3	13,4
ADABA	203	10,2	9,2	12,2	19,6	22,3	23,8	25,1	27,4	25,3	22,5	12,2	6,2
ADABA	203	7	7,9	10,6	13,4	19,8	23	23,5	24,2	23,2	18,7	12,4	7,8
ADABA	203	7,4	9,7	9,7	14,2	21,9	23,4	26	25,4	23,3	18,7	15	10,4
ADABA	203	8,4	5,9	8,6	13,7	21,6	23,5	25,2	22,2	21,3	19,1	13,8	9
ADABA	203	7	9,9	9,9	16,8	21,3	23,3	25,6	27,4	25,1	21,7	18,2	11,5
ADABA	203	9,7	10,6	14,3	17,4	23,7	23,8	26,1		23,6	20,6	14,6	11,7
ADABA	203	7,1	8,3	10,7	17,3	19,6	23,8	27,9	25	23	18,5	14,7	10
ADABA	208	94,8	38,4	91,1	9,7	0	0	0	0	0	4,4	48,8	202,4
ADABA	208	119,3	273,9	38	0,3	2,5	0,5	0	0	0	0	62,5	69,8
ADABA	208	64,5	68,1	27,2	0	10,9	0	0	0	0	3	13,8	30,5
ADABA	208	102,5	47,2	23,9	7	0	0	0	0	0	6,1	154,3	116,9
ADABA	208	4,3	39	19,5	18,6	0	0	0	0	0	0	23,7	13,9
ADABA	208	94,8	23,7	98,8	15,4	0	0	0	0	0	17,7	12,7	12,8
ADABA	208	93	105,1	75,1	1,4	0	0	0	0	0	9,2	2,9	84,9
ADABA	208	89,5	48,3	50,5	2,6	0,6	0	0	0	0	0	2,3	3,2
ADABA	208	51,3	106,5	16,8	17,1	0	0	0		0	0	5	3,3
ADABA	208	146	68,3	0	0	0	0	0	0	0	0,4	3,5	114,5
ADABA	258	61	60	57	42	37	33	41	45	43	56	49	73
ADABA	258	72	76	55	43	36	36	40	44	45	38	49	66
ADABA	258	58	64	49	35	36	27	31	32	39	38	42	48
ADABA	258	67	73	62	43	43	51	51	52	54	50	83	94
ADABA	258	84	83	70	63	59	62	71	69	63	68	63	85

ADABA	258	1996	89	78	82	63	53	57	65	61	65	67	76	78
ADABA	258	1997	78	76	77	58	49	59	64	66	61	66	82	88
ADABA	258	1998	92,4	86	72,9	69,5	63,1	65	62,2	65,2	70,5	64,4	68	78,9
ADABA	258	1999	79,2	77,5	64,1	60,4	48,9	69,2	61,3		63,8	73,6		71,2
ADABA	258	2000	91	83	76	62	61	61	61	75	76	80	78	93
ADABA	534	1991	3,9	6,1	6,1	6,3	3,9	4,6	3,6	4,2	4,5	5,4	5,3	5,2
ADABA	534	1992	5,6	7,7	6,7	6	4,4	3,6	3,8	2,8	4,2	3	5,2	5,7
ADABA	534	1993	5,2	4,1	7	5,2	3,1	3,3	3,5	4	5,7	5,4	5,4	2,9
ADABA	534	1994	5,6	6,3	6,5	5,2	3,9	4,8	5,4	4,3	4,3	3,7	6,5	5,8
ADABA	534	1995	3,1	4,5	3,9	4,4	3	3	2,6	4,1	3,8	3,7	3,6	3,1
ADABA	534	1996	4	3,5	4	3,5	1,9	4,3	3,4	3	2,9	3,6	4	3,2
ADABA	534	1997	3,3	5,2	5	4,3	4,1	4,1	4	3,5		3	6,5	4
ADABA	534	1998	5,6	4,8	5,4	4,5	5,6	4,1	4,2	2,3	3,6	4,6	4,2	4,6
ADABA	534	1999	5,3	5	6,6	7,1	6,9	6,2	5,7		6,1	4,8		5,3
ADABA	534	2000	6,3	5,9	6		5,5	5,4	5,5	5,3	4,7	6,9	6,9	8,5
A.AIRPORT	201	1991	13,2	15,3	20,1	25,7	28,2	32,1	31,9	31,9	31,6	27,9	22,3	11,5
A.AIRPORT	201	1992	9,2	9,6	15,3	22,1	27,5	31,4	32,5	33,8	31,2	30,2	20,3	11,8
A.AIRPORT	201	1993	12,1	12,6	18,2	25,3	27,4	33,2	33,4	34,8	32,5	29,3	20,4	18,6
A.AIRPORT	201	1994	14,7	14,4	18,3	27,3	30,5	31,8	32	34	33,5	29,8	17,8	11,8
A.AIRPORT	201	1995	14,8	15,5	19,8	23,9	30,6	33,9	33	34,2	33,1	27,8	19,4	14,8
A.AIRPORT	201	1996	13,8	16,6	16,7	22,8	31	32,1	34,8	34,4	32,3	26,2	21,3	17,4
A.AIRPORT	201	1997	15,2	12,4	15,2	22,2	30,4	31,9	32,8	30,9	30,4	27,7	21,2	15,5
A.AIRPORT	201	1998	12,5	15	16,5	25,7	29,4	32,6	34,6	36,5	32,8	29,3	24,9	17,7
A.AIRPORT	201	1999	15,9	16,7	20	24,7	31,3	31,3	33,4	34,8	31,8	27,8	22,3	18,3
A.AIRPORT	201	2000	12,4	15	17,7	26	28,9	33	37,7	33,7	31,4	25,4	20,7	15,3
A.AIRPORT	202	1991	0,6	2,7	6,9	8,8	10,5	12,5	13,9	13,6	12,1	11,2	6,3	1,9
A.AIRPORT	202	1992	-0,5	0,9	2,1	4,6	8,6	11,5	12,5	13,5	12,1	9,4	6,2	2,1
A.AIRPORT	202	1993	-0,4	-0,4	2,7	5,3	10,2	12,4	13,1	14,3	11,2	11,7	6	4,8
A.AIRPORT	202	1994	4,1	2	3,7	8,6	10,8	12	14,1	13,4	14,4	13,8	6,8	1,9
A.AIRPORT	202	1995	1,1	2,5	2,9	5,3	10,6	13,4	14,2	13,8	13,4	9,1	4,1	2,2
A.AIRPORT	202	1996	2,8	3,3	4,3	6,6	11,9	11,9	17,1	14,9	13,1	8,9	8	3,5
A.AIRPORT	202	1997	2,2	-0,2	2,8	5,5	11,2	12,7	14,5	13,6	11,5	10,9	6,1	3,5
A.AIRPORT	202	1998	2,3	2,6	3,2	8	11,9	12,2	14,7	16,3	14,5	10	7,4	3,7
A.AIRPORT	202	1999	2,4	2,1	4,2	7,3	12,6	13,2	15,3	16,1	13,9	10,6	5,5	2,7
A.AIRPORT	202	2000	1,9	0,7	2,7	8,5	9,5	12,7	17,1	15,5	12,9	10,4	6,2	4,2
A.AIRPORT	203	1991	6,9	9	13,5	17,3	19,4	22,3	22,9	22,8	21,9	19,6	14,3	6,7
A.AIRPORT	203	1992	4,4	5,3	8,7	13,4	18,1	21,4	22,5	23,7	21,7	19,8	13,3	7
A.AIRPORT	203	1993	5,8	6,1	10,4	15,3	18,8	22,8	23,3	24,6	21,9	20,5	13,2	11,7
A.AIRPORT	203	1994	9,4	8,2	11	18	20,6	21,9	23,1	23,7	23,9	21,8	12,3	6,8
A.AIRPORT	203	1995	8	9	11,4	14,6	20,6	23,6	23,6	24	23,2	18,5	11,8	8,5
A.AIRPORT	203	1996	8,3	10	10,5	14,7	21,4	22	26	24,7	22,7	17,5	14,6	10,5
A.AIRPORT	203	1997	8,7	6,1	9	13,9	20,8	22,3	23,6	22,3	21	19,3	13,7	9,5
A.AIRPORT	203	1998	7,4	8,8	9,8	16,9	20,7	22,4	24,6	26,4	23,7	19,7	16,1	10,7
A.AIRPORT	203	1999	9,2	9,4	12,1	16	22	22,3	24,4	25,5	22,9	19,2	13,9	10,5
A.AIRPORT	203	2000	7,7	7,8	10,2	17,3	19,2	22,9	27,4	24,6	22,1	17,9	13,5	9,8
A.AIRPORT	208	1991	31,1	15,4	34,2	2	1,7	0	0	0	0	2,1	17,8	92,2
A.AIRPORT	208	1992	47,6	148,6	16,4	0,2	0,8	0	0	0	0	0	36,2	25,3
A.AIRPORT	208	1993	25,9	28,9	19,6	0	6,2	0	0	0	0	9,6	6,4	26,5
A.AIRPORT	208	1994	58,7	12,7	23,1	1,3	0	0	0	0	0	6,6	66,3	55,5
A.AIRPORT	208	1995	0,6	19,6	3,9	5,8	0,5	0	0	0	0	0	13,2	13,3
A.AIRPORT	208	1996	54,3	17,6	49,6	6,1	0	0	0	0	0	5,3	13,1	11,7
A.AIRPORT	208	1997	56,2	51,7	24,8	0,4	1,2	0	0	0	0	18,2	2,4	37,8
A.AIRPORT	208	1998	38,9	21,3	17,3	3,6	1,2	0	0	0	0	0	0,5	0,3
A.AIRPORT	208	1999	11	34,7	3,5	5,8	0	0	0	0	0	0	1,1	1,4
A.AIRPORT	208	2000	49,4	3,9	23	0	0	0	0	0	0	24,3	0,8	50,2
A.AIRPORT	258	1991	78	75	72	51	47	48	55	60	59	58	64	84
A.AIRPORT	258	1992	82	88	75	66	46	53	55	57	56	47	65	89
A.AIRPORT	258	1993	83	85	75	61	64	57	65	64	73	72	76	83
A.AIRPORT	258	1994	88	82	83	54	57	59	62	66	72	71	87	89
A.AIRPORT	258	1995	83	83	73	62	57	57	63	63	62	67	62	84
A.AIRPORT	258	1996	84	71	81	58	41	47	43	46	47	51	61	73
A.AIRPORT	258	1997	72	71	72	54	37	44	47	56	52	54	70	78
A.AIRPORT	258	1998	81,4	74,4	67,9	50,6	45,1	48,1	47,6	48,9	50,9	47,1	49,2	59,1
A.AIRPORT	258	1999	68	68	53	47,7	44,7	57,3	55,5	56,9	57,5	63,5	57,1	54,1
A.AIRPORT	258	2000	78	73	70	53	50	48	46	64	68	70	64	86

A.AIRPORT	268	1991	5,7	6,7	6,3	8,2	9,5	12,2	12	11,3	10,3	8,6	8,2	4,7
A.AIRPORT	268	1992	4,5	4,1	7,1	9,1	9,3	11,1	11,9	11,5	10,5	9,8	7	4,6
A.AIRPORT	268	1993	6,1	6,3	8,1	9,7	9,1	12,4	12,4	11,8	9,8	9,2	6,7	6,2
A.AIRPORT	268	1994	5,3	6,7	7,7	9,7	10,7	12	12,1	11,9	10,1	7,4	5,3	6,1
A.AIRPORT	268	1995	7,6	6,9	9	9,6	10,5	12,3	11,9	11,3	10,4	9,5	8,2	6,4
A.AIRPORT	268	1996	5,5	6,5	7,5	9,2	10,8	12,4	11,5	11,8	10,3	9,1	6,9	6,3
A.AIRPORT	268	1997	6,4	7,6	6,5	8,8	11,5	12,1	12	11,3	10,5	7,9	7,5	5,8
A.AIRPORT	268	1998	4,4	7	6,8	9,4	9,4	12,3	12,6	11,9	10,4	9,9	8,4	6,2
A.AIRPORT	268	1999	6,2	7,2	9	9,8	11	12,5	12,4	11,8	10,8	9,3	8,5	7,3
A.AIRPORT	268	2000	5,4	7,7	8	9,1	11,8	12,2	11,7	11,6	10,6	8,6	8,1	5,1
A.AIRPORT	534	1991	5,8	6,1	6,6	8,6	9	8	9,8	8,3	5	5,3	5	7,1
A.AIRPORT	534	1992	7,5	10,2	7	7	7,1	7,6	7,1	5,8	6,5	4	8,4	7,5
A.AIRPORT	534	1993	7,3	6,3	8,2	7,6	8,1	8,1	9,9	8,4	7	7,1	8,6	8,6
A.AIRPORT	534	1994	10,5	10,2	7,4	8	7,8	10,2	11,7	6,9	4,9	4,8	7,3	6,5
A.AIRPORT	534	1995	4,4	7,2	5,8	5,7	6,7	7,8	8,5	7,4	6,4	4,9	7	6,6
A.AIRPORT	534	1996	7,8	7,5	8,2	8,5	7,1	7,2	8,9	7,9	7,7	7,8	10,3	6,1
A.AIRPORT	534	1997	7,6	9	9,7	9,6	7,9	8,7	11	10	6,5	4,9	7,8	7,2
A.AIRPORT	534	1998	8,2	7,4	10,3	7,3	8,6	7,3	8,2	5,1	5,1	3,4	3,5	5,1
A.AIRPORT	534	1999	5,1	5,1	6,4	6,1	5,7	6,4	6,6	4,1	3,7	3,1	3,7	4
A.AIRPORT	534	2000	6,3	5,4	5,2	5	5,9	5,2	5,2	6,8	2,3	5,4	4,4	3,8
A.AIRPORT	538	1992	202	251	290	298	298	282	285	289	295	333	75	228
A.AIRPORT	538	1993	268	276	287	280	271	281	280	284	289	66	28	74
A.AIRPORT	538	1994	201	275	294	313	297	295	280	304	308	98	257	174
A.AIRPORT	538	1995	97	287	322	303	323	310	314	322	311	308	86	110
A.AIRPORT	538	1996	201	283	274	306	302	306	301	307	301	311	100	205
A.AIRPORT	538	1997	83	274	273	270	300	293	301	300	313	306	126	239
A.AIRPORT	538	1998	233	9	278	266	277	287	280	287	297	263	332	97
A.AIRPORT	538	1999	157	261	295	293	306	297	295	293	302	306	17	92
A.AIRPORT	538	2000	246	283	283	280	298	310	320	322	316	323	125	214
R-RABBAH	201	1991	11,3	13,6	17,3	23,1	25,4	28,8	28,8	28,8	28	25,5	20,6	10,2
R-RABBAH	201	1992	7,8	7,7	13,2	19,8	24,5	28,1	29,1	30,2	27,9	27,4	18,5	10,7
R-RABBAH	201	1993	10,8	10,2	15,8	21,8	24,7	29,8	30	31,4	29	27,1	18,8	17,2
R-RABBAH	201	1994	13,3	12,5	15,4	24,1	27,1	28,3	29,3	30,6	29,8	27,8	16,6	11
R-RABBAH	201	1995	13,3	13,5	17,4	21,1	27,1	30,5	29,9	30,6	29,7	24,7	18,2	13,9
R-RABBAH	201	1996	12,6	14,8	14,9	20,9	28,5	29	31,7	31	29,5	24,4	20,7	16,3
R-RABBAH	201	1997	14,3	10,3	13,2	19,7	27,4	29,4	30,4	28,8	27,8	26,1	20,1	14,3
R-RABBAH	201	1998	11,2	13,5	14,7	23,2	27,1	29,7	31,8	33,2	30	27,2	23,5	16,7
R-RABBAH	201	1999	14,4	15,2	18	22,2	29	28,7	31,4	32,9	29,5	25,7	21,2	17,8
R-RABBAH	201	2000	11,5	13,4	15,5	24,1	26,7	30,3	34,4	30,7	28,8	23,7	20,4	14,2
R-RABBAH	202	1991	2,1	3,4	7,3	9,7	11,5	14,6	16,5	16,5	15	12,8	8,7	3,2
R-RABBAH	202	1992	0,8	1,6	3,3	7,3	11,1	14,5	15,7	17	14,8	13	8,2	3,2
R-RABBAH	202	1993	1,5	1,2	4,5	8	11,4	15	16,2	17,6	15,2	13,9	8,3	6,8
R-RABBAH	202	1994	4,9	2,9	4,8	9,1	11,7	14,6	16,5	16,8	17	15	8,1	2,8
R-RABBAH	202	1995	2,8	4	5,2	6,5	12,4	16,3	17,1	17,2	16	12	6,7	4,1
R-RABBAH	202	1996	3,8	4,6	4,7	6,9	13,2	14,5	18,6	17,5	16	11,4	9,6	5,8
R-RABBAH	202	1997	4,4	1,1	4	6,7	13,1	15,2	17,5	16,1	14,7	13	8,7	5,2
R-RABBAH	202	1998	3,5	3,9	4	8,8	13,2	15	17,9	19,1	17	13,3	10,1	6,2
R-RABBAH	202	1999	4,5	4,1	6,6	9	14,5	15,3	18,1	18,4	16,1	13,1	8,9	6,6
R-RABBAH	202	2000	3,6	2,9	4,2	10,1	11,5	15,9	20,4	17,6	16,1	12,1	8,6	5,7
R-RABBAH	203	1991	6,7	8,5	12,3	16,4	18,5	21,7	22,7	22,7	21,5	19,2	14,6	6,7
R-RABBAH	203	1992	4,3	4,7	8,3	13,6	17,8	21,3	22,4	23,6	21,4	20,2	13,4	7
R-RABBAH	203	1993	6,1	5,7	10,1	14,9	18	22,4	23,1	24,5	22,1	20,5	13,6	12
R-RABBAH	203	1994	9,1	7,7	10,1	16,6	19,4	21,5	22,9	23,7	23,4	21,4	12,4	6,9
R-RABBAH	203	1995	8	8,8	11,3	13,8	19,7	23,4	23,5	23,9	22,9	18,3	12,5	9
R-RABBAH	203	1996	8,2	9,7	9,8	13,9	20,8	21,8	25,1	24,3	22,8	17,9	15,1	11
R-RABBAH	203	1997	9,3	5,7	8,6	13,2	20,3	22,3	23,9	22,4	21,3	19,6	14,4	9,7
R-RABBAH	203	1998	7,4	8,7	9,4	16	20,2	22,4	24,8	26,2	23,5	20,2	16,8	11,4
R-RABBAH	203	1999	9,5	9,7	12,3	15,6	21,8	22	24,8	25,7	22,8	19,4	15,1	12,2
R-RABBAH	203	2000	7,5	8,1	9,8	17,1	19,1	23,1	27,4	24,1	22,4	17,9	14,5	9,9
R-RABBAH	208	1991	129,2	38,3	246	1,8	1,7	0,1	0	0	0	13	29,8	178,9
R-RABBAH	208	1992	135,3	194,7	21,2	0	2,8	0,2	0	0	0	0	101,1	119,5
R-RABBAH	208	1993	47,4	63,8	18,8	0	7,5	0	0	0	0	0,6	54,1	46,4
R-RABBAH	208	1994	143,6	76,8	42,5	12	0	0	0	0	0	16,9	133	93,4
R-RABBAH	208	1995	0,9	72,9	4,1	10,2	0	0	0	0	0	0	17,8	17,6
R-RABBAH	208	1996	93,6	19,8	102	3	0	0	0	0	0	11,5	6,9	49,4

