

**World Heritage Centre– ICOMOS – IUCN  
Reactive Monitoring Mission Report  
Petra, Jordan**

21 to 26 November 2017

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## **Abbreviations**

ACOR American Center of Oriental Research

APAAME Aerial Photographic Archive for Archaeology in the Middle East

BR Petra Back Road aka Turkmenia Road

CNC Capital of the Nabataeans Cooperative

DOA Department of Antiquities

IMP Integrated Management Plan, First draft November 2017

IMPR Investment Map Petra Region

ITABC The Institute for Technologies Applied to Cultural Heritage, The Italian National Research Council, (Istituto per le tecnologie applicate ai beni culturali).

MT Petra Main Trail through the site

PAP Petra Archaeological Park

PDTRA Petra Development and Tourism Regional Authority

OUV Outstanding Universal Value

ROUV Retrospective Statement of Outstanding Universal Value

SCHP The Sustainable Cultural Heritage through Engagement of Local Communities Project

SSP Siq Stability Project or SSMP 1.7

SOC State of Conservation Report 2017

TWLCRM The Temple of Winged Lions Cultural Resource Management Project

USAID United States Agency for International Development

WBS Wadi Banks Stabilization

WHC UNESCO World Heritage Centre

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## Executive Summary

In view of the growing development and urban pressures within a planned but not formally designated buffer zone for Petra, the World Heritage Committee, at its 41st session (Krakow, 2017), requested the State Party to invite a joint World Heritage Centre/ICOMOS/IUCN Reactive Monitoring mission, to assess the situation at the property and in the planned buffer zone, particularly where development projects are located or foreseen, and to discuss the development of a Master Plan (41 COM 7B.80). The joint mission took place from 21 to 26 November 2018.

Within the boundaries of the inscribed site, the Petra development tourism Region Authority (PDTRA) in charge of managing, the property does not possess the adequate competencies to address the conservation of the archaeological site. Therefore, the Mission recommends the strengthening of the Department of Antiquities' role and presence in Petra and for it to take over irresponsibility for archaeological conservation, and to adequately plan and supervise works that have a significant impact on the archaeological remains, such as the recent measures taken to channel the flash floods and the construction of the back road at the exit of the site. This would require adequate DoA human and financial resources to be assigned to Petra.

In particular, the Reactive Monitoring mission recommends that if further Wadi Stabilization works are contemplated, careful thought should be given to the landscaping of any such scheme, in addition to the vital and necessary prior archaeological excavations and watching briefs and appropriate consultation with the World Heritage Centre and ICOMOS should take place prior to implementation.

In the buffer zone and the larger setting of Petra, rapid urban growth is following a high steep curve due to population growth and tourism pressure, thus the World Heritage site is in danger of soon being swamped by urbanization. Moreover, the buffer zone adjacent to the entrance of the Siq is highly congested with new constructions that have been built or are under construction by the Government. Other ongoing constructions in Petra's setting, such as the Eco-Village and the Heritage Village are exerting a very strong footprint and should be reviewed to minimize as much as possible their environmental and visual impact. All these projects, including the planned extension of the Crown Plaza Hotel, contribute to raising the frustration of the private property owners who are prevented from building in the setting of the site.

Defining a buffer zone for Petra and protecting its larger setting will entail the elaboration of plans to mitigate urban growth and tourism pressure, which stem from sustainable development approaches. The buffer zone should extend beyond the territory of the Petra Development and Tourism Regional Authority, to include the whole Ma'an Governorate and even to a larger geographical area where/if deemed appropriate. Such an approach could contribute to promoting

and to diversifying potential sources of income not linked or associated specifically with Petra and the World Heritage site. Such an approach would also allow more options in dealing with private property issues.

The national authorities indicated their readiness to undergo a shift in territorial planning and to reverse former decisions taken to protect Petra from urban pressure. The Jordanian Prime Minister has appointed a New Board of Commissioners for the PDTRA who will be entrusted in implementing a new road map for Petra in line with the above commitments. .

The Reactive Monitoring mission appreciates the undertaking by the national authorities both to freeze ongoing constructions and to elaborate realistic and feasible national plans, given the important legal and financial implications that such a decision entails. The Reactive Monitoring Mission also recommends setting a long-term vision for Petra's future within a larger geographical scope, through integrated territorial planning and broad sustainable development approaches

The mission analysed the draft Integrated Management Plan, which is currently being finalised by the UNESCO Amman Office and the Department and Antiquities and Petra Archaeological Park. The Reactive Monitoring Mission is reassured by the thoroughness with which the IMP is being prepared. It considers positively that the action plan will concentrate on the key concrete results and targets, with their appropriate milestones and performance indicators. The cost estimates that are being developed and an indication of the financial feasibility timetable and an exploration of additional sources of funding for the IMP will provide the tools for immediate implementation.

The issues of establishing a mechanism of regular consultation processes with all concerned institutions, and the involvement of the local communities in the management of the property cannot be overemphasized. The Mission notes that establishing linkages between the tangible and intangible values of the site and valorising the "Cultural space of the Bedu in Petra and Wadi Rum in Jordan" could be integrated in the management of the property, and capitalised upon to reinforce the role and benefits of local communities in management and conservation.

The Reactive Monitoring mission also considers that the ongoing project of establishing Petra Archaeological Park as a Natural Protected Area supports the conservation and management of the property and provides benefit in terms of local sustainable environmental, social and economic development.

The mission identified other threats related to the conservation of the property such as flash floods, rock falls, natural decay of the stone, and uncoordinated excavation practices. The Reactive Monitoring mission notes that the root causes of the flash floods were not adequately addressed prior to the works and recommends that technical solutions should always benefit from thorough research and be submitted to the review of the World Heritage Centre and ICOMOS as per paragraph 172 of the Operational Guidelines. It also recommends that the DoA be actively involved in diagnosing conservation problems at the property and addressing them through

appropriate research and with adequate competencies. This process should lead to the preparation of a conservation plan for the property. Moreover, archaeological excavations need to be better regulated and systematically include a costed and financed plan for the conservation, consolidation and backfilling of the given site.

Child Labour and school dropout rates are especially high in the Umm Sayhoun village where the Bdul Community lives, and is linked to children working on the site. Adequate awareness raising and protective measures are needed to address this important social problem.

Finally, the Reactive Monitoring mission recommends that systematic and efficient actions be taken to stop animal mistreatment and increase awareness of this issue, and suggests combining sanctions with incentives, and encourages awareness raising programmes in schools.