R-RABBAH	208	1997	119,3	123,2	63,9	7,6	1,7	0	0	0	0	5	3	86,1
R-RABBAH	208	1998	109,9	49,7	65,2	9,5	5	0	0	0	0	0	1,1	3,5
R-RABBAH	208	1999	37,2	92,3	6,8	18,8	0	0	0	0	0	0,8	0,2	7
R-RABBAH	208	2000	77,7	30,4	45,2	0	0	0	0	0	0	11,5	4,5	87
R-RABBAH	258	1991	85	81	80	59	50	50	59	63	63	60	64	79
R-RABBAH	258	1992	80	83	71	60	52	48	54	54	58	46	68	85
R-RABBAH	258	1993	77	77	69	54	56	48	47	51	59	57	70	74
R-RABBAH	258	1994	82	74	77	50	46	51	51	51	59	56	80	77
R-RABBAH	258	1995	71	75	60	52	46	45	55	58	54	60	53	79
R-RABBAH	258	1996	79	70	76	58	40	48	50	51	52	58	66	73
R-RABBAH	258	1997	72	75	69	48	36	42	43	51	49	48	58	71
R-RABBAH	258	1998	76,5	73,6	67,3	47,1	45,2	43,2	36,1	41	48	47,7	56,5	65,8
R-RABBAH	258	1999	75,5	72,7	58,5	54,3	47,6	67,3	62,7	63,4	64,5	69,8	57,5	68,5
R-RABBAH	258	2000	90	88	99	53	42	52	58	70	65	62	51	75
R-RABBAH	268	1991	5,4	6,4	6,4	8,1	9,7	12,2	11,9	11	9,9	8	7,4	4,4
R-RABBAH	268	1992	4,1	2,9	7,3	8,9	9,4	11,1	11,8	11,4	9,9	9	6	4
R-RABBAH	268	1993	5,4	6,3	7,8	10,1	8,5	12,3	12,3	11,6	10,2	9	6	5,8
R-RABBAH	268	1994	5,1	6,4	7,4	9,3	11	12,2	12	11,6	9,8	8	5,5	5,3
R-RABBAH	268	1995	7	6,5	8,6	9	10,6	12,3	11,9	11,7	10	9,2	7,5	5,8
R-RABBAH	268	1996	4,8	5,7	7	8,4	10,2	12,1	10,9	11,3	10,4	8,9	6,6	5,4
R-RABBAH	268	1997	5,7	6,8	6,1	8,8	11,2	11,8	11,7		10,2	7,9	7,1	4,8
R-RABBAH	268	1998	3,8	7	7	9,3	9	11,8	11,9	11,2	10	9,1	6,9	5,1
R-RABBAH	268	1999	5,4	6,4	8,5	9,5	10,9	11,8	12,1	11,3	10,3	8,9	7,6	6,1
R-RABBAH	268	2000	5,2	7,9	6,9	8,7	11,5	12,1	11,3	11	9,9	8	7,2	4,5
R-RABBAH	534	1991	4,5	4,9	5,6	5,4	6	5	7,3	6,4	2,8	1,8	2,3	5,1
R-RABBAH	534	1992	5,3	9,1	4,2	3,2	3,2	3,3	4,4	4,5	4,2	2,1	4,3	3,7
R-RABBAH	534	1993	4,9	4,8	7,6	5,3	7,1	5,5	6,7	3,3	2,4	2,2	3,3	1,6
R-RABBAH	534	1994	4,9	6,6	3	2,6	2,1	3,2	4,7	1,9	1,2		3,4	3,8
R-RABBAH	534	1995	1,4	2	3,1	2,3	1,9	2,7	2,8	1,7	1,4	1,1	2	0,8
R-RABBAH	534	1996	2,3	1,8	4,1	2,6	1,2	2	3,9	1,7	1,6	0,9	2,2	0,7
R-RABBAH	534	1997	0,8	4,3	3,5	4,1	1,4	1,2	2,6	1,6	1	0,5	1	2
R-RABBAH	534	1998	3	1,7	3,3	1,8	2,4	2,1	2,2	1,4	0,8	0,5	0,3	1,2
R-RABBAH	534	1999	1,5	4,4	6,5	5,7	4,4	4,4	3,5	1,2	1,5		2,1	
R-RABBAH	534	2000	2,5	2,3	4,5	3	3,3	4,6	6	1,6	5,3	2,8	4,7	
R-RABBAH	538	1992	252	235	243	241	265	328	283	265	261	254	189	223
R-RABBAH	538	1993	216	240	238	257	242	258	262	257	259	196	235	125
R-RABBAH	538	1994	214	245	255	243	278	283	281	284	279		265	264
R-RABBAH	538	1995	260	258	269	263	273	284	285	283	284	252	267	169
R-RABBAH	538	1996	259	266	257	235	252	255	258	260	261	249	85	228
R-RABBAH	538	1997	258	250	254	255	250	260	265	267	256	194	169	265
R-RABBAH	538	1998	249	253	251	260	255	267	262	263	261	200	117	246
R-RABBAH	538	1999	192	268	272	274	268	270	279	279	276	250	120	260
R-RABBAH	538	2000		256	264	266	269	274	280	287	287	279	144	249
QATRANEH	201	1991	12,4	15,6	19,9	25,5	27,6	31,1	30,9	30,9	30,4	27,2	22,4	12,4
QATRANEH	201	1992	9,6	10,2	15,4	22,4	27,2	30,3	31,4	32,5	30	29,3	20,4	12,5
QATRANEH	201	1993	12,4	13	18,1	24,6	27,1	32,2	32,2	33,8	31,4	28,6	20,3	18,8
QATRANEH	201	1994	14,9	14,5	18,2	26,8	29,7	30,5	31,1	32,8	32,4	29,4	18,4	12,5
QATRANEH	201	1995	15,3	15,7	19,8	23,4	29,7	32,4	31,8	32,6	31,7	26,7	19,6	15,3
QATRANEH	201	1996	14,1	16,9	17,2	23,5	30,9	31,2	33,9	33,3	31,3	25,8	21,5	17,9
QATRANEH	201	1997	15,7	12,5	15,8	22,2	29,9	31,8	32,4	30,6	29,8	27,7	21,1	15,7
QATRANEH	201	1998	12,8	15,4	16,9	25,7	29,1	31,6	33,9	35,5	31,8	28,9	25	17,9
QATRANEH	201	1999	15,9	17,3	20,1	24,5	30,9	30,7	32,9	33,9	31,1	27,2	21,9	18,5
QATRANEH	201	2000	12,8	15	17,7	26	28,4	32,4	36,4	32,4	30,7	25,2	21	15,7
QATRANEH	202	1991	2,4	3,2	7,7	10,7	12,7	15,2	16,5	16,6	14,5	12,4	7,1	2,2
QATRANEH	202	1992	0,6	2,1	3,9	7,7	12,5	15	16,1	16,8	14,7	10,6	6,9	2,5
QATRANEH	202	1993	0,4	0,5	4,8	8,5	12,4	15,6	16,2	17,5	14,5	13	7,6	5,2
QATRANEH	202	1994	4,4	3	5,2	10,3	13,1	14,9	16,8	16,3	16,3	14,9	7,8	2,2
QATRANEH	202	1995	1,7	3,3	5	7,5	13,2	16,8	17,6	17	15,6	10,7	5	2,2
QATRANEH	202	1996	2,9	4,2	5,5	7,9	14,6	14,9	19,1	17,7	15,1	10,5	8,6	4,8
QATRANEH	202	1997	3	0,6	4	8	13,8	16,1	17,4	16,2	14,5	12,1	8	4,1
QATRANEH	202	1998	2,9	3,9	5	10,5	14,3	16,2	18,5	19,6	17,1	12	8,1	4,3
QATRANEH	202	1999	3,4	3,4	5,7	8,9	14,4	15,9	18,5	18,6	15,9	12,3	6,6	3,2
QATRANEH	202	2000	2,3	2	3,8	10,5	12	15,6	20,3	18	15,4	11,3	6,1	4,2
QATRANEH	203	1991	7,4	9,4	13,8	18,1	20,2	23,2	23,7	23,7	22,5	19,8	14,8	7,3
QATRANEH	203	1992	5,1	6,2	9,7	15,1	19,9	22,7	23,8	24,7	22,4	20	13,7	7,5

QATRANEH	203	1993	6,4	6,8	11,4	16,5	19,8	23,9	24,2	25,7	23	20,8	13,9	12
QATRANEH	203	1994	9,7	8,7	11,7	18,6	21,4	22,7	23,9	24,6	24,3	22,1	13,1	7,3
QATRANEH	203	1995	8,5	9,5	12,4	15,4	21,5	24,6	24,7	24,8	23,7	18,7	12,3	8,8
QATRANEH	203	1996	8,5	10,5	11,4	15,7	22,8	23	26,5	25,5	23,2	18,1	15	11,3
QATRANEH	203	1997	9,3	6,6	9,9	15,1	21,8	24	24,9	23,4	22,2	19,9	14,6	9,9
QATRANEH	203	1998	7,9	9,7	10,9	18,1	21,7	23,9	26,2	27,5	24,4	20,5	16,5	11,1
QATRANEH	203	1999	9,7	10,4	12,9	16,7	22,7	23,3	25,7	26,3	23,5	19,8	14,3	10,9
QATRANEH	203	2000	7,6	8,5	10,8	18,3	20,2	24	28,4	25,2	23,1	18,3	13,5	9,9
QATRANEH	208	1991	31,5	8,3	46,6	0	0	0	0	0	0	3,6	6,5	25,7
QATRANEH	208	1992	28,8	64,3	13,6	0	0,8	0	0	0	0	0	5,5	22,4
QATRANEH	208	1993	16,9	8,1	10,6	0	3,1	0	0	0	0	0	29,8	23,8
QATRANEH	208	1994	41,8	20	5,6	0	0	0	0	0	0,9	12	41	15,2
QATRANEH	208	1995	0	14,9	2,1	1,4	0	0	0	0	0	0	0,3	3,6
QATRANEH	208	1996	27,8	9,7	27,4	0	0	0	0	0	0	0,1	21,3	3
QATRANEH	208	1997	30,8	15,9	12,9	0	0,2	0	0	0	0	6,5	1,4	19,2
QATRANEH	208	1998	41,7	26	25,4	6,3	1,8	0	0	0	0	0	1,3	1,2
QATRANEH	208	1999	8,7	11,1	0,3	2,1	0	0	0	0	0	0	0	1,3
QATRANEH	208	2000	27,8	0,7	16,3	0	0	0	0	0	0	3,7	0	18,5
QATRANEH	258	1991	64	55	53	37	38	36	40	42	44	46	49	68
QATRANEH	258	1992	72	77	59	51	44	43	47	48	50	38	55	75
QATRANEH	258	1993	68	66	55	40	39	36	42	38	47	44	61	68
QATRANEH	258	1994	79	73	70	39	40	47	50	55	56	56	72	69
QATRANEH	258	1995	58	60	48	44	41	39	46	50	42	46	40	68
QATRANEH	258	1996	69	58	61	43	29	35	35	41	44	42	58	62
QATRANEH	258	1997	64	63	60	27	30	36	36	48	47	59	64	72
QATRANEH	258	1998	74,2	66,3	58,2	43,3	38,2	39,9	34,7	41,6	47,6	44,6	45	50,1
QATRANEH	258	1999	61,8	58,7	44,7	42,9	31	38,3	40,9	45,6	52,3	54,7	48,2	47,6
QATRANEH	258	2000	69	64	60	44	41	41	40	47	52	58	50	74
QATRANEH	268	1991	6,1	7,7	7	9	9,4	11,3	11,2	11,4	10,4	8,3	8,2	5,3
QATRANEH	268	1992	4,7	5,1	8,1	9,2	9,5	11,4	11,9	10,9	10,3	9,6	7,3	5
QATRANEH	268	1993	6,3	6,8	8,8	10,3	8,8	12,5	12,4	11,7	10,7	9,2	7,2	6,3
QATRANEH	268	1994	6,1	7,3	8	9,7	11,1	12	12	11,5	9,9	7,7	6,5	6,2
QATRANEH	268	1995	7,6	7,2	9,4	9,5	10,4	12,2	12,2	11,7	10,3	9,4	8,1	6
QATRANEH	268	1996	5,5	6,6	7,4	9	10,3	12,2	11	11,6	10,1	9	6,7	6,8
QATRANEH	268	1997	7	8,5	6,8	8,6	11,2	12,2	12,1	11,4	10,7	8,3	7,6	5,4
QATRANEH	268	1998	5,2	7,8	6,9	9,2	8,7	11,7	11,7	11,3	10,3	9,6	7,8	6,2
QATRANEH	268	1999	6,1	7,4	9,1	9,8	10,9	12,2	12,2	11,5	10,8	9,6	8,6	7,2
QATRANEH	268	2000	6,6	8,7	8	9,4	12,1	13	12	11,8	10,8	8,9	8,1	6,2
QATRANEH	534	1991	5,8	6,6	8	7,3	6,5	5,1	6,3	5,9	2,6	2,1	2,4	5
QATRANEH	534	1992	4,2	9,3	5,2	3,9	5	5,4	6,2	5,2	5,6	2,1	5,6	8,5
QATRANEH	534	1993	5,9	5,2	8,3	4,9	6,9	6,9	5,6	3,7	5,4	5,2	6,4	4
QATRANEH	534	1994	6,9	6,1	5	5,3	4,8	5,2	6,8	4,1	2,7	2,6	6,5	6,9
QATRANEH	534	1995	4	5,1	5,4	6,9	5,7	7,1	6,8	4,6	3,5	3,2	4	3,6
QATRANEH	534	1996	4,1	4	6	5	3,9	4,1	5,3	3,8	3,3	2,8	5,6	3,6
QATRANEH	534	1997	5,7	8	7,7	8,6	5,6	6,1	6,1	5,8	4,2	3,6	6,2	6
QATRANEH	534	1998	6,4	5,6	6,7	6	6,2	5,6	5,7	3,8	4,4	4	2,5	4,7
QATRANEH	534	1999	4,6	5,2	6	5,2	5,7	6,7	7,1	4	3,5	2	2,7	2,7
QATRANEH	534	2000	5,1	4,5	3,6	2,7	2,4	4,7	4,7	4,2	2,5	4,3	4,1	6,1
QATRANEH	538	1992	202	247	283	289	285	299	301	301	293	310	190	218
QATRANEH	538	1993	210	237	257	274	264	284	286	292	307	168	179	155
QATRANEH	538	1994	208	244	269	268	290	293	288	292	298	155	226	189
QATRANEH	538	1995	199	219	246	271	298	299	297	312	310	306	203	157
QATRANEH	538	1996	192	254	262	269	306	314	316	315	309	283	131	219
QATRANEH	538	1997	237	295	322	339	1	29	348	325	332	246	177	221
QATRANEH	538	1998	274	288	289	269	286	310	298	307	304	266	159	165
QATRANEH	538	1999	204	240	260	282	295	286	287	289	289	304	223	150
QATRANEH	538	2000	238	264	278	275	282	321	322		314	287	140	228

C. Annex 3 : Excavation chronology

- 1986 : Church of Bishop Sergius
Church of St Stephen
- 1987 : Church of Bishop Sergius (north chapel)
Church of St Stephen (north chapel)
Church of the Aedicula
Church of the Courtyard
Church of the Tower
- 1988 : Church of Bishop Sergius (funerary chapel and baptistery)
Church of St Stephen (area to the East)
Church of the Aedicula
Twin churches (Swiss team)
- 1989 : Church of St Stephen
Church of the Courtyard
Area south of St Stephen complex and some work around Lion's church
Twin churches (Swiss team)
- 1990 : Church of the Courtyard : soundings
Church of Bishop Sergius : soundings
Church of St Stephen : soundings
Church of the Lions
Church of priest Wa'il (D.A.J., Taysir 'Attiyat)
Twin churches (Swiss team)
- 1991 : St Stephen complex : soundings
Church of the Lions and surroundings
Church of priest Wa'il
Restoration works (funded by USAID) : walls of St Stephen, North wall of the Aedicula church, apse of the church of the Courtyard, North wall of Bishop Sergius church, walls of the baptistery. Filling large crack on the apse of priest Wa'il church.
North Gate (Swiss mission)
- 1992 : Church of the Lions and surroundings
Chapel of the Peacocks
Church of the Tabula Ansata
North Gate and South Gate (Swiss mission)
- 1993 : St Stephen complex : excavation of the north-west angle of the complex
Church of the Aedicula : architectural survey and study
Project of the Archaeological Park
- 1994 :
- 1995 : Church of St Paul
- 1996 : Church of St Paul
- 1997 : Church of St Paul and vicinity.
Vine press and surroundings
- 1998 : Church of St Paul south-east flank
Vine press complex and northern area
Church of the Lions : soundings and architectural studies
St Stephen complex : soundings
- 1999 : Church of the Tabula Ansata
Area between St Paul church and the chapel of the Peacocks
Church of the Lions : tombs and soundings

Sources : That list gives only the main lines of the different operations done at Umm ar-Rassa. It is not exhaustive on the works done on the site. From : M. Piccirillo, Ricerca storico-archeologica in Giordania Liber Annus 1986-2000. A.D.A.J., M. Piccirillo, SHAJ IV, 1992, M. Piccirillo, Umm al-Rasas Mayfa'ah I , Gli scavi des complesso di Santo Stefano, S.B.F. Maior 28, Jerusalem 1994.

Bujard J. : A.D.A.J. 32, 1988, p. 101-113, A.D.A.J. 36, 1992, p. 291-306

D. Annex 4 : characteristics of building materials

Following types of building materials were observed in different places of the site. These materials were used separately but most of the time mixed together:

Coquina:

- mega-crystalline accumulation of oyster shells
- 60% carbonates, 40% phosphates and silica
- reaction with HCl: strong
- hardness: not easily scratched with a steel knife
- typical color : 5 YR 7/2 (light brownish gray)
- easily hewn
- excellent building stone used in most buildings
- sensible for pitting by acid chemical weathering and granular disintegration by physical thermoclastic weathering

Phosphatic chert:

- micro-crystalline accumulation of phosphates (14 - 21% of P_2O_5 , derived from phosphatic mud of fish fragments and faecal pellets) and silica
- reaction with HCl: none
- hardness: not scratched with a steel knife
- typical color: 5 RP 3/1 (dark purplish gray)
- not easily hewn
- mostly used for wall construction (wall of the Kastron, culture terrace walls)
- sensible for cracking and flaking by physical thermoclastic weathering

Limestone:

- micro-crystalline structure
- reaction with HCl: strong
- hardness: easily scratched with a steel knife
- very limited use
- typical color: 7.5 YR 8/3 (light yellow orange)
- sensible for flaking by physical thermoclastic weathering

Black shale:

- micro-crystalline structure
- reaction with HCl: weak
- hardness: easily scratched with a steel knife
- very limited use
- typical color: 2.5 Y 3/1 (brownish black)
- sensible for flaking by physical thermoclastic weathering

Gypsum:

- macro-crystalline structure
- reaction with HCl: very strong
- hardness: very easily scratched with a steel knife
- slabs are used as pavement
- typical color: 10 Y 6/1 (gray)

Provenance:

Coquina, *phosphatic chert* and *limestone* are found in abundance in the geological substratum at Umm-Ar-Rasas. They were extracted from numerous large and small quarries all over the site area.

Black shale and *gypsum* are not found at Umm-Ar-Rasas. The *gypsum* is found at the boundary of the lower Wadi as Sir Limestone Formation and the Upper Shu'ayb Formation. The *black shale* occurs in the lower members of the Shu'ayeb Formation. Both stone types are quarried in the canyon of the Wadi el Mujib. We observed f.i. a modern gypsum quarry at position X = 0768057, Y = 3483532 at + 330 m.

E. Annex 5 : Castrum : state of preservation of walls and towers

The single number refers to a tower (number 1 is the north-east corner tower), while the hyphenated numbers to the portion of wall in-between two towers. Both are represented on the plan, with recommendations for presentation:

1. Good preservation. Remove collapse on the east side to make it inaccessible. Thamudic inscription.
- 1-2. Two meters of collapse (2 courses). Thamudic inscription
2. Collapse on North corner (to fill); collapse on south side (to rebuild)
- 2-3. Entire wall to consolidate and rebuild
3. Missing blocks to replace; blocks cracking under the weight of upper courses. Thamudic inscriptions.
- 3-4. Top 5 courses missing. Partly consolidated with mortar and stone filling
4. N wall is consolidated, East wall collapsed
- 4-5. Rebuild 4 or 5 courses
5. Three Thamudic inscriptions. South corner collapsed and to reconstruct.
- 5-6. Top stones missing for a length of 2/3 meters, 3 courses high.
6. Missing stones to replace, empty areas between stones to fill.
- 6-7. At the base, stones cracked to be repaired and reinforced
7. Stones missing on East wall. Very deteriorated stone in South wall to be replaced. Danger of collapse of this corner.
- 7-8. The entire wall has moved and should be consolidated to avoid collapse.
8. North wall has collapsed. To be rebuilt for at least 5 courses. East wall is inclined. It should be dismantled and rebuilt. South wall displaced and partly collapsed (5 courses to rebuild). Traces of mortar on exterior wall.
- 8-9. An access to the courtyard of the twin churches has been built here by the Swiss mission. If the idea of limiting access to the castrum prevails, this access should be dismantled.
9. Collapse of East and West corners. 3 courses to rebuild.
- 9-10. 1.5 meter missing from top.
10. Conservation work following excavation not to standard. Need to dismantle and rebuild.
- 10-11. Postern gate: only lintel and top 50 cm of gate are exposed. Expand and complete sounding or backfill. Missing 2 courses in centre of wall.
11. Collapse of east corner.
- 11-12
12. Kufic inscription. West corner leaning and in danger of collapse. West wall cracked and displaced 40 cm on top.
- 12-13. Collapse of upper 4-5 courses.
13. Tower collapsed on both corners.
- 13-14. Five meter wide collapse of top 5-6 courses. Wall deformed and leaning
14. Large collapse of East and West corners
- 14-15. Large collapse of top 5 courses. Differential weathering of different stone types: coquina stones are developing pitting, while phosphorite is spalling and cracking.
15. Three courses collapse of south corners
- 15-16. Well preserved section, although a number of stones is cracked and voids need to be filled.
- 16
- 16-17. collapse or voluntary opening of this sector in recent times: 4-5m wide, 5 courses high.
17. Small collapse on southern and northern sides, 4-5 courses high in the latter.
- 17-18. 6 meters wide 2 courses section of missing stones
- 18
- 18-19. Collapse in proximity of 19: 4-5 courses over three meters.
19. Shaken, especially north corner. Large collapse in centre of north wall.
- 19-20. Large collapse of top 3 courses on centre of wall
20. Tower has a small collapse, but has also lost verticality and is inclined to north
- 20-21. small collapse near tower 20. Large voids to fill in rest of wall.
21. Large collapse of west corner.
- 21-22
22. Large voids in lower part.
- 22-23
23. Covered by excavation debris. Top 4 courses missing.
- 23-24. Excavated north gate. Debris from excavation must be removed.
24. Needs filling of voids.
- 24-25. Many voids need to be filled.
25. Large collapse of western corner and north wall. 6 or 7 courses missing
- 25-1. Huge collapse of entire wall.

Work to be carried out:

A general detailed study of the entire wall has to be carried out. All the parts in immediate danger of collapse have to be restored and/or consolidated. Targeting a wider objective, the wall has to be restored in a way that avoids any passage from outside to the interior of the castrum, except through its 'natural' north gate. The provisional stairway placed by the Swiss archaeological team has to be dismantled. It is premature and too costly to foresee a tourist circuit inside the fortification, even if the construction of a platform over ruined ancient streets seems technically feasible (see proposal §.....).

All excavation dump accumulated on the eastern side will be removed. Hopefully, the North Gate excavation will be terminated.

F. Annex 6: Coordinates of water collection structures

Coordinates are UTM, zone 36R, European datum 1950, collected with a Garmin x-trek GPS with an accuracy of +/- 5m.

Elevation	East	North	Type
767	777454	3488911	5
772	777475	3488879	5
769	7777490	3488827	5
768	7777534	3488852	5
768	7777528	3488803	5
767	7777542	3488779	5
767	7777499	3488731	5
764	7777483	3488678	5
766	7777449	3488606	5
767	7777373	3488654	2
768	7777369	3488678	3
770	7777429	3488724	5
765	7777513	3488606	5
765	7777552	3488600	5
765	7777630	3488582	5
766	7777672	3488613	5
765	7777674	3488629	5
765	7777691	3488609	5
765	7777695	3488581	5
764	7777719	3488605	5
764	7777749	3488560	1
765	7777708	3488631	5
764	7777681	3488652	5
765	7777688	3488665	3
765	7777705	3488677	5
762	7777679	3488705	5
76	7777674	3488733	5
762	7777651	3488741	5
762	7777583	3488677	5
763	7777628	3488679	5
763	7777636	3488697	5
763	7777650	3488693	5
765	7777633	3488642	5
765	7777585	3488651	5
765	7777564	3488638	5
767	7777491	3488684	5
762	7777587	3488745	2
762	7777622	3488830	3
761	7777613	3488835	5
761	7777670	3488917	2
760	7777670	3488940	5
761	7777641	3488925	5
755	7777707	3489011	5 (swamp)
755	7777673	3489049	1
758	7777681	3489105	5
752	7777784	3489122	1
752	7777791	3489186	1
753	7777659	3489134	5
754	7777665	3489187	4
753	7777564	3489181	2
758	7777541	3489053	2
761	7777554	3488936	5

760	777565	3488905	5
764	777588	3488043	5
759	777585	3488984	2
756	777542	3489190	5
755	777512	3489152	5
755	777515	3489171	5
754	777520	3489195	5
754	777524	3489200	2
752	777532	3489246	5
755	777545	3489248	5
751	777533	3489295	3
752	777555	3489294	3
752	777573	3489291	4
762	777392	3489124	2
763	777332	3489133	5
760	777343	3489155	Arches
760	777394	3489158	2
760	777404	3489152	Tomb?
756	777432	3489180	4
760	777375	3489215	4
768	777264	3489008	3
770	777136	3488835	1
771	777211	3488728	1
761	777390	3489081	2

Work to be carried out :

general survey and study, including research with non destructive adapted techniques (see churches of St Stephen and Bishop Sergius).

Cartography of all underground structures

G. Annex 7 : List of archaeological soundings to backfill, clandestine excavations to assess and backfill, excavation debris areas to be removed (see Fig 7 – Plan 11 - § X)

List of archaeological soundings to backfill

Deep sounding (3x1x1.5 deep) North of the Church of Bishop Sergius
 Long sounding (20x1x1 deep) North of northern external wall of St. Stephen complex
 Tombs in chapel at east end of right aisle of St. Stephen
 2x1x1.3 deep sounding in a room south of St. Paul
 2.5x2.5x 1 deep stepped trench between South wall of St. Paul and opposite wall (good stratigraphy here)
 2.5x1.5x 1 deep trench at the base of wall opposite south wall of St. Paul's
 Huge trench, 20x10x5 deep in a structure to the west of the wine press in St. Paul's complex. This is a current excavation.
 Large sounding 2x3x 2.5 deep at the southern foundations of Church of the lions, in a small room adjacent the church
 2.5x1x1 deep in front of a door along a street south of Lions complex. There is a tabula ansata lintel into it, possibly belonging to the same door
 entire room west of the Church of the Lions. Displaced tomb slabs in situ
 3x2x 1 deep. Slabs in situ. Partially exposed tomb, to the west of Church of the Lions
 4x1.5x0.5 deep: Slabs in situ. Partially exposed tomb or tombs, to the west of Church of the Lions.
 1x3x1 deep. Slabs in situ, possibly a tomb, to the west of Church of the Lions.
 2x4x0.7. Partly backfilled trench, to the west of Church of the Lions.

List of the clandestine excavations to assess and backfill :

Room south of Church of Aedicula: floor slabs dislodged
 NW corner of Church of St. Paul: 50 cm deep, 2m wide hole through mosaic floor. Tesserae in debris, but not in sufficient number to reconstruct mosaic. Was the mosaic stolen?
 SW corner of Church of St. Paul: deep (1.5m) hole through a mosaic, 2m wide. A tomb was found, its capping stone displaced and left in situ. Debris to be sifted to recover tesserae.
 Room N of Chapel of Peacocks: deep (>1m) hole through mosaic, 1.5m wide. Uncertain whether mosaic was stolen or destroyed. The debris should be sifted to recover tesserae.
 Courtyard of modern complex north of Northern gate: large soundings across the courtyard, with stone paving visible throughout the area at an average depth of 40cm.
 Interior of house east of the previously mentioned courtyard: 2m wide excavation which uncovered a paved area. Slabs partly dislodged.
 Ancient structures transformed into house, abutting unexcavated church north of fortifications: Large excavation which uncovered stone slabs, possibly tombs.
 Room north of northern twin church in the castrum
 Area in front of northern door of northern twin church: slabs removed and displaced, column base displaced
 Room south of southern twin church: displaced slabs
 Courtyard complex north of unexcavated church in northern settlement: the house with the double arcade has an excavation that uncovered a paved floor, its slabs dislodged.
 Church of the Tabula. Excavation in the Northwest corner of the church.