## **1. Background to the Mission**

### **1.1 Criteria and World Heritage values**

Petra was inscribed on the World Heritage List in 1985 under criteria (i), (iii) and (iv). Within the framework of the Periodic Reporting exercise and further to the request by the World Heritage Committee, the State Party of Jordan drafted a Retrospective Statement of Outstanding Universal Value (RSOUV) which was adopted by the World Heritage Committee at its 34th session in 2010, as follows:

#### **Brief synthesis**

Situated between the Red Sea and the Dead Sea and inhabited since prehistoric times, the rock-cut capital city of the Nabateans, became during Hellenistic and Roman times a major caravan centre for the incense of Arabia, the silks of China and the spices of India, a crossroads between Arabia, Egypt and Syria-Phoenicia. Petra is half-built, half-carved into the rock, and is surrounded by mountains riddled with passages and gorges. An ingenious water management system allowed extensive settlement of an essentially arid area during the Nabataean, Roman and Byzantine periods. It is one of the world's richest and largest archaeological sites set in a dominating red sandstone landscape.

#### **The Outstanding Universal Value (OUV)**

The OUV of Petra resides in the vast extent of elaborate tomb and temple architecture; religious high places; the remnant channels, tunnels and diversion dams that combined with a vast network of cisterns and reservoirs which controlled and conserved seasonal rains, and the Adoption of retrospective Statements WHC-10/34.COM/8E.Add, p. 10 of Outstanding Universal Value extensive archaeological remains including of copper mining, temples, churches and other public buildings. The fusion of Hellenistic architectural facades with traditional Nabataean rock-cut temple/tombs including the Khasneh, the Urn Tomb, the Palace Tomb, the Corinthian Tomb and the Deir ("monastery") represents a unique artistic achievement and an outstanding architectural



ensemble of the first centuries BC to AD. The varied archaeological remains and architectural monuments from prehistoric times to the medieval periods bear exceptional testimony to the now lost civilisations which succeeded each other at the site.

### **Criteria**

**Criterion (i):** The dramatic Nabataean/Hellenistic rock-cut temple/tombs approached via a natural winding rocky cleft (the Siq), which is the main entrance from the east to a once extensive trading city, represent a unique artistic achievement. They are masterpieces of a lost city that has fascinated visitors since the early 19th century. The entrance approach and the settlement itself were made possible by the creative genius of the extensive water distribution and storage system.

**Criterion (iii):** The serried rows of numerous rock-cut tombs reflecting architectural influences from the Assyrians through to monumental Hellenistic; the sacrificial and other religious high places including on Jebels Madbah, M'eisrah, Khubtha, Habis and Al Madras; the remains of the extensive water engineering system, city walls and freestanding temples; garden terraces; funerary stelae and inscriptions together with the outlying caravan staging posts on the approaches from the north (Barid or Little Petra) and south (Sabra) also containing tombs, temples, water cisterns and reservoirs are an outstanding testament to the now lost Nabataean civilization of the fourth century BC to the first century AD.

Remains of the Neolithic settlement at Beidha, the Iron Age settlement on Umm al Biyara, the Chalcolithic mining sites at Umm al Amad, the remains of Graeco-Roman civic planning including the colonnaded street, triple-arched entrance gate, theatre, Nymphaeum and baths; Byzantine remains including the triple-apses basilica church and the church created in the Urn Tomb; the remnant Crusader fortresses of Habis and Wueira; and the foundation of the mosque on Jebel Haroun, traditionally the burial place of the Prophet Aaron, all bear exceptional testimony to past civilizations in the Petra area.

**Criterion (iv):** The architectural ensemble comprising the so-called "royal tombs" in Petra (including the Khasneh, the Urn Tomb, the Palace Tomb and the Corinthian Tomb), and the Deir ("monastery") demonstrate an outstanding fusion of Hellenistic architecture with Eastern tradition, marking a significant meeting of East and West at the turn of the first millennium of our era.

The Umm al Amad copper mines and underground galleries are an outstanding example of mining structures dating from the fourth millennium BC.

The remnants of the diversion dam, Muthlim tunnel, water channels, aqueducts, reservoirs and cisterns are an outstanding example of water engineering dating from the first centuries BC to AD.

### **Integrity (2010)**

All the main freestanding and rock-cut monuments and extensive archaeological remains within the arid landscape of red sandstone cliffs and gorges lie within the boundaries of the property that coincide with the boundaries of the Petra National Park. The monuments are subject to ongoing erosion due to wind and rain, exacerbated in the past by windblown sand due to grazing animals reducing ground cover. The resettlement more than twenty years ago of the Bdul (Bedouin) tribe

and their livestock away from their former seasonal dwellings in the Petra basin to a new village at Umm Sayhun was aimed in part at arresting this process.

They are also vulnerable to flash flooding along Wadi Musa through the winding gorge (Siq) if the Nabataean diversion system is not continually monitored, repaired and maintained.

The property is under pressure from tourism, which has increased greatly since the time of inscription, particularly congestion points such as the Siq which is the main entrance to the city from the east.

The property is also vulnerable to the infrastructure needs of local communities and tourists. A new sewerage treatment plant has been provided within the property to the north with the recycled water being used for an adjacent drip irrigation farming project. Further infrastructure development proposed inside the boundary includes electricity supply and substation, a community/visitor centre, an outdoor theatre for community events, picnic areas, camping ground and a new restaurant near the Qasr al Bint temple, all of which have the potential to impact on the integrity of the property.

### **Authenticity (2010)**

The attributes of temple/tomb monuments, and their location and setting clearly express the Outstanding Universal Value. The natural decay of the sandstone architecture threatens the authenticity of the property in the long-term. Stabilization of freestanding monuments including the Qasr al Bint temple and the vaulted structure supporting the Byzantine forecourt to the Urn Tomb Church was carried out prior to inscription.

### **Protection and management requirements (2010)**

Under Jordanian National law, responsibility for protection of Antiquities sites lies with the Department of Antiquities, a separate entity under the Ministry for Tourism and Antiquities.

The property is a protected area within the Petra Archaeological Park, managed by the Ministry of Tourism and Antiquities. However responsibility for the overall planning and implementation of infrastructure projects at the site rests largely with the Petra Regional Authority (PRA) - originally the Petra Regional Planning Council (PRPC) - but now expanded to cover the social and economic wellbeing of the communities in the locality.

Increased staff numbers have enabled campaigns of inspection and control and strategies have been developed to manage tourist access and local community involvement, including the location and design of community-managed shop/kiosks.

Regulations and policies developed under the Petra Archaeological Park Operating Plan will cover infrastructure projects undertaken by the PRA including electrification of the Petra Archaeological Park and works associated with water recycling and farming projects, including tree-planting. They will also cover visitor facilities such as park lighting, tourist trails and interpretative signage, restaurants and shops, community recreation areas and businesses, as well as public events and activities within the park.

There is a long-term need for a framework for sustainable development and management practices aimed at protecting the property from damage resulting from the pressure of visitors, while enhancing revenues from tourism that will contribute to the economic and social viability of the region.

## **1.2 Examination of the State of Conservation by the World Heritage Committee and its Bureau**

Since the time of inscription, the World Heritage Committee and its Bureau examined state of conservation reports related to Petra in 1994, 1995, 1996, 1997, 1998, 2000, 2001 and 2010, 2011, 2013, 2015 and 2017 (see reports and decisions in attached Annex 6.2.3).

## **1.3. Justification of the mission**

The factors affecting Petra that had been brought to the attention of the World Heritage Committee since the inscription of the site include archaeological conservation, flooding, rock-falling in the Siq, commercial activities within the site, uncontrolled development and urban encroachment including increasing tourism-related constructions, insufficient management measures, the lack of a management plan for the property and a Master Plan for the region, coupled with absence of a formal buffer zone. Moreover, in recent years, development projects constructed and foreseen in the setting of the property, where a planned buffer zone has not yet been formally defined, have considerably increased and only a few factors affecting the property have been addressed.

Furthermore, information relating to projects in the buffer zone was not systematically submitted in advance and with the required level of details for review, according to the process defined by Paragraph 172 of the Operational Guidelines of the World Heritage Convention. Moreover, the projects, apart from the Petra Museum, which is currently under construction in the Buffer Zone, were not supported by Heritage Impact Assessment (HIA) studies.

In view of this increase in urban growth within the planned but non-formal buffer zone, and in the absence of an overall Master Plan at the level of the territory, the World Heritage Committee at its 41st session (Krakow, 2017) requested that the State Party should invite a joint World Heritage Centre / ICOMOS / IUCN Reactive Monitoring mission to assess the situation at the property and in the planned buffer zone, particularly those where the development projects are located or foreseen and to discuss the development of a Master Plan (41 COM 7B.80). Despite the fact that Petra was inscribed as a cultural site, the participation of IUCN in this mission was sought to contribute to defining adequate protection and management measures of the important environmental, natural and geological values of the property and its setting, which are part and parcel of its cultural values and could constitute a natural protection zone.

## **2. National Policy for the Preservation and Management of the World Heritage Property**

### **2.1 Institutional framework and Management structure**

The 2010 Reactive Monitoring mission to Petra reported that in August 2007 the Petra Archaeological Park (PAP) was announced, by virtue of a new bylaw, as an autonomous legal entity

with separate financial resources, with the result that the management and maintenance of the Petra Archaeological Park is funded through an allocation from the state budget; foreign aids, grants and donations; a percentage of park entrance fees; and fees from services provided inside the Petra Archaeological Park. However the PAP appears as a subordinate organization that reports to the Petra Development and Tourism Regional Authority (PDTRA).

Established in 2009 by Antiquities Law n.15, the PDTRA exercises control over the PAP (264 km<sup>2</sup> protected area) and all surrounding areas, the entire Petra Region (755 km<sup>2</sup>). The PDTRA's role is the development of the Petra Region economically, capitalising on its potentials in tourism, among other objectives such as local community development, heritage management and protection, and the environment. The mandate of the PDTRA focuses on several areas, including:

- managing and protecting the Petra Archaeological Park;
- developing tourism;
- overseeing zoning and land use;
- stimulating investment;
- improving socio-economic conditions of local communities;
- encouraging sustainable development across the region.

The PDTRA is linked directly to the Prime Minister and headed by a Chief Commissioner at ministerial level who is assisted by a board of Commissioners (for the PAP at the level of Deputy-Commissioner; Communities and Environment; Infrastructure; and Administration and Finance) making up a council called "Board of Commissioners". However, as outlined above, the archaeological area of Petra has been under the jurisdiction of the Antiquities Law n. 21 art. 51 of 1988 by which the DoA is the only body responsible for the protection and conservation of the archaeological site. A representation of the DoA is permanently appointed within the Petra Archaeological Park to fulfil this responsibility. The Director General of the Department of Antiquities is involved in decisions related to the conservation of the property.

Shortly after completion of the Reactive Monitoring mission, on 9 January 2018, the Cabinet of the Jordanian Prime Minister appointed a New Board of Commissioners for Petra, composed as follows:

- Chief Commissioner: Eng. Falah Al Amoush (former Head of Zarqa Governorate)
- Deputy Chief Commissioner and Commissioner for the PAP: Dr Suleiman Farajat
- Commissioner for Communities and Environment: Dr Maram Frehat
- Commissioner for Infrastructure: Eng. Abdulmon'em Abu Helaleh (already part of previous Board)
- Commissioner for Administration and Finance: Dr Khalil Abu Hamour (already part of previous Board)

It is to be noted that, after its endorsement by the Cabinet of the Prime Minister, the new Board of Commissioners will be entrusted to implement a new way forward for Petra.

The factors/issues affecting the property have remained the same from 2000 up to 2017, and some, like urban growth, have worsened considerably. Therefore, the existing institutional framework has proven to be insufficient to address the challenges that the property faces. The mission noted the need for reinforced stakeholder collaboration, especially at the governmental level, and the need to significantly reinforce the role of the DoA in the conservation and the management of the property, particularly when infrastructural interventions take place within its boundaries (e.g. the back road and the flash floods channels). Indeed, the mere fact that the PDTRA is focused on development and tourism rather than on archaeological protection and management weakens the attention, competencies and investment that should be dedicated to the property's values and attributes. The balance between local development and tourism development on one hand, and archaeological protection and management on the other, is still not adequately reflected in the institutional structure. Moreover, the mission noted that the territorial jurisdiction of the PDTRA, which is limited to 775 km<sup>2</sup>, allows it to address the issues at stake only within a limited territory, thus limiting the solutions. This issue is further detailed in several parts of the report below.

Finally, the institutional link between the PDTRA and the Ministry of Environment would need to be reinforced; environmental conservation and management would need to be integrated systematically in PDTRA's mandate and work and linked to the cultural attributes of the World Heritage property and its setting, including at its legal jurisdiction. Indeed, linking the natural and cultural attributes in the institutional framework would lead to better protection of Petra's OUV.

## **Recommendations**

### **Institutional framework and Management structure**

- Significantly reinforce the role of the DoA in the conservation and the management of the property particularly when infrastructural interventions take place within its boundaries (e.g. the back road and the flash floods channels).
- Reinforce stakeholder collaboration especially at the governmental level.
- Reinforce the institutional link between the PDTRA and the Ministry of Environment and mainstream environmental laws and bylaws into the PDTRA mandate and conservation and management efforts.