List of excavation debris areas to be removed

The presence of these excavated materials is indicated per each area. From North to South the areas are:

Tower complex: North of unexcavated building.
 Tower at coordinates xxx: debris abutting the north wall of the tower
 Tower at coordinates xxx. Debris abutting structure.
 Large area, approximately 400 m², North of St. Stephen complex, north of present track. In this area there are many decorated stones
 Area immediately north of St. Stephen complex: this has been arranged by bulldozer, but stones need to be sorted out.

Area to the North-east of St. Stephen complex, East of present guard post: this debris area includes also fragments of chancels and pillars that need to be retrieved.

Area on the North-east corner of St. Stephen complex

Area to the west of St. Stephen complex

Area to the west of St. Paul's complex

Area to the west of Lion's complex

Area to the north of North gate complex. This area includes decorated stones.

Vast area (at least 2000 m²) to the east of castrum ramparts. Some of the blocks from the Swiss excavation were already arranged in an area to the east of this debris, but many more exist in this debris and in another immediately to the south of this "lapidarium".

Small fill to the east of eastern ramparts, containing many blocks, also part of the Swiss excavations fill.

H. Annex 8 : State of preservation of the Churches

1. Church of the River

Excavation :

Swiss archaeological Mission, Max van Berchem Foundation (Jacques Bujard)

Date of excavations :

1988, 1989, 1990

Superficy :

125 m²

Plan :

Earliest of the twin churches excavated by the Swiss mission members.

Mono apse church with three naves separated by two rows of three arches. Raised presbyterium, limited by chancel and flanked by two small rectangular chambers closed with doors. Three doors (one by nave) gave entrance through the western wall (from a kind of « narthex »). One another door, in the north wall, give access into a small rectangular chamber (« sacristy » ?) covered by two arches. In later times two of the west doors were blocked and benches build along the wall, inside the church.

Walls :

They are from the common double side of local uncut stones from different size and nature with medium filling of earth. Only the inner wall of the apse was built of well dressed and cut limestone blocks of pseudo isodome aspect. The first row of voussoirs of the « cul de four » is still in situ, over a small cornice crowning the apse wall.

The apse was partially over cut through the inner side of the city wall. The walls are quite well preserved, sometime over three meters high. All of them have been restored by the Swiss mission members.

Floor :

All the church was paved with coloured mosaics, half of which are still in situ, under 10 to 20 cm of dump and sand protection.

Datation :

The mosaic is dated of 578-579 or 593-594 A.D.. The church was probably built half a century earlier.

Bibliography :

J. Bujard : Les églises géminées d'Umm er-Rassas, A.D.A.J. XXXVI, 1992, p. 291-306.

2. Church of the Palm Tree:

Excavation :

Swiss archaeological Mission, Max van Berchem Foundation (Jacques Bujard)

Date of excavations :

1988, 1989, 1990

Superficy :

220 m².

Plan :

South to the twin churches which have been excavated by the Swiss mission, that church was the latest to be built.

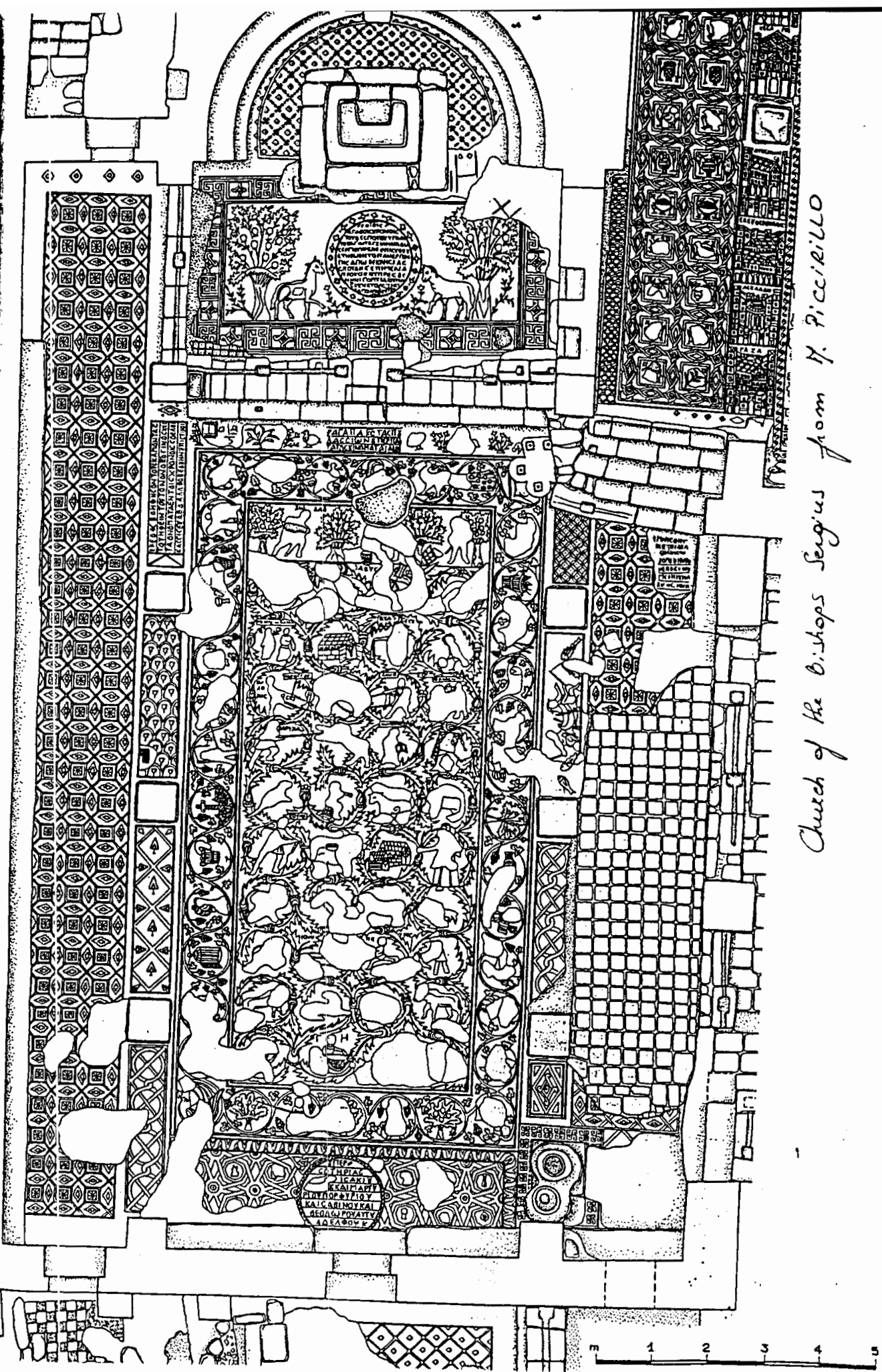
Mono apse church with three naves separated by two rows of three arches. Raised presbyterium, limited by chancel and flanked by two small rectangular chambers closed with doors (in the original state, these chamber were completely open to the naves). Three doors (one by nave) gave entrance through the western wall (from a kind of « narthex »). Two others doors are visible in the south wall, the one situated in the east opening into a small rectangular chamber covered by two arches.

The apse was partially cut off from the inside side of the city wall.

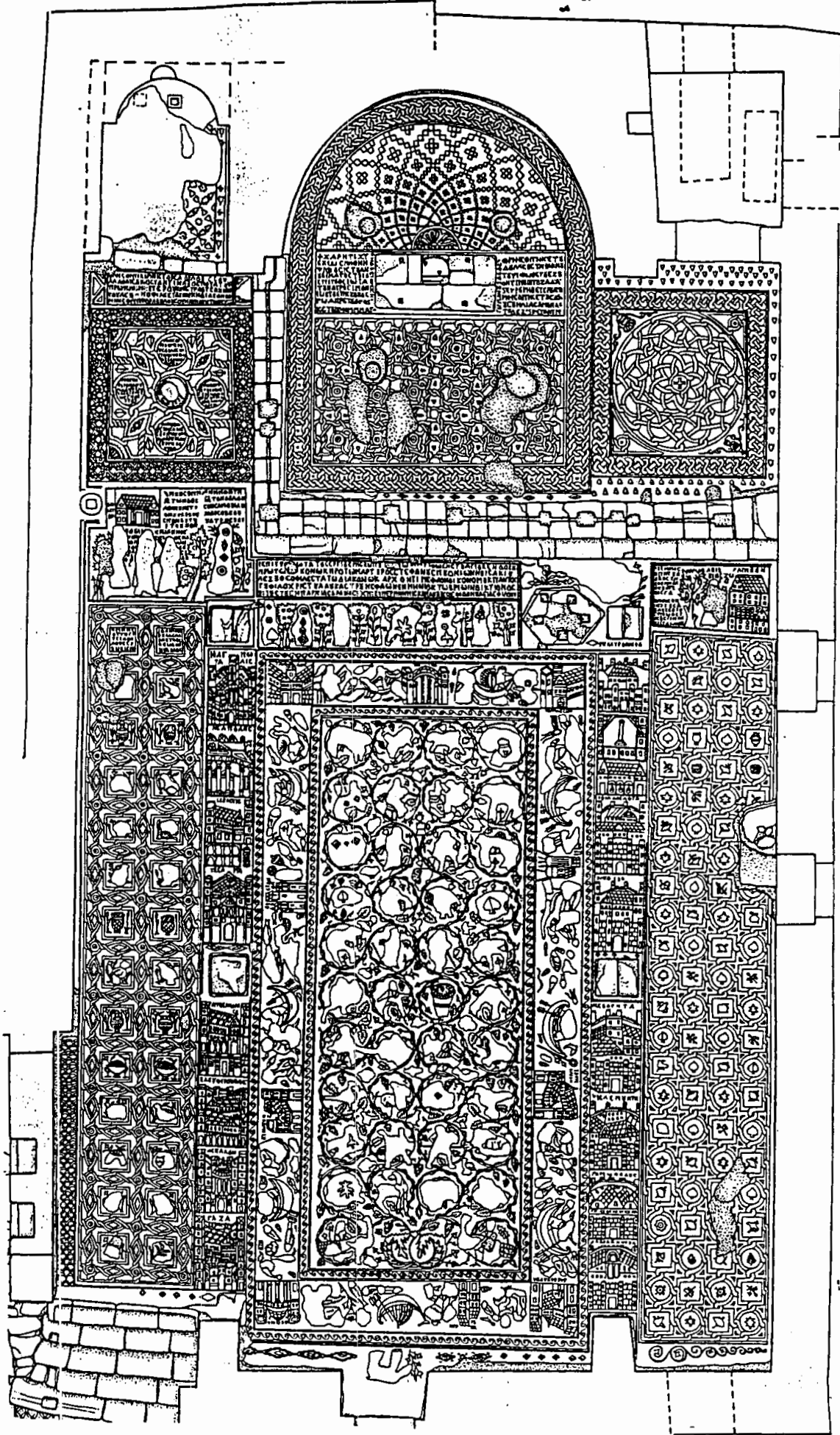
Walls :

They are from the common double side of local uncut stones from different size and nature with medium filling of earth. The inside wall of the apse is of better quality, the stones use being more regular, of quite rectangular shape and put on horizontal courses. The first course of the voussoirs from the « cul de four » covering are still in situ over the crowning moulded layer. Benches were found along the north and south walls. Two small arched lintels found during the excavations prove that two small windows existed over the « triumphal arch ». Traces of plaster still subsist on the different walls.

Floor :



Church of the Bishops Sergius from St. Piccirillo



*St. Stephen Church from
M. PICCIRILLO*



spite of an apparent unit, this church is extremely heterogeneous in its structure. Added to the south-east corner of the church of bishop Sergius, it encroaches partially on the latter which it covers the end of its southern nave. This organisation made it possible to have the two buildings communicating. The construction of St Stephen was also done with the site of former buildings whose walls were more or less integrated in the new place of worship. One penetrated there by two doors spared in the southern wall and two others in the western wall. In the Northwest angle, a flight of 6 steps gave direct access to the church of Sergius located at more than one meter downwards

Walls :

Because of the late construction of the church, in and above former buildings, its walls are very heterogeneous. They call upon the general system of the double facing in blocks of all natures and all sizes, cut as from the quarry, bound by an internal ground stuffing interfered spalls. In general the walls are well preserved but they will have to be systematically consolidated, their old lime coatings mortars protection being currently reduced to the state of traces. Only the northern apse, added, presents a regular facing of well dressed rectangular blocks. That chamber was to be covered by a « cul de four » proceeded by an also well dressed stones barrel vault, similar to the one still in situ above the southern passage.

The walls of St. Stephen have various problems, going from weathering of various types of stones, to cracking, loss of stability, deterioration of mortars, etc. The vault of the chapel at the end of the right aisle rests on minimal support and is in danger of collapse. Plaster are also in bad conditions, and some of them have salts efflorescence .

Floor :

The floor of the church is entirely covered by an extraordinary carpet of geometric and figurative mosaics, which are at the origin of the celebrity of the site of Umm ar-Rassas. The images of the pavement were destroyed during the iconoclasm crisis but carefully restored at the same time. The pavements are well dated by inscriptions also mentioning the names of the mosaists. In spite of their appearance, the mosaics are not in a good state of preservation. It is generally detached. Recent damage occurred in the vignette of Kastron Mefaa, when a small area collapsed in a subterranean passage. This may indicate the existence of channels, tombs or passages under the floor of the church.

A cursory graphic documentation was made of the floor of St. Stephen: this shows the following damage occurring to the mosaic, in order of extent and importance of damage: detachment (generalised, but more evident close to walls and in the apse), erosion (grey and yellow shale tesserae used in borders, and red tesserae used to represent walls and roofs in the vignettes representing Madaba, Hesbounta, Belemonta, Areopolis and Karak), bulging (such as in the area to the left of the panels representing Gaza, Askelon, and Eleutheropolis and loose tesserae). Comparisons with photos taken shortly after the excavations show that the shale tesserae, while already showing some deterioration, were not in the advanced weathering shown today, where some of them have lost more than 1cm of surface compared to those in their proximity. It is possible that the microclimate of the shelter may have a role in this damage. Without proper investigation is not possible to advance hypotheses on the reasons of this behaviour. It is enough to say that more and detailed study is necessary in advance of shelter construction to understand the reasons for the almost total detachment of the mosaic from its support and for accelerated decay of a specific stone type.

It has also been observed that in the same church there are at least 3 or four types of modern lacunae filling. Besides being aesthetically unpleasant, the use of different mortars to fill lacunae creates a proliferation of methods and formulae, some of which untested.

Datation :

756 for the mosaic of the presbyterium

Bibliography :

M. Piccirillo, L.A., XXXVI 1986, XXXVII 1987, XXXVIII 1988..., M. Piccirillo, The mosaics of Jordan, Amman, 1993, p. 238 239, M. Piccirillo, Umm al-Rassa Mayfa'ah I, S.B.F. Maior 28.

10. Church of Bishop Sergius

Excavation :

Studium Biblicum Franciscanum and Department of Antiquities of Jordan

Date :

1986, 1987, 1988, 1990

Superficy :

320 m²

Plan :

The plan of that church has been changed after the construction of St Stephen and Courtyard churches. We may suppose, from the archaeological evidence, that primitively the church had three naves, the main one with an apse and raised presbytherium, the two lateral ones with small chambers. Only the northern chamber remains. It is of rectangular shape with central arch, still in situ, that supported the roof of covering stone slabs. Archaeological evidences shows that the lateral naves were roofed with stone beams and slabs supported by outside walls and rows of small arches separating the naves. Three doors (two actually in situ), one by nave, opened from the West wall. We know nothing from the South wall, to day totally demolished after the construction of St Stephen and substituted by a balustrade with central pillar. At the same time, the southern chamber was demolish and replaced by a group of six steps giving access to St Stephen church.