## **2.2 Protected Area legislation**

The legal status and jurisdiction in Jordan is established by:

- 1) Laws (Royal decree)
- 2) Policy (bylaws) and

### 3) Guidance (regulations).

As outlined by the State Party under “Protection and Management Requirements” in the 2010 Retrospective Statement of OUV (see section 1.1 above), two laws have direct impact on the Petra Archaeological Park (PAP): 1) the Antiquities Law (1988); and 2) the PDTRA Law, first issued in 2009 and updated 2015. Each Law is linked to a series of regulations and guidance. The PDTRA Law gives the region its own legal autonomy, and with the exception of antiquities which responsibility lies with the Department of Antiquities (DoA), an entity under the Ministry of Tourism and Antiquities (MoTA), the role of all other departments and ministries is covered within PDTRA whereby PDTRA law overrides any specific laws associated with these ministries. Indeed, since 1988, the archaeological area of Petra has been under the jurisdiction of the Antiquities Law n. 21 art. 51, by which the DoA is the only body responsible for the protection and conservation of the archaeological site.

Other ancient sites of historical interest in the Petra region are covered under the same legal provisions as Petra Archaeological Park (PAP): Bir Madhkur, Qasr Umm Rattam, Sumr el-Taybeh, Umm el Amad, Abu Khusheibeh and Wadi Sabra.

A number of other laws affect the Petra region and are detailed in the draft Integrated Management Plan (DoA/UNESCO, 2017).

According to the PDTRA Law (2015), the role of the MoTA in Petra is taken over by the PDTRA, as set out in a Memorandum of Understanding between the two institutions signed in 2015. In parallel to the integrated management planning process, a MoU is being formulated to establish joint management arrangements for the site between the DoA and PAP (due for endorsement in December 2017). This institutional set-up affects the daily management of the archaeological site, as explained further in section 2.1 Institutional Framework and Management Structure above.

### **2.3 Designating Petra Archaeological Park as a Natural Protected Area**

Natural values are highly associated with Petra’s cultural values; these have been highlighted in several scientific papers and reports and more recently (2105) in a proposal prepared by the United Nations Development Programme (UNDP) and the Jordanian Ministry of Environment to designate PAP a Natural Protected Area, by arguing that the PAP represents distinct biogeographic zones and physical environments of Jordan.

The PDTRA is engaged in the process of preparing a file to propose the designation of PAP as a natural protected area. Representatives of the PDTRA Board commissioners and directors of all related departments have taken an active part in related discussions and in the review of the file.

Studies done by UNDP and UN Habitat both supported the designation of a natural protected area due to the natural values of both the site and region. Literature highlighted the potential of the area to be designated a natural protected area.

### **2.3.1 The ecological and biodiversity values**

#### **The ecological and biodiversity values are integral to the cultural landscape and setting of the site.**

The larger proposed park area contains one of the last remaining oak forests in Southern Jordan, as well as a rich flora and fauna, including endemic species. The file for the proposed Natural Protected Area considers that these have been more specifically defined in the application to designate the area as a National Park, and the State Party considers that the property could also be expanded for consideration under criterion (viii) of the World Heritage Convention, especially in elaborating the natural-cultural connectivity and interdependence of the property.

The Petra Archaeological Park is characterized by a high diversity of plants and animals: almost 40% of all the species that occur in Jordan have been recorded in the Petra area, listing and/or describing most of PAP's plants, mammals, amphibians and reptiles, and birds. It includes a total of over 750 species of plants (42 of which are threatened and/or endemic and 18 have medicinal significance), 122 species of birds (at least 8 are globally and/or regionally threatened), 36 amphibians and reptiles (one species is vulnerable and other two are endangered according to IUCN Red List status), and 28 mammals (three of them are vulnerable and endangered, including Blanford's fox and Nubian ibex). Furthermore, Petra also represents the southern limit for several species of Mediterranean plants, reptiles (the wall lizard, the Greek tortoise and the European chameleon), and mammals (the European hedgehog, wood mouse and mole rat). It is also very near the northern limit for African species such as Acacia trees, rock hyrax and Blanford's fox.

Wild Atlantic Pistachio, *Pistacia atlantica*, and wild almond (genus *Crataegus*) occur in the PAP, as well as planted fruit trees. Some pistachio trees are several hundred years old, with massive trunks. The evergreen oak, *Quercus coccifera*, woodland of Al-Hisha, has oaks that do not grow very large, partly because of the dry climate but also because they are regularly coppiced and grazed. Wadi Araba to the west and south of Petra is an arid sub-tropical zone which typically has scattered acacia trees *Acacia tortilis*, with patches of halophytes and dunes with shrubs. The Mediterranean biotope is represented by Phoenician Juniper *Juniperus phoenicia*, cliffs and sandstones, and other tree vegetation such as Evergreen Oak *Quercus coccifera*. Thirteen different habitat types, 18 medicinal herbs, and several forest types are recorded.

### 2.3.2 Landscape and Geological Formations

Petra was carved in two geological formations, which are: the Umm Ishrin Formation in which most of the monuments are found and the Disi Formation with minor carving activity. The Siq and its surroundings are characterized by faults and joints. Such geological structures are due to stresses related to the tectonic activities that affected the area in the past.

The variety of geologic and rock formations along with the distinctive biogeographic zones that characterize the Petra region provide a magnificent scenic value to the site. The evergreen forests of oaks and Junipers that spread over the slopes enrich the natural values of Petra.

The geological formations of the surrounding area of the PAP are integral parts of the monuments that are carved into them make the setting of the site globally unique. The variation of geological formations can be of great value in creating new routes and trails for visitations.

In addition, some mega biological zones can be identified within the PAP; each mega zone includes a mixture of natural habitats. Some zones can be classified as no go zones, but others such as those located along tourism routes within the archaeological areas, could be promoted as examples of best environmental practices, after studying and confirming their carrying capacity for visitors use.

It is important to note that according to the established Jordanian criteria for inclusion of new sites in the National Protected Areas Network, the proposed protection area scores high values thanks to its World Heritage status. However, under the same scoring grid, in terms of validity and sustainability, the proposed protected area has a low score due to the threats affecting it. On the other hand, the manageability, touristic value/use, usability for educational purposes and documentation capacity scores are relatively high.

The Natural Protected Area designation would allow the conservation of the biodiversity in the area, which is considered, at least in a significant proportion of its habitat, among the best representatives of Jordan's vegetation types constituted by Oak and Juniper forests. It would also contribute to developing the tourism sector through sustainable tourism activities and generate employment in that sector.

The establishment of the PAP as a Natural Protected Area, coupled with appropriate protection measures and sustainable environmental practices, would considerably reinforce the protection and conservation of Petra's natural and cultural resources and protect its setting since it would provide a de-facto natural buffer zone. It would preserve Petra's geological specificities and its landscape, which are an intrinsic part of its archaeological attributes, along with its biodiversity. It would also lead to integrating the natural dimension in the zoning and land use of the property's buffer zone and larger setting, and introduce incentives for the local communities to conserve the archaeological and natural values of the whole area.

Moreover, it could encourage visitors to explore a different experience after or during their visit to the archaeological site, thus diversifying and extending the tourism opportunities to include natural-related ones such as rural/natural tourism where visitors can experience the local food,



organic-farming products, bird watching, medicinal plants, trekking, and several other products that could be developed.

This could also contribute to creating jobs and sources of income as well as pride in the local communities through licensed environmentally sustainable activity inside the natural park.

The designation of a natural protected area represents a big challenge in terms of land property rights and would need to be supported with appropriate compensation measures according to Jordanian law, and would benefit from being coupled with incentives to the owners such as licensed environmentally sustainable tourism activities inside the area and promotional support at the national level.

Based on the environmental protection law, activities inside and around the PAP should therefore follow strict guidelines, regulations and restrictions that should be an integral part of the Natural Protected Area file and formalized through legal provisions.

### **2.3.3 Recommendations:**

#### **The Designation of the PAP as a Natural Protected Area**

- Pursue the designation of the PAP as a Natural Protected Area, and couple it with the appropriate protection measures and sustainable environmental practices, to reinforce the protection and conservation of Petra's natural and cultural resources and protect its setting since it would provide a de-facto natural buffer zone.
- Based on the environmental protection law, strictly regulate activities inside and around the PAP.
- Elaborate a specific monitoring programme for the natural values of the Natural Protected Area.

### **2.4 Response to the recognition of values under international treaties and programmes**

The "Cultural space of the Bedu in Petra and Wadi Rum in Jordan" were inscribed in 2008 (3.COM) on the Representative List of the Intangible Cultural Heritage of Humanity (originally proclaimed in 2005), as follows:

*The Bedu are settled and nomadic communities living in the southern part of Jordan, particularly near Petra and Wadi Rum, within a region of semi-arid highlands and deserts. These conditions have allowed for the development and existence in complementary relationship of both types of communities. Several Bedu tribes, namely the Bdul, the Ammarin and the Sa'idiyyin, continue to*

*use the Nabatean water-collecting cisterns and caves near Petra. The Bedu communities inhabiting this area keep alive a traditional pastoral culture and related skills. The Bedu of Petra and Wadi Rum have preserved specific knowledge related to the flora and fauna of the area, traditional medicine, camel husbandry, tent-making craftsmanship, and tracking and climbing skills. The Bedu have developed an extensive knowledge of their environment and complex moral and social code, all of which is expressed and transmitted orally. Their rich mythology is manifested in various forms of oral expression, comprising poetry, folktales and songs that are closely linked to particular places and the history of these communities. Over the last fifty years, more and more Bedu groups have settled down. The provision of education, housing, health care and sanitation has made a sedentary existence more attractive for many of them, leading, however, to the erosion of skills developed by the Bedu over generations. The increase of desert tourism and its demand for “authentic Bedu culture” should not be allowed to further degrade the intangible heritage of the Bedu in Petra and Wadi Rum.*

The Mission notes that establishing linkages between the tangible and intangible values of the site and valorising the “Cultural space of the Bedu in Petra and Wadi Rum in Jordan” could be further reinforced in the management of the property. Furthermore, this link could be capitalized upon to reinforce the role of local communities in management and conservation, valorise them as custodians of the World Heritage property, and reinforce the need for them to be beneficiaries of sustainable economic and social development.

#### **2.4.1 Recommendations**

##### **Intangible heritage values**

- Establish linkages between the tangible and intangible values of the site and integrate them in the management of the property to reinforce the role of local communities in management and conservation, and contribute to their sustainable economic and social development.

#### **2.5 Management structure**

##### **Integrated Management Plan (IMP)**

Since 2010, the WH Committee has been concerned at the lack of a Management Plan for Petra, which would specify how the OUV of the property will be protected. The Reactive Monitoring Mission was therefore pleased to be given a copy of the Integrated Management Plan (IMP), first draft, dated November 2017, which has been prepared jointly by the UNESCO Amman Office and the technical team drawn from the staff of the PAP and DoA. The mission was also given a clear presentation on the IMP during the mission itself. The mission was reassured by the care and thoroughness with which the IMP is being prepared and felt confidence in the planning team. The mission was informed that it is hoped to finalize the IMP early in 2018.

The mission was impressed by the extent of stakeholder participation in the IMP. This participation had taken place by means of the following 14 advisory groups:

- |                                 |   |  |
|---------------------------------|---|--|
| 1. Local community partnerships | 6. Infrastructure management                    | 10. Planning and land use              |
| 2. Law and legalities           | 7. Nature conservation                          | 11. Risk management                    |
| 3. Heritage Conservation        | 8. Visitor services, interpretation and museums | 12. Sustainability and eco development |
| 4. Archaeology                  | 9. Tourism                                      | 13. Education                          |
| 5. Geology and hydrology        |   | 14. Data management                    |

The input of the advisory groups has resulted in the production of a Policy Framework and the identification of 27 necessary management actions; ten of which are considered priority and urgent actions; the IMP announces only new policies (MoUs) for the management of the site. As soon as it is officially adopted, the implementation of the IMP should be coupled with legal provisions and reinforced with adequate policies.

The IMP contains a detailed description of this exemplary process, the mission nevertheless suggests that the final text would summarise the discussion of the methodology of the consultation process and could be add more details in an appendix. Such an arrangement would mean that the final IMP text could focus firmly on the property's OUV and the priority action plan required to sustain it. The mission is reassured that the action plan, which is being developed will concentrate on the key concrete targets, which have been identified. Together with their appropriate milestones and performance indicators, a cost estimate and an indication of the financial feasibility and timetable for the implementation of the IMP will represent critical tools for the immediate implementation of the IMP.

The mission noted that IMP policy 'A3' provides for the development of a GIS based data management system for monitoring, reporting and research purposes. Mission believes that an essential output of this system and planning tool must be an accurate GIS-based plan of Petra showing its precise boundaries, topography and locations of all its component attributes.

In principle, the boundaries of World Heritage property coincide with those of the Petra National Park, which did not have a formal existence at the time of inscription. Various maps provided by the Jordanian authorities show different boundaries (see Annex 6.3, Maps from the Retrospective Inventory). The current plan accompanying the draft (IMP Figure 3.1) only provides a simplified view of the property's boundaries based on a series of specific points, identified by coordinates. The mission appreciates that the nature of the terrain of the PAP makes precise boundary definitions difficult, but notes that the boundaries were reviewed in 2013, so that more remote points are now recorded and marked on the ground (IMP 3.1.2). As it currently stands, the plan does not contain yet topographical information or the location of Petra's component attributes, that will be integrated before the completion of the planning process. The recording of missing cultural heritage attributes will be included as part of the priority actions to be undertaken within the first year of implementation of the plan.

As outlined in several World Heritage Committee decisions, the buffer zone for Petra has also, in the view of the mission, not yet been finalized (refer to section 3.1 on the buffer zone below).