Walls :

East and North walls are built with the double rows of rectangular regular local limestone blocks (only the external face for the north wall), perhaps reused from an older building. The apse is entirely built with such stones, till the moulding and the first rows of voussoirs of the cul de four. All the others walls are of the traditional on site double irregular with internal pocket. The pillars were of good rectangular limestone blocks. The high of support is well known from the southern apse side pillars, still in situ, with their moulded capitals. The springing of the arches is well known and a restoration of all the southern row of arches could be done. as in the Church of St. Stephen the walls suffer various type of damage, from stone weathering (mostly cracks) to loss of cohesion and mortar deterioration. There are two aediculae in the wall separating this church from St. Stephen which are in need of stabilisation. Traces of plaster protection are still visible. During the excavation fragments of painted decoration were found in the sanctuary. The remains of plaster are rapidly deteriorating.

Floor :

Entirely covered with mosaics. The central apse floor is raised and limited by chancel foundation. The mouth of a bottle shaped cistern is visible between the central and southern nave, at the level of the first arch. That cistern mouth was integrated in the mosaic pavement and was under use during the time of the church

Only portions of the mosaics of this church are visible today, but they were totally preserved. Those that are outside the shelter are covered by 10/20 cm of sand and dump. Those that are under the shelter, are in critical conditions: water penetrates at the base of the shelter, and stagnates on the paved floor. We have observed serious damage occurring in this area, including a recent, rapid phenomenon of pitting of white limestone tesserae, but also heavy crusts and salt efflorescence as the consequence of water infiltration. There are also lacunae formations that are of recent genesis, also perhaps the effect of water infiltration. Detachments, spalling, and exfoliation are the most common phenomena.

Datation :

586 A.D. Second in chronological order of the churches built in Umm ar-Rassas.

Bibliography :

M. Piccirillo, *Ricerca in Giorania*, L.A. XXXVI, XXXVII, XXXVIII, XL, M. Piccirillo, *The Mosaics of Jordan*, Amman 1993, p. 234 235.

11. Church of the Aedicula

Excavation :

Studium Biblicum Franciscanum and Department of Antiquities of Jordan.

Date of excavations :

1987, 1988, 1991, 1993

Superficy :

155 m²

Plan :

Single apse church with three naves and raised presbytery. Its name come from the small aedicula inserted in its south wall. Two rows of three large arches separated the nave in three parts. A portico of two columns supporting three arches preceded the entrance, by two doors in the west wall. On the south wall, a door with lintel and arch in situ, open on a small closed room the floor of which paved with large gypsum (alabaster ?) slabs.

It is the only church actually known in Umm ar-Rassas, which is not inscribed in a rectangle. The outside walls of the apse present a unique trapezoidal plan, and there are no lateral chapels.

Walls :

Except the pillars and the doors jambs which are treated in well cut limestone blocks, all the building is built with undressed stones, of different sizes, simply adjusted with small fragment, in double irregular with internal pocket of mixed earth and ships stones.

The north wall, which did not supported the ground push, was completely rebuilt in the summer of 1991. The wall facing south (where the aedicula is inserted) is preserved to the high of more than three meters, but it is also in the worst state of preservation. It presents accentuated loss of verticality and a state of complex cracking. The aedicula, build on a lintel (actually broken) spanning over the underground passage form a large bulging. The east doorjamb (which has been restored recently) may collapse rapidly (large cracks) due to the desegregation of the stone doorjamb.

The apse, constructed in pseudo square blocks, more or less similar, is the best-preserved wall. Statically it is more reliable, however some disjoints between blocks are visible.

Floor :

The entire floor was paved with local alabaster slabs. The pavement was discovered almost complete, excepted over the underground corridor passing under the floor at the level of the church presbytery. Today large parts of the pavement have been removed by archaeologists (soundings) and probably by robbers. It is in urgent need of restoration.

A clandestine excavation was conducted in the room to the South of the church, leaving dislodged floor slabs and debris.

There are many decorated stones lying on the floor of the church. They all suffer various degrees of weathering, including exfoliation and cracking

Datation :

No precise datation. It is supposed that that church is the oldest one from St Stephen complex. Its construction could be placed in the beginning of the 6th century.

Bibliography :

Piccirillo M. : L.A. XXXVII, 1987, p. 402, L.A., XXXVIII, 1988, p. 458-459.

Piccirillo M., Alliata E. : Umm al-Rasas I, Gli scavi del complesso di santo Stefano, Studium Biblicum Franciscanum, collectio Maior 28, Jerusalem 1994

12. Church of the Courtyard

Excavation :

Studium Biblicum Franciscanum, Department of Antiquities of Jordan

Date :

1987, 1990 (soundings)

Superficy :

150 m²

Plan :

This church has the particularity of having a reversed apse, located at the west. This unusual plan is due to the fact that the building (probably an old transformed court) was inserted a posteriori between the churches of the Aedicula, of Bishop Sergius and of St Stephen. It is thus about an additional building, adapted to the former structures. Its plan can be regarded as with three naves (separated by two lines of two arches each), if it is admitted that the southern side of the church of the Bishop Sergius could constitute his northern side. The apse presents a raised prebyterium, originally provided with a chancel. The access to this building was done by two doors bored in the medium of the southern wall and by the close churches. It is more probable than it served as " place of distribution " for the churches of St Stephen and of Bishop Serge of which it was separate only by two arches between which a chancel was established.

Walls :

Very heterogeneous, the building being inserted inside various pre-existent structures. The walls are of the general type with two irregular facings of blocks of various sizes and natures separated with an earth filling. Only the quality of construction varies from one wall to another. They were originally covered with lime plaster, more or less thick, of which it remains important fragments in situ

Floor :

The floor was entirely covered with rectangular blue/grey " gypsum " flagstones, including for presbyterium. Several tombs were excavated under this last. It is possible that others existed in the vicinity. The floor of presbyterium is crossed by a series of water pipeline supplying the cistern of the church of the Bishop Sergius.

Datation :

Very late in relative chronology (posterior with the construction of the church of St Stephen whose pavements of mosaic are dated from the VIII^o century)

Bibliography :

M. Piccirillo, Ricerca in Giordania, L. A. XXXVII, 1987 and XL, 1990., M. Piccirillo, Umm al-Rassas Mayfa'ah I, S.B.F. maior 28.

13. The Church of the Tower:

Excavation:

Department of Antiquities of Jordan and Studium Biblicum Franciscanum

Date of excavation:

1987

Superficy:

125 m2

Plan:

Three small naves separated by two rows of two arches. Central nave with apse and elevated presbyterium flanked by two small rectangular chambers completely open on the lateral naves. Two out of the three doors in the north wall were opening to the inside large enclosure surrounding the tower. The third one gave access to an annex. Remains of a door (which was blocked during the antiquity) in the axis of the western wall, are still visible.

Walls:

The walls are of irregular masonry erected with poor care and attention, using all kind of materials simply bounded by earth mortar. They were under collapse. They were primitively covered and protected by a plaster of muddy lime mortar, some patches of it still remaining.

Floor:

Simply plastered. Half of it was preserved. A large underground, covered by stone slabs was found in front of the presbyterium.

Datation:

? Unknown.

Bibliography:

M. Piccirillo, Ricerca storico-archeologico in Giordania XXXVII, 1987.

I. Annex 9 : Ancien Fields

Work to be carried out :

A general survey and study of the structures is a preliminary need. These structures have to be protected and possibly restored (including the excavated ones), and prepared with the view of future investigations, tourist presentation and agricultural use (antique rural life theme). After a comprehensive study, they could be used again as fields for agriculture and grazing to fulfill local Bedouins requirements. Restoration of such structures will be easy and, in the same time, a good solution for recycling the debris found during the excavations: rubbish stones could be used to rebuilt the walls and the earth to fill back the fields. Under the condition to keep their ancient configuration and utilisation this action will : 1) help tourists understand antique village agro-economy in arid lands, 2) improve site cleanness and avoid summer dry fallow land fires, and 3) generate income for local populations. Additionally, this action will maintain a local interest for Bedouins to control the area.

J. Annex 10 : The Tower Complex

1. The Tower

14,70 m high for a section of 2,5 x 2,5m, this exceptionally preserved tower does not possess either internal or external stairs. The plain core support, at an elevation of 11m above ground, possesses a simple chamber, with a door on the northern side. The 2 x 2m chamber was domed.

This tower has already been studied. Since the absence of internal stairs and its location near a church exclude a military use, a more probable interpretation is that it served as a stylite's tower (high level meditating platform for a monk). If this interpretation is correct, it would be the only known erected structure of this type.

The blocks which come from a nearby quarry are laid on site dry, pseudo square more or less similar. The joints are always regularly stepped and the rows maintains almost constant height. The inside is filled with waste (?) material, and only a small vertical « channel » can be noticed on its southern side (toilets?).

The tower is threatened by loss of verticality, bulging, rotation, cracks, and major phenomena of stone weathering, especially on its northern side where the wind, which blows with power in this area, has caused alveolization and superficial abrasion of the external surface.

Work to be carried out :

Although cracks do not effect any key stones but their joints, monitoring the tower is recommended, especially because a clandestine excavation has destroyed –and destabilised- the lower part of the inner core (large hole opened in the northern façade). This tower may be also the place where general and detailed in situ studies on local stone weathering degradation could be monitored. An overall and comprehensive detailed drawing and study should be carried out.

2. Area around the Tower

The excavation of the perimeter wall of the church and tower should be documented, as future reconstruction work may hide important evidence to understand its chronology and relationship to the buildings it surrounds.

The two-storied building to the North of the tower has been consolidated. The building however threatens to collapse given large cracks and a visible bulging on its northern side.

Another building to the east of the previous one remains unexcavated, as are the quarries, cistern (still in use by local Bedouins, belonging to a rarely found type, consisting of a plastered pool covered by arches (supporting a slab roof) and an exposed rock-cut wine press, in relatively good condition

Work to be carried out :

registration and study of the existing remains before implementing any restoration work (for example the courtyard limiting walls were recently cleared without any prior stratigraphic expertise and recording).

complementary excavations , mainly around the «farm» building

restoration of the unearthed structures

general cleaning of the whole area's dump

restoration and protection of the stone slabs roofed cistern still under use.

K. Annex 11 : Semi Subterranean Houses :

Work to be carried out :

A thorough examination should be lead on a selection of two houses prior to start any restoration work. Prior to this step, consolidation will be executed and excavation conducted. A general survey and ccprehensive study of this recent conversion of the antique remains are also expected. Quite not a single study (? ? ? ?) has been carried out on such traditional modern reoccupation of ancient structures. The second interest of Umm ar-Rassas is to have preserved a complete village of that recent dwellings

M. Annex 13 : Data on visitors frequency

Visitors data : April-May 2001 (13 days)

Day	Daily frequency of visitors groups													Total number of visitors/day	Number of groups / day (> 2)	Mean size of groups/day			
<i>April</i>																			
25	2	1	24	3	25	22	1	4	1									83	
26	1	2	2															5	
27	6	3	4	9	43	27	4											96	
28	6	2	29															37	
29	2	1	10	2	2	13												30	
30	1	1	2	2	4	2	2	1	1	1	1							18	
<i>May</i>																			
1	20	2	2	9	1	1	1	1	5	2	1	3	1	1	2			52	
2	16	2	2	1	1	1	2	16	1	1	2	2	4	24	38	2	16	2	4
3	1	2	1	1	1	24	3	12	2									47	
4	2	7	4	3	3	2	10											31	
5	2	3	2	29	1													37	
6	2	2	1	14														19	
7	1	2	1	2														6	
13 days																			

Mean number of groups / day (n>2 persons)

Mean number visitors / day

Mean size of groups / day

Max. group size:

Min. group size :

3,0

46

6,0

43

1

N. Annex 14 i Visitor carrying capacity Umm-At-Rasheed

	Assumption 1	Assumption 2	Assumption 3	Assumption 4
Group size (max.) (or number of visitors / 20')	15	20	15	20
Time interval Between groups	30	30	20	20
Max. Number visitors / hour at St Stephen	30	40	45	60
Winter:				
Site opening hour	9:00 AM	9:00 AM	8:30 AM	8:30 AM
Site closing hour	2:00 PM	2:00 PM	2:30 PM	2:30 PM
Summer				
Site opening hour	8:00 AM	8:00 AM	7:30 AM	7:30 AM
Site closing hour	3:00 PM	3:00 PM	3:30 PM	3:30 PM
CC winter (n1 visitors/day)	150	200	270	360
CC summer (n2 visitors/day)	210	280	360	480
Average number of days / month	28	5	5	6
Months of visit				
winter	6			
summer	6			
CC winter	25200	33600	45360	60480
CC summer	35280	47040	60480	80640
CC per year	60480	80640	105840	141120

P. Annex 16 : Lots for the Visitors' Centre

1. Lot N°1 - Excavation, Masonry

a) Preliminary works :

- All suggestions (? ? ? ? ?) of the preparation of the working area, fences, equipment for workmen, storage for materials...

b) Plot preparation :

- General excavation of all ground levels after the plantation (? ? ? ?) of stakes
- Trenching for all networks.
- Excavation on full ground, raising up and level of the dig (? ? ? ? ? ? ?).
- Earth transportation, excavation
- Supply and set up sewerage and rainwater pipes, steading (? ? ?), all suggestions (? ? ? ? ?). Joining of the tracery (? ? ? ?).
- Supply and set up polyethylene drinking water pipes. All suggestions (? ? ? ? ?). Joining of the tracery (? ? ? ?).
- Supply and set up floodgates in concrete boxing (5).

c) Walls, floor, face board, fake ceiling :

- Supply and installation of concrete foundation, for long timber. Approx . 0.50m.
- Supply and installation of stone surfaces, approx. 0.50m thick, 0.31m high, 0.70m long. Laying, size, and sawing handling. Assembly of thin joints to lime mortar. Fencing layer on all visual sides. Incorporation of mosaics.
- Preliminary samples and tries. The intern faces of the rooms reserved for the staff will have doubled partitions.
- All scaffolding prepared for the work.
- All suggestive (? ? ? ? ? ?) for openings, supports, and doorways.
- All suggestive (? ? ? ? ? ?) for the making of the inside palls and beams in strong concrete, frames include (positioning and taking up). Finished in rough concrete.
- Foundation blocks of 0.30m thick.
- Paving including forms of 0.10m thick, cement, joints, armatures, by welded wire-mesh. Screed smooths 0.12m thick. Finishing screed smooth 0.04m thick. Water repellent incorporated into the form and screed. Setting up of the ducts, tubes and diverse reservations.
- Joint dilatations.
- Supply and installation of the floor, full of concrete paving, framing, steel, support, ...Use chevriots for ventilation, or smoke tubes etc....
- Supply and installation of insulation 0.10m thick.
- Water-tightness of flat roof. Heavy protection. Lifting of water-tightness, cover joints of dilatation, water receptor...
- Masonry of bricks full from the mortar with cement to the interior separating walls (0.10m thick) posed on a phaltext platform. Making of lintel. Sealing of the doorframes furnished bay the carpenter, double compartments in brick of 0.07m, for the different offices.
- Grooves in the compartments include reblocking to incarcerate the tubes, girdles, and canalisations.
- Lintel on the opening provides, supply by two visible irons IPE, filling in with concrete.
- Supplying and lying down of stone to restore the ground dimensions. Making of doorway, of steps and ramp for exterior access, restoring stone the same. Shining, etc.
- Concern all areas reserved to the public, apart from sanitary.
- Supply and laying of grey tiles 20x20 for sanitary, for lab, reserve and storage, first aid. Decorating of the walls will be the same, 1.40m in height, and work surface.
- Work surface in concrete, including supports in mab.

- Smoke ducts and ventilation of 40x20 in heat resistant cement. Stack of ventilation. Fumes extracting equipment's.
- Lime mortar coatings in all interior compartments.
- All exterior carpenters sealing.
- Supply and installation of suspended ceiling plasterboard in all rooms.
- Making of girdles in staff to air and ventilate.
- Gutters.
- Export of rubble, cleaning of the site.