The management programme outlined in the IMP includes a number of priority actions to be achieved within a 5 year planning timeframe, with priority set on policies of category A and B. Through the Action Plan, the IMP has been conceived as a planning tool to guide the management of the site for the coming 5 years and direct funding into priority actions. Project sheets will be attached as appendixes to the plan to support the national authorities in fundraising efforts.

. The IMP implicitly acknowledges the shortfall in funding.

For instance in Management policy B1 an action is stated to 'Agree a higher proportion of funding from ticket sales to be allocated to conservation works at Petra' and 'External funding and support for specific training to be sought from donor agencies'. The cost of an entry ticket is already high (JD50 for one day) and it is understood that it would be difficult to justify an increase in this price at this time. The mission therefore suggests that the PDTRA explore alternative sources of funding and suggests that, rather than raising ticket prices, for instance, a tourism levy on coach and tour operators could be explored, especially cruise ship operators coming through Aqaba, might be considered. Such a coach tax is already in place at the World Heritage property of Venice. A tax of this type would have the advantage of targeting day visitors who by definition spend little in the community and, in the case of cruise ship passengers, have a disproportion impact on the site during their necessarily brief visits.

The Reactive Monitoring mission therefore **recommends** that the final IMP should reinforce focus on a deliverable and costed action plan and should include: a detailed and up to date base plan of the property; proposals for a comprehensive appropriate buffer zone; and a consideration of additional sources of funding such as a tourist tax.

The site visit concluded that there is still a need to improve liaison and stakeholder collaboration at the governmental level and with the local communities. The IMP proposes ways to address this through regular participative planning processes.

The IMP and the reality on the ground have shed light on structural weaknesses in managing the property at the present time, in particular with regard to its archaeological conservation. The overall responsibility lies with the Petra Development and Tourism Regional Authority. The people working in conservation and maintenance are DoA staff but are administratively under the PDTRA. Although by law the Department of Antiquities is the sole responsible authority in charge of archaeological sites the situation is confusing and creates problems in terms of sound decision-making and accountability.

Indeed, the PDTRA does not possess the adequate competencies to address the conservation of the archaeological site. This is visible in the poor implementation of the 2014 conservation vision and plan for the property, and poorly implemented archaeological conservation projects carried

out within it, such as the flash floods draining measures detailed below. Therefore, there is a need to reinforce the Department of Antiquities' role and presence in Petra to allow it to plan the property's conservation and adequately supervise works that have a significant impact on the archaeological remains, such as the recent measures taken to channel the flash floods and the construction of the back road at the exit of the site. This would require adequate DoA human and financial resources to be assigned to Petra.

Despite the extent and importance of Petra, limited financial resources are available for the DoA to undertake conservation and maintenance activities. The current financial and operative support provided by the government, by the international community and by non-governmental organizations is not sufficient to ensure that the site is monitored and well preserved.

The mission therefore considers that the DoA needs to reinforce its presence in Petra, fully take over its responsibilities in terms of archaeological conservation and physical interventions at the property and benefit from adequate financial and human resource support. This should be reflected in the IMP and implemented as a matter of urgency.

Although the PDTRA (2014) Petra Archaeological Park Buffer Zone Special Regulations are mainly concerned with developments within the buffer zone of the property with a particular emphasis on 'eco' developments, this was not reflected in the construction projects implemented in the planned buffer zone of the property. The Tourism Law N. 20 (1988) sets out the obligations of the MoTA to promote, organize and manage tourism activities, alongside protected tourism sites, and to develop human resource capacity. However, this is not effectively reflected in the PDTRA organizational structure or its human resources. The environmental protection law does not show up within the framework of development inside the region.

In terms of local development, capitalizing on the natural assets of the PAP would allow protecting the environment, and developing more diverse tourism-related packages that could potentially benefit the local communities if well planned. The variety of the natural habitat could support several environmentally sustainable activities such sustainable tourism and agricultural tourism, organic farming, medicinal plants production, trekking, bird watching, etc., in addition to the existing traditional tourism products. As outlined above, the nature conservation measures designed in the Integrated Management Plan should be coupled with a specific monitoring programme for the natural values of the area.

The presence of nomadic groups in the area could enhance the value of sustainable tourism activities, and reinforce both the involvement of local communities in the preservation and valorisation of their environment, as well as the connectivity and linkages between the PAP's natural and cultural heritage resources.

Interpretation and well-designed ecotourism programs can strongly express that linkage which can support the OUV of the property. Geological formations and natural landscape can provide quality

packages to express these linkages and to enhance the authenticity of the property. The variety of fauna and flora in the property can reinforce the uniqueness of the area the nomads have historically and are currently using in their daily life.

The expression of the linkages between natural and cultural heritage values of the PAP that are already promoted in the IMP, need to be developed also as part of the sustainable development plans for the area, as well as in educational and sensitization programmes. Strict protective measures should regulate any proposed tourism and agricultural activities in the PAP to avoid adverse effects that might adversely impact the environmental and cultural heritage attributes that sustain its OUV.

Finally, the IMP classifies the local communities as having high impact but low influence. In this regard, it is proposed that the final IMP emphasizes the need to reinforce the participatory role of local communities in the conservation and management of the property and its setting.

In conclusion, the Mission recommends that the IMP integrate appropriate environmental protection measures to be implemented by the PDTRA in its structure, obligations and mandate, as foreseen by the law.

#### **1.5.1 Integrated Management Plan (IMP)**

The action plan of the IMP should concentrate on key concrete results and targets, with their appropriate milestones and performance indicators:

- Provide a cost estimate and an indication of the financial feasibility and timetable for the implementation of the IMP and explore alternative sources of funding the implementation of the IMP.
- Reinforce DoA presence in Petra with adequate financial and human resource support to address archaeological conservation and physical interventions at the property. This would need to be reflected in the IMP and implemented as a matter of urgency.
- Improve liaison and stakeholder collaboration at the governmental level and with the local communities.
- Develop an accurate GIS based plan of Petra showing its precise boundaries, topography and location of all its component attributes.
- Develop the linkages between natural and cultural heritage attributes of the PAP and reflect them in the IMP.
- Integrate appropriate environmental protection measures to be implemented by the PDTRA in its structure, obligations and mandate, as foreseen by the law and with appropriate monitoring tools; devise strict protective measures to regulate proposed

tourism and agricultural activities in the PAP that might affect environmental and cultural heritage assets.

- Ensure the inclusion in the IMP of provisions for the participation of local communities in the management of the property and its setting.

### **3 Identification and Assessment of Issues/Threats**

#### **3.1 Buffer zone**

The Reactive Monitoring mission was given a presentation on the buffer zone proposed by PDTRA, which is currently under discussion at the national level, where considerable work has been done to define land occupation percentages and heights of construction. The planned buffer zone is divided into different zones which are subject to varying building regulations: in publically-owned land, mainly situated to the south, the proposed density is low to nil (apart from the entrance to the site which has several ongoing constructions and a planned extension of the Crown Plaza Hotel); and in privately-owned land to the east, the plan aims to reduce the density and visual impact but retains the possibility of development. The PAP to the north and west acts as a natural buffer zone although some projects implemented by the PDTRA (Eco-Lodge and Heritage Village) have created a precedent that could trigger further pressure for urbanization by private land owners.

This potential definition would pave the way for considerable urbanisation and does not address the issue of planning control within the property's wider setting, which logically should also benefit from sound protective planning policies.

The planning of Petra's buffer zone and the PDTRA's local development initiatives – including several proposals to create new products that would diversify the economy – are confined to those areas outside the PAP which come under its direct authority. Despite the PDTRA's efforts to reduce the density of urban growth through restrictive building regulations, tying the planning to such a limited territory will lead to inevitable congestion and dense urban growth in the medium and long terms. Indeed, despite a freeze on development in some areas within the planned buffer zone, urban growth is currently following a rapid and steep trajectory year after year due to population growth and tourism pressure in the wider setting of Petra, thus threatening the World Heritage property itself with being swallowed by urban growth, similar to the situation at the Giza Pyramids in Egypt. Moreover, the area situated at the entrance of the World Heritage site is highly congested with new constructions that have been built or are under construction by the Government to provide visitors services. All these projects, including the museum under construction and the planned extension of the Crown Plaza Hotel at the entrance of the property, will lead to the densification of the urban fabric in the buffer zone. In addition, the existence of these developments is contributing to increased feelings of frustration on the part of the private

property owners who, unlike the public entities, are prevented from building in the planned buffer zone or the setting of the property.

The mission's site visits have shown that constructions that are underway in the planned buffer zone and setting are having a very severe environmental impact and should be reviewed to reduce this as much as possible. In particular, the Eco-Village and the Heritage Village have been constructed with deep foundations and heavy concrete structures, sometimes more than one floor, resulting in substantive visual impact without due consideration to the landscape and habitat change. The visited constructions are ecological by name only; economic feasibility studies and environmental impact assessments were not conducted prior to their construction, and adequate justifications have not been provided for these projects, nor have appropriate risk mitigation measures. The mission noted also the poor execution of constructions in general.

These projects are far from being aligned with the necessary environmental regulations designed to maintain the integrity of the natural ecosystems. Their visual impact and environmental footprints in such sensitive areas close to the property create a precedent that could pave the way for inappropriate urban growth and ill-planned environmental practices.

The mission believes that the current plans for the buffer zone will ultimately lead to a dense urban fabric in Petra's setting, in the medium to long term. Therefore, the mission considers that, in order to define an appropriate buffer zone for Petra and protect its larger setting from becoming dense with constructions in the medium and long term, there need to be plans to mitigate urban growth and tourism pressure that encompass a larger territory than that of the PDTRA; in other words, extending to the whole Ma'an Governorate, and even to a larger geographical area where/if deemed appropriate. Such a shift in territorial planning, coupled with a sustainable development approach, would contribute to diversifying economic sources of revenues, either by building on the cultural and natural values of Petra, or independently from these values, without congesting the buffer zone and larger setting, and would potentially allow more flexibility for landowners following the construction freeze within their private properties.

The mission recommends establishing a development plan by a national multidisciplinary team of experts in the fields of urban planning, conservation, economy and law, possibly to be led by a national policy facilitator who would help reconcile the different needs with the local social context and private property matters in the Petra region. The new policy could explore means to divert urban growth towards the east of the World Heritage property within the larger boundaries of the Ma'an Governorate, set the vision and the way forward for the protection of Petra at the level of the larger territory, and plan for its sustainable development.



The mission recommends a freeze on planned new constructions in the area located at the entrance of the Siq, refraining from densifying urban growth in the planned buffer zone and larger setting, and taking the necessary measures to reduce the environmental footprints and visual impact of projects now under construction. These include the Heritage Village, the Eco-Village, and the Crown Plaza Hotel.

The above recommendations were positively received by the Jordanian authorities who agreed to revise the planning of the buffer zone for the property by taking into account planning solutions that go beyond the PDTRA territory and extend to the Ma'an Governorate. The authorities also agreed to freeze constructions in the setting of the property, and to freeze the extension project of the Crown Plaza Hotel and revise it in order to reduce its environmental and visual footprint in a sensitive area that overlooks the boundaries of the World Heritage property.

The engagement of national authorities to undergo a shift in territorial planning and to reverse former decisions is a complex endeavor that entails important legal and financial implications and is therefore commendable. Therefore, the Reactive Monitoring Mission appreciates the decision of the national authorities to freeze ongoing constructions and to elaborate realistic and feasible national plans and recommends setting a long-term vision for Petra's future within a larger geographical scope, through integrated territorial planning and broad sustainable development approaches, and expresses confidence that the process is on the right track.

## **Recommendations**

### **The vision for Petra's future and territorial planning**

- Set the vision and the way forward for the protection of Petra at the level of the larger territory, through integrated territorial planning and broad sustainable economic, social and environmental development approaches.
- Divert urban growth towards the east of the World Heritage property, within the larger boundaries of the Ma'an Governorate.
- Freeze planned new constructions in the area located at the entrance of the World Heritage site, including the Crown Plaza Hotel extension, and refrain from densifying urban growth in the planned buffer zone and larger setting, including the Heritage Village and the Eco-Village.
- Take the necessary measures to reduce the environmental footprint and visual impact of projects under construction.

## **3.2 Risk management and prevention**

### **3.2.1 Management system and floods**

The management of water is a key element of the Outstanding Universal Value (OUV) of the Petra World Heritage Property. The **Brief Synthesis** of the statement of OUV draws attention to 'the remnant channels, tunnels and diversion dams that combined with a vast network of cisterns and reservoirs which controlled and conserved seasonal rains'; under **Criterion (i)** it is stated that: 'The entrance approach and settlement itself were made possible by the creative genius of the extensive water distribution and storage system'; **Criterion (iii)** specifies the 'remains of the extensive water distribution and storage system'; and **Criterion (iv)** notes that the 'remnants of the diversion dam, Muthlim tunnel, water channels, aqueducts, reservoirs and cisterns are an outstanding example of water engineering dating from the first centuries BC to AD.' Finally, the statement of **Integrity**, emphasizes that the monuments of the property are 'vulnerable to flash flooding along the Wadi Musa through the winding gorge (Siq) if the Nabatean diversion system is not continually monitored, repaired and maintained'.

The mission noted that the PDTRA management is actively carrying out the necessary monitoring, repair and maintenance of this aspect of the property's OUV. PDTRA also recognizes that 'the rapid onset of natural phenomena poses a major threat to the heritage as well as to the visitors' (State of Conservation report, 2017 (SOC), 1.6).