2. Lot N°2 - Carpentry:

- All the carpentry will be delivered pre-painted.
- Supply and installation of block exotic wooden doors 40mm thick. Dormant frame included and sealing clay. To be painted. Handle lock in chromed cane. Bolts for bathroom doors, mixed locks in offices, approx. 0.93x2.04m.
- Joint covers.
- Supply and installation of plinth in exotic wood to be painted, in all rooms. 0.20m high.
- Supply and installation of the cupboard doors framed in exotic wood, exterior side coated in exotic wood. Chrome lock. Two leafed door.
- Supply and installation of a reception desk made of framework 22mm thick, 0.80m wide bench, coated with sanded glass. Vertical separation of service side. cash register....

3. Lot N°3 - Metal work:

All the metal pieces will be delivered in the finishing stages treated with anti erosion paint.

- Supply and installation of steel door 0.93x2.10 for the staff accesses.
- Supply and installations of several openings of aluminium extrude, in dark brown. All water-tightness, security locks. Supply and installation of burglar proof glass, double-glazed.
- Supply and installation for steel entrance door. with burglarproof glass, doubled glazed.

4. Lot N°4 - Painting:

- Protection of all floors and stone walls.
- On wooden doors, plinths, and cupboard faces: Two coats of glycerophthalique paint on new carpentry including all preparations.
- On fake ceilings two coats of glycerophthalique paint.
- On metal works two coats of anti-rust fireproof paint .
- All interior walls are lime, unpainted.
- Signposts in the public toilets, and on each office door.
- Mirrors, brush carpets...

5. Lot n°5 - Mosaics:

- Supply and installation of mosaics in outer walls.

6. Lot N°6 - Plumbing / heating / air conditioning:

All ducts, pipes, etc ... to be buried in the floor, or hidden in compartments.

- Supply and installation of all sanitary, heating, air conditioning fittings.
- All connections, distributions.

7. Lot n°7 - Electricity, television, telephone networks:

- Supply and installation for all necessary circuits.
- All connections and distribution

8. Lot n°8 - Green areas and outdoor areas:

- Supply and installation of trees (olive trees, local pepper trees, etc.), staking, excavation on 2.50x2.50m, 1.00m depth.
- Supply and installation for watering.
- Maintenance for two years
- Realisation of passive concrete path, with stone borders. Slope, benches....

9. Lot n°9 - The covered way in the Visitors' centre

Description

The covered path of the visitor centre reproduces the Bedouin's tent concept adopting the double inverse curving principle; already used for traditional tents. The main frame is composed with two oblique V masts using tube of Ø88.9x3.2 above the path. They carry on their common head the membrane which is stretched on each side by lateral small mast shore up with shrouds. Membrane's sides between two frames are composed with garland-made cables. Their ends are bolted and fastened in a plate for the membrane end. Turnbuckles allow adjustments. The membrane is PES/PVC of type 2, alike the covering membrane of the churches. Its colour can be either black dominant (winter colour) or sand dominant (summer colour). The structure erection can be proceeded directly on the floor using light lifting devices, and even by hand (with hoist and specific hoist-frames). The membrane is hoist by hand on the frames, fasten on the anchoring points and then stretched until taking its shape.

The yearly maintenance (action on turnbuckle) is absolutely essential in order to ensure a life span of over 20 years.

UMM ER-RASAS
Kastron Mefa'a

Of JORDAN

**Steps taken as required by the ICOMOS
recommendations**

Comparative Analysis

**And Justification of the universal values and meeting of
Criteria**

Four similar regional towns and sites could be chosen for the comparative purposes with Umm Er-Rasas:

- The first one is the monastery of Qal'at Sim'an ("fortress of Simeon"), near Aleppo in Syria.
- The second one is the huge Roman town of Jerash in Jordan, being under big project of restoration and landscaping, in the process of turning it into a tourist attraction.
- The third one is Madeba with its mosaics ,in Jordan 30 km. north of Umm Er-Rasas .
- The fourth one is the case of the agricultural fields of Feinan

The four sites don't appear on the World Heritage List.

Qal'at Sim'an ("fortress of Simeon"), near Aleppo in Syria.

To meet Criterion IV

The Stylite tower (Column) of Umm Er-Rasas

Today, the magnificent ruins of the monastery of Qal'at Sim'an ("fortress of Simeon"), near Aleppo in Syria, stand as a striking reminder of the power of Simeon's sanctity . The monastic complex rests on a ridge in the stark Syrian hills.

In comparison to this site Umm Er-Rasas has certain important and unique characteristics:

- Qal'at Sim'an stands as a striking reminder of the first power of Simeon's sanctity and the **Stylite Syrian asceticism** ,and Simeon's pillar remained ,in antiquity ,one of the major pilgrimage sites in north eastern Christianity. But unfortunately the remains of Simeon's pillar have been chiseled down to a stub, about eight feet high by the tens of thousands of pilgrims who visited the site after his death and carried off small pieces of the column as relics of the saint.

While the Tower(Column) of Umm Er-Rasas is still completely intact with all of its 13 meters height and with the existence of the remains of the neighboring church and the foundations of the surrounding courtyard . Its value, in this sense, is that it is the only complete material evidence in the world , ever known yet ,on the **Stylite Syrian asceticism** . The shape and components of the tower indicate that sole function of pious and religious practice.

- The site of Qal'at Sim'an had only four basilica churches, a monastery, a cloister, a graveyard, a processional way, and a huge baptistery.

But Umm Er-Rasas ,on the other hand, has the evidence of holding more than 16 Churches some of them developed to the status of monastic complexes .Many of which have been excavated by specialized experts .

-The Stylite Column of Qal'at Sim'an had been erected in an environment of solitary in the northern parts of the Byzantine empire ,and it achieved its importance and fame in those northern parts. On the other side ,the Stylite tower of Umm Er-Rasas had been constructed in another environment of solitary ,but it achieved its importance and fame in the southern parts of the empire.

-Moreover ,the ecclesiastical importance of the city of Mefa'a was attested from the story of Buheira ,whom Prophet Mohammad searched to meet him at Mefa'a ,in one of his trading trips ,just before Mohammad was declared as the messenger of God and the sole Islamic Prophet and leader .

Mohammad , who was respected and highly considered by his tribe in Mecca , at that time ,met him so as to enquire from him about some religious ideas he believed in .The meeting was attended by some companions of Mohammad who told that story later in the time, while Mohammad was declared as prophet..

That event took place because of the wide spread ecclesiastical Christian importance of Mefa'a and of its monks in those southern parts of the empire , and even in the far remote cities of the Arabian Peninsulas which have been out of the borders and sovereignty of the Byzantine Empire.

The value here springs out from the consideration of monotheism that was attested in Umm Er-Rasas. The beliefs of Monk Buheira of monotheism have been accepted by Mohammad who was declared, after a while ,as Prophet and Messenger of God . In preaching his followers he started to tell them that monotheism should be considered as the first corner and requirement of the Islamic religion.

Jerash

To meet criterion III

In comparison with Jerash ,Umm Er-Rasas has other important and interesting characteristics concerning the development of changes in life of the community when circumstances permitted and required:

- Jerash has been mainly constructed in the second century as a major site of the Decapolis as a civilian town and sustained that kind of identity towards the final decades of its grandeur, even in the Byzantine period and in the early Islamic period.

But Umm Er-Rasas had started its being as fortified huge camp (castrum) on the eastern border of the Roman Empire.

Um Er-Rasas was considered in the Roman period as the place of support with auxiliary cavalry troops in critical situations for other parts of the eastern Roman Borders.

It seems that military function of the site decreased in a later period because it was expanded to embrace a civilian ecclesiastical community in a way that expressed and indicated to the feeling of widespread of peace and security and extinguishing of warfare in the Byzantine period on those eastern fringes of the Byzantine Empire.

The value ,here, springs out from the material archaeological indicators and the material evidence it provided . It indicated two things .The first one is that Umm Er-Rasas had been truly turned into a comfortable civilian and even into pious community after being developed from a site of military use.

The second is that it proved that a military community and its life could be turned into civilian when circumstances permitted and required .

The third value is the continuity of the site in life from the Roman though Byzantine to the Ummayyad and even the Abbassid Islamic periods. Continuity was in life ,construction and in art . That continuity was represented by the ecclesiastical monastic complex of St. Stephen which has been construction at the threshold of the Umayyad period and construction continued without interruption.

- Big scale Jerash (about two kilometers in length north-south by one kilometer wide E-W) had shown yet fifteen churches . On the other hand Umm Er-Rasas ,even being small city with its civilian Byzantine identity had more than 17 churches and more than three of them developed to the status of monastic complexes. That exaggerated number of churches in this small city located on the eastern border expresses its ecclesiastical importance despite its further remote location from the main Decapolis league and despite its location of solitary on the fringes of the desert .

The value springs here from the truth that Umm Er-Rasas represented an evidence of the wide spread of Christianity in that area of the ancient world and the dedication of the citizens of that city to the turning of the surrounding communities into pious Christian societies.

- The economy of Jerash flourished depending on the following factors:

1-Its location among the decapolis league ,which meant that there has been flourishing trading between the cities of that league.

2-Its location along the main paved Trajan Road (Via Nova Trayana) brought fortune of trade for Jerash.

3-Its location on the side of a perennial water stream, called in antiquity “the golden River”.

4-Its location among fertile fields .

But on the other hand it seems that Umm Er-Rasas was important due to the following factors:

1-Its being an extreme eastern ecclesiastical focal point among the Christians communities of the desert fringes .

2- The establishment , in Umm Er-Rasas, of the widespread of the Syrian asceticism in that region , turned Kasron Mefa’a (Umm Er-Rasas) into a pilgrimage focal point. With pilgrims a big wealth was brought to the city. That wealth was attested by the great big scale construction operation of so many churches in a small scale city.

3-Another importance of the site of Umm Er-Rasas springs out from the evidence of the continuous existence of an organized Christian community in the Umayyad Period ,8th century(Early Islamic period) in that area . The construction of the complex of Saint Stephen Complex in that period stands as a visible evidence.

Madaba

To meet criterion I

The Characteristics of the Mosaics of Saint Stephen

In comparison with the mosaics of Madaba , Umm Er-rasas has other certain important characteristics and universal values :

- Madaba is wide famous as the city of mosaics due to the discovery of a big amount of mosaic floors of Byzantine churches .The most important of which ,for comparison, in function and cultural and artistic values is the Byzantine Mosaic Map of the sixth century A.D.

On the other hand, the mosaic floor of the complex of St.Stephen, in Umm Er-Rasas , is the main feature taken for comparison.

The map is so important in its identity ,contents and history.

- The map had been constructed mainly in linear design .

While the mosaic floor of Umm Er-Rasas represented the function of a map in a perspective symbolism .

- Madaba map showed ,areas of Jordan, Palestine and Egypt in writing and linear design.

But St.Stephen floor , showed places and churches in Jordan ,Palestine and Egypt in perspective design, accompanied with inscribed names.

Besides that, the geographical frame of St Stephen floor showed Nilotic pictorials , fish, birds water flowers and floating among them are boats and boys fishing or hunting .

Parts of the map of Madaba have been destroyed and much information have been missing in the locations of the destroyed portions.

- In this sense, the Mosaic of St.Stephen of Umm Er-Rasas has a great universal value if being considered as a complementary resource of information that concerns the layout area of Jordan ,Palestine and Egypt , besides to many other aspects and data concerning those depicted ancient cities and Christian centers of that area.

The agricultural fields of Feinan:

To meet Criterion V

Agricultural Fields and Dry Farming

In comparison to the agricultural fields of Feinan which is located , about at a point 400 metres below the sea level and about 150 km far to the south, in Wadi Araba, Umm Er-Rasas has certain characteristics concerning the utilization of the available land .

- Remains of many Roman and Byzantine agricultural fields and gardens still exist in Feinan . They have been irrigated by channels that brought water from both a dam and a spring located in the east of the site.

But the fields of Umm Er-Rasas have been used for dry farming .The upstream running rain water that was accumulated behind the water weirs could feed the under ground soil with a lot of water and could keep it wet and suitable for farming for all the period of summer time .

More than one value could be gained from the farming system adopted by the community of Umm Er-Rasas. The first value springs out from the technology of adopting that dry system of farming by the construction of water weirs that could help them create agricultural fields .

In the meanwhile, that agricultural evidence proved that the Roman and Byzantine communities could master every available tiny parcel of land for farming even they had been in bad need for water in that dry and semi arid area.

Then , it could be said that , the technology of vegetation and watering system adopted at Um Er-Rasas indicated that farming had been of the first priorities for the Roman and Byzantine communities.

Justification of Criteria

Criterion I

As a perspective resource of information

- The Mosaic of St.Stephen of Umm Er-Rasas has a great universal value if being considered as a complementary resource of information that concerns the layout area of Jordan ,Palestine and Egypt , besides to many other aspects and data concerning those depicted ancient cities and Christian centers of that area.

The geographical frame of St Stephen floor showed Nilotic pictorials , fish, birds water flowers and floating among them are boats and boys fishing or hunting .

The mosaic floor of Umm Er-Rasas represented the function of a map in a perspective symbolism .It showed places and churches in Jordan ,Palestine and Egypt in perspective design, accompanied with inscribed names.

Criterion IV

The Stylite tower (Column) of Umm Er-Rasas

-The tower(Column) of Umm Er-Rasas is still completely intact with all of its 13 meters height and with the existence of the remains of the neighboring church and the foundations of the surrounding courtyard . *Its value, in this sense, is that it is the only complete material evidence in the world , ever known yet ,on the Stylite Syrian asceticism . The shape and components of the tower indicate that sole function of pious and religious practice.*

-The Stylite tower of Umm Er-Rasas had been constructed in an environment of solitary as it was the case of the Stylite Column of Qal'at Sim'an that had been erected in that type of environment of solitary in the northern parts of the Byzantine empire ,and it achieved its importance and fame in those northern parts.

-Another universal value here springs from the truth that while the Stylite Column of Qal'at Sim'an achieved its importance and fame in those northern parts,the The Stylite tower of Umm Er-Rasas achieved its importance and fame in the southern parts of the empire.

Criterion III

Universal values mainly from the following:

1-Development from military into ecclesiastical civilian community

2-Continuity in life, construction activity and art.

30-The most important value in this place is that St.Stephen complex was the only example of monastic complexes that was constructed in the Umayyad period and continued to practice its role in the Abassid period

-But Umm Er-Rasas had started its being as fortified huge camp (castrum) on the south eastern border of the Roman Empire.

Um Er-Rasas was considered in the Roman period as the place of support with auxiliary cavalry troops in critical situations for other parts of the eastern Roman Borders.

It seams that military function of the site decreased in a later period because it was expanded to embrace a civilian ecclesiastical community in a way that expressed and indicated the feeling of widespread peace and security and extinguishing of warfare in the Byzantine period and in the later periods on those eastern fringes of the Byzantine Empire.

The value ,here, springs out from the material archaeological indicators and the material evidence it provided . It indicated two things .The first one is that Umm Er-Rasas had been truly turned into a comfortable civilian and even into pious community after being developed from a site of military use.

The second is that it proved that a military community and its life could be turned into civilian when circumstances permitted and required .

The third value is the continuity of the site in life from the Roman though Byzantine to the Ummayyad and even the Abbassid Islamic periods. Continuity was in life ,construction and in art . That continuity was represented by the ecclesiastical monastic complex of St. Stephen which has been construction at the threshold of the Umayyad period and construction continued without interruption.

Criterion VI

Monasticism

-Umm Er-Rasas has the evidence of holding more than 16 Churches many of which developed to the status of monastic complexes .Many of which have been excavated by specialized experts.

It was the story of Zayd ibn ‘Amr ibn Nufayl that included the account of a visit to a site which could be identified as that of Umm Er-Rasas (Kastron Mefa’a).

Due to his religious restlessness ,Zayd ,according to Ibn Ishaq,the Arabic historian “had determined to leave Mecca,in central the Arabian Peninsula ,to travel about in search of the *Hanifiyyah*,the religion of Abraham” . His travels took him ,as the story goes, as far as Mosul in the northern Mesopotamia and throughout Stria All along the way he was “questioning monks and rabbis (*ar-ruhban wal-ahbar*).”The text goes on to say that Zayd “...came eventually to a monk at Mayfa’ah,of the land

of al-Balqq. This monk said to him : You are seeking a religion to which no one today can guide you ,but the time of a prophet who will come forth from your country which you have just left has drawn near. He will be sent with the *Hanifiyah*, the religion of Abraham, so stick to it ,for he is about to be sent now and this is his time.”

Having received the monks prophecy at Mafa'a Zayd is said to have set out on his return to Mecca.

For Muslim Arab writers of the period like Ibn Ishaq, it would have been perfectly credible that Zayd ibn 'Amr could have met a monk at Mafa'a-Kastron Mafa'a at the turn of the sixth to the seventh centuries A.D. The site would have been flourishing at the time and, according to the archaeological record, it was in existence well beyond the life of Ibn Ishaq.

-Moreover ,the ecclesiastical importance of the city of Mafa'a was attested from the story of Buheira ,whom Prophet Mohammad as it was recorded by Alhalabi(17th.century) another Arabic historian, searched to meet him at Mafa'a ,in one of his trading trips ,just before Mohammad was declared as the messenger of God and the sole Islamic Prophet and leader .

Prophet Mohammad , who was respected and highly considered by his tribe in Mecca , at that time ,met him so as to enquire from him about some religious ideas he believed in .event took place because as it was said monk Buheira with his prophecies could recognize the signs of prophetic vocation of Mohammad .The meeting was attended by some companions of Mohammad who told that story later in the time, while Mohammad was declared as prophet.

That event took place because of the wide spread ecclesiastical Christian importance of Mafa'a and of the prophecies of its monks in those southern parts of the empire , and even in the far remote cities of the Arabian Peninsulas which have been out of the borders and sovereignty of the Byzantine Empire.

The value here springs out from the consideration of monasticism that was attested in Umm Er-Rasas. The beliefs of Monk Buheira of have been accepted by Mohammad who was declared, after a while ,as Prophet and Messenger of God .

Criterion V

Agricultural Fields and Dry Farming

More than one value could be gained from the farming system adopted by the community of Umm Er-Rasas. The first value springs out from the technology of adopting that dry system of farming by the construction of water weirs that could help them create agricultural fields .

In the meanwhile, that agricultural evidence proved that the Roman and Byzantine communities could master every available tiny parcel of land for farming even they had been in bad need for water in that dry and semi arid area.

Then , it could be said that , the technology of vegetation and watering system adopted at Um Er-Rasas indicated that farming had been of the first priorities for the Roman and Byzantine communities.

Comprehensive Management Plan

1-No comprehensive management has yet been designed for the site of Um Er-Rasas.

2- But the Ministry of Tourism And Antiquities(MOTA) and the Department of Antiquities of Jordan (DoA) are in the process of creating that plan. **The Preliminary Design study for Umm Er-Rasas** ,the report of which had been finalized in 2001, through the European funded **Report on the Protection and Promotion of the Cultural Heritage of Jordan** has been the first step taken towards the creation of

that Management Plan and towards the adopting of a project of Development of the site to become a well preserved and conserved tourist attraction .

Comprehensive Plan of Conservation

No comprehensive plan of conservation has yet been adopted .But MOTa,in coordination with DoA, is preparing one, in the procedure of the development of the site in an attempt to turn it into a tourist product and visitor's attraction.

Plans for preservation and presentation.

MoTA/ European Commission Cooperation.

The Ministry of Tourism and Antiquities is the beneficiary of a Euro 4.1 million grant from the European Union entitled “Protection and Promotion of Cultural Heritage in the Hashemite Kingdom of Jordan”. The initial phase of protection and preservation works at Um ar Rassas is included in this programme with Euros 1.9 million allocated for the physical works.

What has been achieved to date (20/6/04).

- Consultant study – Preliminary Design completed in December 2001. This study reviewed the current status of archeological investigations and prepared a preliminary design and costing for the initial works at the site.
- The preliminary design envisages construction of:
 - A new Visitor Centre that will include visitor comfort facilities, exhibition and interpretation spaces and management offices.
 - Car parking and support infrastructure.
 - Footpaths providing access to the key elements of the site including the Kastrum and the St. Stephens Church complex.
 - Dismantling of the existing shelter and construction of a new shelter over the St. Stephens Church complex.
 - Subject to budget constraints shelters will also be built over other significant structures with mosaic floors.
 - Conservation and preservation of mosaic floors.

- Additional conservation and restoration of structures by DoA.
- Sign posts, interpretation panels.
- Visitor shaded seating areas, waste management etc.

Prior to these works being designed an exploration of the ground beneath the mosaics, and adjacent to the significant structures will be undertaken. This will provide guidance for the shelter design and the preservation works.

- At the Stylite Tower some improvements in infrastructure will be provided including car parking and a short foot path circuit with directional and interpretation panels.

Preparation of the Final Design.

- The Terms of Reference for the Final Design have been agreed and procurement of the design service is in hand – actual work on the final design will begin in August 2004.
- The Final Design exercise based on the preliminary design and preparation of the Tender Dossier will take 6 months to complete.
- Physical works will begin by mid 2005 and take 12 months to complete.
- The Final Design exercise will include a socio-economic study in the local community. The results of which will be used to address the issue of involvement of these important stakeholders in the project at all stages including its future management and incorporation of handicraft or other economic projects at the site.
- An environmental impact assessment will also be completed during this phase.

Future Management.

The MoTA/EC agreement also includes funding for improvements and capacity building in Site Management. In this regard efforts are in hand between MoTA/DoA to agree the most effective structure for management of the site.

The EC will facilitate this and provide specific training to the various individuals selected for a role in this new unit.

It is envisaged that a dedicated management team will be assembled and that clear strategies for all aspects of management of the site will be written. Specific procedures will be agreed and annual plans developed that will be aimed at achieving the desired results for all stakeholders – these will cover all items of concern from archaeological conservation,

presentation and research, through visitor carrying capacities, catering, solid waste management, to handicraft and cultural expositions etc. The underlying mission will be to manage the asset in a sustainable and environmentally correct manner ensuring that the uniqueness of Um ar Rassas is not compromised.

The Management Plan in Place

a. Ownership

- The two main sanctuaries of the site which contain the archaeological monuments and all details are the property of the Government represented by the Department of Antiquities (DoA).
- The space between the two sanctuaries (Sectors) is still owned by the private sector but it is reserved for the benefit of the DoA. The purchasing of that land is in process.
- Moreover it has been completely prohibited to carry out any activity in that private property land for many years.

b. Legal Status :

-The legal status likewise any archaeological sites and monuments is determined in Jordan by the **Law of Antiquities**. This law mandates to the Ministry of Tourism and Antiquities /Antiquities(MOTA) ,represented by the Department of Antiquities (DoA) to protect and manage and administrate Mobile and non-mobile antiquities in every inch of Jordan. By that law the DoA is the only official agency authorized to implement the archaeological policy in Jordan.

- Acting by the force of law MOTA and DoA are planning to declare Umm Er-Rasas as part of a National Archaeological Park .The park will include both Umm Er-Rasas and a neighboring site of Lehun.
- Even though Lehun will be taken as a one part of that park, it will not be integrated with the nominated site of Umm Er-Rasas in case this site is approved for inscription on the World Heritage List, because the two sites are spaced enough to the degree that they cannot

form one integrity ,and the components of both sites are different from each other , in quality and chronology.

-A comprehensive management plan for that park is in the process of formulation in the time being.

-An administrative Unit is intended to be appointed for the administration of the park as a requirement of the Management Plan.

c. Declaration of the Um Er-Rasas as an archaeological Site.

-Since the sixties of the 20th century Umm Er-Rasas had been declared, by the force of Antiquities Law, as a protected archaeological site

d. Protective Measures and Means of Implementing them:

-Law of Antiquities

-Periodical Archaeological Inspection of antiquities is being implemented under the Antiquities Law.

-Three site safe Guards have been assigned and dedicated to the site for years ago.

- A Police station has been stationed , for many years, in the near vicinity of the site ,one of its jobs is to look after the site and to prohibit any violating interference in the site.

- The headquarters of the local municipal council is located not far from the site .Of council's multi- jobs is to prohibit any actions of building near the vicinity of the site. An efficient coordination is being done with DoA.

- The operation of declaration of the Archaeological Park of Umm Er-Rasas and Lehun is being in progress , in coordination with the Municipal Council.

- A project of conservation of the site is being in the process of designing .

e. Agencies with Management Authority

-DoA is involved in the protection , cleanliness and conservation of the site.

-DoA is working together with MOTA on the preparation of declaring the National Archaeological Park of Umm Er Rasas and Lehun .

f. Level of Management and Contact Points:

Department of Antiquities : Management throughout all levels is exercised on the property.

(DoA) Queen Misbah street, Amman 11118
P.O Box(88)-Jordan
Fax : 009626-4615848
Tel: 009626-4644336
Email :doa@nic.net.jo

Ministry of Tourism and Antiquities : Management is practiced in coordination with DoA.

Almutanaby Streets
P.O Box (224)
Amman-11118
Jordan
Website : www.tourism.jo
: <http://www.mota.gov.jo>

Department of Antiquities , Madaba Branch : Management throughout the inspector of Madaba.

Madaba, Antiquities Office
P.O Box (!@)
Prince Ra'Ad Street
Telefax: 00962-5-32244056

Department of Antiquities ,Local safeguards. : Management is represented locally in the operation of guarding the site .

Municipality of Umm Er-Rasas : Management is exercised locally in coordination with DoA. :

Management is represented in cleanliness, urban zoning, infrastructure construction .

Contact point through the chairperson of the Council of Umm Er-Rasas Municipality :

Franciscan Archaeological Institute : Management is represented in excavation and research projects.They are volunteer consultant to DoA concerning Umm Er-Rasas.

Contact Point is Dr. Father Michele Piccirillo,
Madaba, Mount Nebo Church,

P.O Box-Faisaliya (2)- Madaba 17196

Fax :0096-2-5-3252932

Tel.00962-5-3252938

0096-2-(0)79-5524996

0096-2-(0)79-3252932

g.Sources and levels of finance :

1-Most of the funding for Umm Er-Rasas yet comes from the State Budget, which is intended for protection, excavation, and conservation projects. The majority of the funds are directed through MOTA and DoA.

2-Additional funds comes through the Franciscan Archaeological Institute, located in Madaba region .Funds come from the Franciscan Church and from ticketing in Mount Nebo archaeological ecclesiastical complex which is the property of that church.This fund goes to excavation,research and conservation.

3-Additional funding comes through the governmental social transformation projects implemented by the government through the Ministry of Planning of Jordan.

4-Additional funding ,once ,came through European grants for the sake of research related to the projects of turning the site into a national archaeological park.

5-Additional funds are expected through international resources .That funding will go to the construction operations of infrastructure needed in the process of developing the site into a National Archaeological Park .

i. Sources of expertise:

1-The management of the site is entrusted in the hands of the DoA which is a professional body with experts on management conservation and protection.

2-The conservation is carried out by the Conservation and Restoration Department of the official DoA. The conservation Department includes conservation architects and engineers and specialized conservators.

3-Conservation related to mosaics is implemented by the Mosaic School of Madaba in coordination with the Franciscan Archaeological Institute . The School is directed by DoA. Professionals of the school have been efficiently trained by highly Italian professionals.

j. Visitor facilities and statistics :

The site is still not being well developed to the level of a tourist attraction.

Designs of development are still in process.

Available tourist services are still limited . :

1-There is available a small constructed building convenient for the attendance of a tourist police station and three guards .

2-There are available two toilet units convenient for the use of tourists. They are provided with tap water.

3-There is available a statistics book.

4- In the vicinity of the site there are some grocery shops that may provide tourists with refreshments and cold water and with any thing they order .

- 5-Mobile telephone transmission is efficiently available.
- 6-There is available an official clinic in the vicinity of the site.
- 7-There is available a tourist police and a normal police station in the vicinity.
- 8-There is available a post office.
- 9-The site is provided with an efficient asphalted access road.
- 10-Tourist restaurants are available in Madaba which is about 30 kms far to the north.
- 11- Some traditional restaurants that provide traditional food are available in Dhiban town which is 7 kms far to the west.
- 12-The site is provided with 220 V. electrical power.

Estimated tourist statistics:

Even though the site is still not developed as a tourist attraction , it is visited by many tourists in the high season of tourism.

In the last three years, tourism decreased ,in numbers , all over the world .But it decreased more in the Middle East due to many international and regional factors.

k . Property management plan and statement of objectives:

The duty of the DoA in the time being is :

- 1-Protection of the site.
- 2-Preservation of the site.
- 3-The declaration of the site as a protected National Park in coordination with MOTA
- 4-The development of the site into a a National Archaeological Park ,In coordination with MOTA.
- 5-The Purchasing of the private land parcels located between the two main sectors that include the antiquities.

But as for the Master plan it should be said that it is being designed in the process of the overall development of the site .

L . Staffing levels :

- 1-DoA has five three civilian safe guards .
- 2-Police has a local tourist and a police station dedicated to the site .
- 3-in the near vicinity there is a normal police station.
- 4-The inspector of Antiquities of DoA of Madaba pays many visits to the site monthly.

5-The local Municipality is responsible through its sanitary staff for cleaning around the site .

6- In the time being there is a team of technical conservators working for three conservation and supervised by an architect and an archaeologist .

Factors affecting the property:

a. Development Pressures:

Due to its geographical remote and isolated location and due to its being on the fringes of the desert and far from any urban development this factor does not constitute any problem to the site.

b.Environmental Pressure

None of the industrial projects do exist in the region or in the vicinity of the site .The site exists in a clean area far and free from any kind of pollution or any projects that many cause pollution to the site or to its vicinity.

c.Natural disasters and preparedness:

Since all the buildings of the site of Umm Er-Rasas are constructed on a semi flat bedrock and far from any zone of earthquakes there is not noticed any dangerous factor of disasters or preparedness.

d.Visitor/Tourism pressure

The city of Umm Er-Rasas is horizontally wide extended and has many spaced components available for visitors to see.

At the moment, and even in the future there will not be expected any negative impact of tourism on the site.

e. Number of inhabitants

There are no inhabitants at the sanctuary of the site except two houses situated in the space between the two archaeological sectors. Those two houses are to be purchased by the near future. Their houses are sparsely scattered some 500 metres far from the nearest point of the site. They are concentrated mainly in two sections of the modern village, one sector located to the west of the site, while the second one exists at the northern side.

Total number of inhabitants is almost two thousands peoples.

Monitoring

a. key indicators for measuring the state of conservation

Even though conservation project is in the beginning of implementation, it could be said that the principal indicator for the state of conservation in the site is the number of monuments that require medium to extensive intervention.

But there is a pending comprehensive conservation and restoration project that will take place in the near future through a Euro-Med funding.

Other key indicators are :

- 1- The amount of euro-Med funding expected to be provided.
- 2- The annual State- budget for conservation
- 3- Number of personnel working on conservation related projects.
- 4- Number of field recordings carried out on monuments other components.

b. Administrative arrangements for monitoring of the site

One body is entrusted with the monitoring of the site. It is the DoA regional inspector Madaba.

- 1- He himself has to visit the site from time to time. Any case of intervention required he has to report it to the main Headquarters of DoA.
- 2- He is involved in the moment in a restoration and conservation project. He has to make the monitoring, in every day of the project.
- 3- Three local safe - guards who are working under his supervision make that monitoring every day. They have to report to him any

kind of required intervention .They are to report to him any violating actions done against any component of the site.

b. **Results of previous exercises :**

- 1- Since a small portion of the site has been excavated there has not been reported any cases that required intervention
- 2- Being excavated and extensively researched ,the majority of the mosaic floors have been covered with easily removable sand as a procedure of protection waiting for a pending big internationally funded project of development .

Um er-Rasas (Jordan)

No 1093

1. BASIC DATA

State Party: The Hashemite Kingdom of Jordan

Name of property: Um er-Rasas (Kastron Mefa'a)

Location: Madaba Geographical Region

Date received: 21 February 2002

Category of property:

In terms of the categories of cultural property set out in Article 1 of the 1972 World Heritage Convention, this is a *site*.

Brief description:

Um er-Rasas is an archaeological site, most of which is not excavated, with remains from Roman, Byzantine and Early Moslem periods (end of 3rd century A.D. to 9th century A.D.). It started as a Roman military camp and grew to become a town, from 5th century on. On the site there are several churches, some of which with well preserved mosaic floors. Two square towers, outside the site's nucleus, suggest the stylite monasticism practise. The area is rich with remains of ancient agricultural activities.

2. THE PROPERTY

Description

Um er-Rasas is an archaeological site of the Roman-Byzantine-Early Moslem periods. The site was founded in the 3rd century A.D. as a Roman military camp, closely associated with the borders of the empire (the *Limes*), the border with the desert and possibly with the Eastern branch of the incense route. The big camp (*castrum*) gave the site its ancient name – Kastron Mefaa. The roughly square, fortified *castrum*, of the size of about 150 x 150 metres is almost unexcavated.

While the *castrum* itself became the core of the later settlement the ruins of the Byzantine settlement outside it, cover an area of about 200 x 300 metres. Among the visible and partly excavated structures on the site are several churches. These can be easily identified before excavations, and attracted the main attention of archaeologists working on the site since 1986. For this reason much less is known of the character of housing, town plan and daily life.

Among the extraordinary remains on the site are several mosaic floors, one of which of special importance. The mosaic floor of the Church of Saint Stephen shows an incredible representation of towns in Palestine, Jordan and Egypt, including their identification.

At a short distance from the town, a well preserved tall tower from the Byzantine period is probably the only existing remain of a well known practice in this part of the

world – of the stylite ascetic monks. (i.e. monks sitting in isolation, for long time on top of a column or tower. The tower has no stairs and is in a relatively isolated area).

Um er-Rasas is surrounded and dotted with remains of ancient agricultural cultivation – from water reservoirs to terracing, water channels, dams and cisterns.

There are two small cemeteries on the site, one immediately to the west and the other to the east. The Eastern is an old Bedouin cemetery, while the Western is a modern one. About 150 meters are separating between the site and the main modern North-South road. In this area there are several ruins of relatively new structures, from the mid-19th to the mid-20th century. These structures are abandoned.

Management regime

Legal provision:

The site is legally protected by the law of antiquities – though just for passive purposes, of what should not be done. The main cores of the site are state owned and therefore no private or non authorised activity can take place on the site.

Management structure:

There is no management structure to manage the site, nor a management plan. On site there are four permanent guards who provide basic cleaning and maintenance.

At the time of the site evaluation the place was considered dangerous for visitors, due to lack of signage, many open trenches and non stable structures. The only managed structure, including shelter and suspended walkway, is the church of Saint Stephen.

Some other structures on site went through an initial conservation treatment and most excavated mosaics are covered, for their protection, with a thin layer of soil.

A larger conservation campaign took place in 2003 with the objective of stabilisation of 5 of the excavated churches. The evaluation points at many problems with the work on site.

A management plan is being suggested through a European Community grant, including the recommendation for management structure. The nomination dossier indicates the scope of such plan but without any indications on time frame for its preparation or implementation.

Resources:

- Ministry of tourism;
- Department of Antiquities;
- European grant.

Justification by the State Party (summary)

The State Party justifies the nomination by explaining the importance of the site through several features. Those include the artistic value of its mosaics, the importance of the mosaics inscriptions for the understanding of geography in the region, evidence of evolution of construction techniques, the religious tolerance as proven

by the construction of churches under Moslem rule, uniqueness of the tower of the stylite monks and the importance of the desert agriculture.

The property is nominated on the basis of *criteria i, iii, v and vi*.

3. ICOMOS EVALUATION

Actions by ICOMOS

An ICOMOS mission visited the site in July 2003.

ICOMOS has also consulted its International Scientific Committee on Archaeological Management Heritage.

Conservation

Conservation history:

The Church of Saint Stephen is under a hangar like shelter and visitors to the church walk on elevated walkway. Many of the other excavated areas have been backfilled (with no information on proper documentation prior to this action).

Conservation plans are being prepared and some conservation works are being implemented.

The evaluation points out that there are no proper conservation plans, wrong materials are being used, no proper archaeological supervision during conservation works and absence of proper equipment.

State of conservation:

The site has no proper comprehensive conservation plan and many of its structures are not stable.

Management:

There is total lack of management structure and plans. No sufficient staff on site, no signage, dangerous trenches and basic problems regarding responsibilities – Ministry of Tourism through its staff or Department of Antiquities (often not involved in planning and decision making process). There is neither technical nor management unit in the responsible bodies to take care of the planning and implementation of the plans.

Risk analysis:

Like any site without management plans and management-implementation structure, the main risk is that nothing in the direction of sustainable protection will take place. As a result of excavations and exposure of walls and mosaic floors, the site is at much higher risk than before to deterioration and damage.

Conservation works being carried out without proper planning and specifications present another risk.

Authenticity and integrity

The site kept its full authenticity. The only ‘non authentic’ elements on site are the shelter over a mosaic and two reconstructed arches. The shelter has an important conservation role and its only possible negative impact is to the integrity of the site. It is though reversible and plans are being prepared for new shelters.

The arches were reconstructed as full anastylosis.

Comparative evaluation

ICOMOS sees a big problem in lack of sufficient comparative analysis. The region is rich with sites of this period. Some have several churches with important mosaic floors (see Madaba). Evidence for evolution of building techniques in the region and relevant periods is also not special to this site.

Ancient agriculture is typical to the region and the comparative analysis did not show whether this site is better in any aspect than others.

The stylite tower might be of outstanding value. The Roman *castrum* is possibly of outstanding value as well, but this is not shown in the dossier through comparisons.

Outstanding universal value

General statement:

Without proper comparative studies it is difficult to establish the outstanding universal value of the site. It might meet the requirement and it might not, at the same time.

Evaluation of criteria:

Depending on the comparative analysis, the site may meet *criteria i* (the mosaics), *iv* (*castrum*, stylite tower), *v* (agriculture), *vi* (stylite monks – Christian monasticism as ideology).

4. ICOMOS RECOMMENDATIONS

Recommendation for the future

It is recommended that:

- a management plan and proper conservation plans be prepared;
- a management and implementation structure be established;
- a proper comparative analysis be prepared and submitted.

Recommendation with respect to inscription

That the nomination be *deferred* for the following steps to be taken by the State Party:

- Preparation of a comprehensive management plan, and having a management system in place;
- Preparation of proper conservation plan for the whole site;
- Submitting a comparative analysis for sites of his kind in the region;
- Justify the Outstanding Universal Value and meeting of criteria.

ICOMOS, March 2004

Um er-Rasas (Jordanie)

No 1093

1. IDENTIFICATION

État partie : Royaume hachémite de Jordanie

Bien proposé : Um er-Rasas (Kastron Mefa'a)

Lieu : Région géographique de Madaba

Date de réception : 21 février 2002

Catégorie de bien :

En termes de catégories de biens culturels, telles qu'elles sont définies à l'article premier de la Convention du patrimoine mondial de 1972, il s'agit d'un *site*.

Brève description :

Um er-Rasas est un site archéologique comprenant des vestiges des périodes romaine, byzantine et du début de l'Islam (de la fin du III^e au IX^e siècle apr. J.-C.), dont la plus grande partie n'a pas été fouillée. Ce site fut d'abord un camp militaire romain puis s'agrandit pour devenir une ville à partir du Ve siècle. Il comporte plusieurs églises, dont certaines possèdent encore des sols en mosaïque bien conservés. Deux tours carrées, en dehors du centre du site, suggèrent la pratique des anachorètes stylites. La zone est riche en vestiges d'anciennes activités agricoles.

2. LE BIEN

Description

Um er-Rasas est un site archéologique témoignant des périodes romaine, byzantine et du début de l'Islam. Sur ce site fut fondé au III^e siècle apr. J.-C. un camp militaire romain, en étroite liaison aux frontières de l'empire (le *Limes*), la frontière avec le désert et vraisemblablement avec la section orientale de la route de l'encens. Le grand camp (*castrum*) donna son nom ancien au site – Kastron Mefa'a. Le camp fortifié, de forme carrée d'environ 150 x 150 mètres, n'a quasiment pas été fouillé.

Le *castrum* est devenu le centre de l'établissement ultérieur tandis que les ruines de l'établissement byzantin se trouvent à l'extérieur et couvrent une superficie d'environ 200 x 300 mètres. Parmi les structures en partie fouillées et visibles sur le site, on compte plusieurs églises. Celles-ci étaient facilement repérables avant même que commencent les fouilles et ont attiré l'attention des archéologues qui travaillent sur le site depuis 1986. C'est d'ailleurs pour cette raison que les particularités des habitations, du plan de la ville et de la vie quotidienne sont beaucoup moins connues.

Parmi les vestiges extraordinaires que comporte le site, on compte plusieurs sols en mosaïque, dont l'un revêt une importance particulière : les sols en mosaïque de l'église Saint-Étienne montrent d'incroyables représentations de villes identifiables de Palestine, de Jordanie et d'Égypte.

À proximité de la ville, une grande tour bien préservée, datant de la période byzantine, est probablement l'unique vestige d'une pratique très connue dans cette partie du monde – celle des anachorètes stylites, assis au sommet d'une colonne ou d'une tour et isolés du reste du monde. La tour ne possède pas d'escalier et elle est située dans une zone relativement isolée.

Um er-Rasas est entouré et parsemé de vestiges témoignant de l'activité agricole – réservoirs d'eau, cultures en terrasses, canaux d'irrigation, barrages et citernes.

Deux petits cimetières se trouvent l'un immédiatement à l'ouest et l'autre à l'est du site, le premier est un ancien cimetière bédouin tandis que le second est un cimetière moderne. Le site est séparé de la grande route moderne par une bande d'environ 150 mètres de large. Dans cette zone, se trouvent plusieurs ruines de constructions relativement récentes, datant de la moitié du XIX^e siècle à la moitié du XX^e siècle, et aujourd'hui abandonnées.

Politique de gestion

Dispositions légales :

Le site est protégé par la loi sur les antiquités – une loi qui cependant protège les antiquités de manière passive, en se limitant à citer les interdictions. Les centres principaux du site appartiennent à l'État, de sorte qu'aucune activité privée ou non autorisée ne peut se faire sur le site.

Structure de la gestion :

Il n'existe ni structure de gestion ni plan de gestion du site. Le site emploie quatre gardiens à plein temps qui effectuent le nettoyage et les travaux d'entretien de base.

Au moment de son évaluation, le site était considéré comme dangereux pour les visiteurs, en raison du manque de signalisation, du grand nombre de tranchées ouvertes et de structures instables. L'église Saint-Étienne est l'unique structure gérée, comportant un abri et un accès protégé.

Certaines autres structures du site ont reçu un premier traitement de conservation et la plupart des mosaïques retrouvées lors de fouilles sont protégées par une fine couche de terre.

Une campagne de conservation de plus grande envergure s'est déroulée en 2003 dans le but de stabiliser les découvertes de cinq des églises fouillées. L'évaluation signale de nombreux problèmes concernant les travaux entrepris sur le site.

La proposition d'un plan et d'une structure de gestion financés par une subvention de la Communauté Européenne a été suggérée. Le dossier de proposition d'inscription indique le champ d'action de ce plan, sans

toutefois préciser les délais de préparation ou de mise en œuvre.

Ressources :

- Ministère du tourisme;
- Direction des antiquités;
- Subvention de la Communauté Européenne.

Justification émanant de l'État partie (résumé)

L'État partie justifie la proposition d'inscription par l'importance de différentes caractéristiques du site, par exemple : la valeur artistique des mosaïques et leur importance pour comprendre la géographie de la région, le témoignage de l'évolution des techniques de construction, la tolérance religieuse prouvée par la construction des églises chrétiennes sous domination musulmane, l'originalité de la tour des anachorètes stylites et l'agriculture adaptée à une région désertique.

Le bien est proposé pour inscription sur la base des critères i, iii, v et vi.

3. ÉVALUATION DE L'ICOMOS

Actions de l'ICOMOS

Une mission d'expertise de l'ICOMOS a visité le site en juillet 2003.

L'ICOMOS a également consulté son Comité Scientifique International sur la gestion du patrimoine archéologique.

Conservation

Historique de la conservation :

Les vestiges de l'église Saint-Étienne sont protégés par un abri et les visiteurs marchent sur des passerelles. D'autres zones fouillées ont été recouvertes de terre (il n'existe aucune documentation établie préalablement à cette mesure de protection).

Des plans de conservations ont été préparés et quelques travaux de conservation ont été entrepris.

L'évaluation note l'absence de plans de conservation appropriés, l'utilisation de matériaux impropres, l'absence de contrôle des travaux de conservation d'un point de vue archéologique et l'absence d'équipements adéquats.

État de conservation :

Le site ne possède pas de plan de conservation détaillé et adapté et beaucoup de ses structures ne sont pas stables.

Gestion :

Il y a une absence totale de structure et de plan de gestion. Le personnel sur le site est insuffisant, la signalisation et le

balisage sont inexistant, il y a des tranchées dangereuses et des problèmes fondamentaux de responsabilité – le ministère du tourisme au travers de son personnel ou la direction des antiquités (souvent absent des procédures de planification et des prises de décisions). Aucune unité technique ou de gestion relevant des organes responsables ne prend soin de la planification ou de la mise en œuvre des plans.

Analyse des risques :

Comme tout site dépourvu de plan de gestion et de structure de mise en œuvre de la gestion, le risque principal est l'absence de tout traitement en faveur d'une protection durable. Les fouilles et l'exposition des murs et des sols couverts de mosaïques mettent le site en bien plus grand danger de détérioration et de dommage qu'avant.

Les travaux de conservation effectués sans planification ni spécifications techniques présentent aussi un risque.

Authenticité et intégrité

Le site a conservé son authenticité intégrale. Les seuls éléments non authentiques sont un abri placé sur une mosaïque et deux arches reconstruites. L'abri a un rôle de conservation important et son unique impact négatif concerne l'intégrité du site. Cet aménagement est cependant réversible et des plans sont en cours de préparation pour de nouveaux abris.

Les arches ont été complètement reconstruites par anastylose.

Évaluation comparative

L'ICOMOS considère que l'absence d'une analyse comparative suffisante pose un problème. La région est riche en sites de cette période. Certains comportent plusieurs églises avec des sols en mosaïque importants (voir Madaba). Les témoignages d'une évolution des techniques de construction dans la région et les périodes concernées ne sont pas non plus spécifiques au site.

Les pratiques agricoles anciennes sont typiques dans la région et l'analyse comparative n'a pas montré que le site est plus représentatif que d'autres sous aucun aspect que ce soit.

La tour du stylite est susceptible avoir une valeur exceptionnelle. Le *castrum* romain peut aussi être d'une valeur exceptionnelle, mais ce n'est pas montré dans le dossier par des études comparatives.

Valeur universelle exceptionnelle

Déclaration générale :

Sans étude comparative appropriée, il est difficile d'établir la valeur universelle exceptionnelle du site. Il est susceptible de remplir les critères comme il peut ne pas s'y conformer.

Évaluation des critères :

Une étude comparative pourrait révéler que le site répond aux critères *i* (les mosaïques), *iv* (le *castrum*, la tour du stylite), *v* (l'agriculture), *vi* (les anachorètes stylites – monachisme chrétien comme idéologie).

4. RECOMMANDATIONS DE L'ICOMOS

Recommandations pour le futur

Il est recommandé :

- que des plans de gestion et de conservation appropriés soient préparés ;
- qu'une structure de gestion et de mise en œuvre soit créée ;
- qu'une analyse comparative appropriée soit préparée et soumise.

Recommandation concernant l'inscription

Que l'examen de cette proposition d'inscription soit ***différé*** afin de permettre à l'État partie de prendre les mesures suivantes :

- préparation d'un plan de gestion détaillé et mise en place d'un système de gestion ;
- préparation d'un plan de conservation approprié pour l'ensemble du site ;
- soumission d'une analyse comparative des sites du même type dans la région ;
- justification de la valeur universelle exceptionnelle et conformité aux critères.

ICOMOS, mars 2004