Flash flooding of the Wadi Musa presents a special danger to visitors and the constituent monuments of the property alike. The Wadi passes through the Siq and then runs parallel to the Main Trail through the property, past the Theatre and alongside the Colonnaded Street (Cardo Maximus) (Figures 16, 17 and 22). On either side of the stream bed the Wadi has stone retaining walls and in places it is crossed by the MT on bridges. Access for both visitors and staff can be restricted when the Wadi floods, while the banks adjacent to the nearby archaeological elements can be damaged; indeed, erosion of the hewn structures is highly visible in the areas affected by flash flooding.

The PDTRA management has been addressing this issue through its Wadi Stabilization Project (WBS) which is summarized in SOC 2.3.1. Labour has been provided by the Nabataeans Cooperative (CNC) and this is a welcome involvement.

SOC 2.3.4 noted that flood damaged portions of the Siq path's surfaces have been consolidated or resurfaced. Past repairs of the path were criticised at the mission's meeting with the local communities. The mission was able to examine the current path surface during the site visit.

The Reactive Monitoring mission paid particular attention to the Wadi Stabilization Project (WBS) along the Main Trail. The mission viewed the new retaining walls and gabions which have been installed at the edges of the Wadi near the Theatre and parallel to the Colonnaded Street with the aim of channelling water flow (Figures: 17-20). The mission was assured that the necessary prior archaeological excavations and watching briefs prior to and during construction were carried out, since these works clearly constituted a potentially informative archaeological section along greater part of the length of the property.

The mission appreciated that these works had only recently been completed and that they had yet to weather. Nevertheless, it was felt that such significant modern intrusions into the property, however necessary, should have been subject to more careful attention to their impact on the landscape of the property. The concrete capping of the retention wall is visible in places as are large-diameter concrete drain pipes; these features were considered by the mission to detract from the visitors' experience of the site (Figures 18-20).

The mission notes that the works were not implemented according to the procedures of the World Heritage Convention as per paragraph 172 of the Operational guidelines.

The mission therefore **recommends** that if further Wadi stabilization works are contemplated careful thought should be given to the landscaping of any such scheme, in addition to the vital and necessary prior archaeological excavations and watching briefs. Appropriate consultation with the World Heritage Centre and ICOMOS should take place prior to the implementation any such works.

The mission noted that the root causes of the flash floods were not adequately addressed prior to the works and the need for intrusive flood management systems in the site could have been reduced if more attention had been paid to the management of Wadi Musa's water shed, in order to reduce and control the rate of water flow onto the Property. This approach was taken by the Nabataeans themselves who elaborated a very efficient water management system (Charles R. Orloff, 'The Water Supply and Distribution System of the Nabataean City of Petra (Jordan), 300 BCE—AD 300', *Cambridge Archaeological Journal* 15.1 (2005): 93-109). Their water collection, distribution and conservation system in the Wadi-produced arable lands, diverted strong floods, and collected rainwater. Their massive water system led to a stable agricultural system in valleys and terraces that mainly produced cereals, and a network of distribution channels for gardens, fountains and pools. Inside one of the most water-scarce areas in the world, Nabateans were able to sustain water for their daily use. The springs in the eastern surroundings of Petra area, which supplied the ancient city with water, are still flowing today as one of the most important water sources for the population

The Reactive Monitoring mission therefore welcomes IMP Management Policy 'B7', which specifies the preparation of a detailed land-use map for the land within the jurisdiction of the PDTRA, and areas of influence outside PDTRA control. This land use planning will allow an understanding of the local hydrology and should lead to the production of management and development guidelines aimed at reducing the flow of water and water-carried debris in the Wadi within a holistic approach of water management that would include the following measures:

- Developing preventive measures such as terracing and upstream water management, before arrival to the property, and downstream collection (cf. IMP).

- Revitalizing and rehabilitating of the Nabatean water management system such as: the dam at the entrance of the Siq and a tunnel that diverts floodwaters away from the Siq, in the Wadi Al-Mudhlim tunnel (*cf.* Nomination file)
- Integrating water management concerns (flow, distribution, wastewater discharge, etc.) in all proposed projects in the PAP and allocating a special section in any Environmental Impact assessment for that purpose, to avoid water quality deterioration.
- Promoting the traditional water harvesting techniques for agricultural purposes, landscaping and other suitable uses.

The Reactive Monitoring mission **recommends** that the proposed water shed planning should be given high priority and that, in addition to restricting developments, which might increase run off, consideration should be given to encouraging mitigation measures, which might also reduce water flow.

## **Recommendations**

### **Water management and flash floods**

- Pursue the Wadi Stabilization Project (WBS) and address, as a matter of priority, through a holistic and scientific approach, water management and water shed planning, by paying particular attention to the root causes of flash floods.
- Ensure that the vital and necessary prior archaeological excavations and watching briefs are conducted prior to undertaking any works within the property and its buffer zone, including water management works.
- Integrating water management concerns (flow, distribution, wastewater discharge, etc.) in all proposed projects in the PAP and allocating a special section in their EIA for that purpose, to avoid water quality deterioration.
- Promoting the traditional water harvesting techniques for agricultural purposes, landscaping and other suitable uses.
- Provide adequate landscaping to all types of works within the priority, and undergo appropriate consultation with the World Heritage Centre and ICOMOS prior to implementation of any works.

### **3.2.2 Rock falls – Siq Stability project and visitor safety**

During the mission a presentation was given on a project entitled ‘SIQ STABILITY – Managing Disaster Risks in the Siq of Petra’, funded by Italy and being implemented by the UNESCO Amman Office and the national authorities. This project involves the monitoring and dislodgement of precarious rocks overhanging the Siq (the narrow main pedestrian entrance to the property). It also includes training local workers recruited from the Capital of the Nabataeans Cooperative (CNC).

The first rapid assessment of the 'Siq' dates back to 2011 and was undertaken as part of UNESCO's response to the Department of Antiquities' request for emergency assistance from the World Heritage Centre.

The 'Siq' - a 1.2 km gorge serving as the only tourist entrance to the property - is especially dangerous: its narrow pathway (3.4 m wide at the narrowest point), high rock walls (up to 70 m), and limited access points, make it hard to evacuate casualties in the event of emergencies. The risk to tourists and monuments due to landslide and rock fall is severe and urgently needs to be addressed.

The project is pursuing a strategy to enhance the protection of the World Heritage property from natural hazards. It is also supporting to an increase in the awareness of key stakeholders about heritage protection and conservation, knowledge-sharing and capacity building. The project has progressed towards the achievement of the three expected results:

- A Disaster Risk Reduction Plan for the Petra Archaeological Park, with priority actions in the 'Siq' developed and integrated in the overall management framework for the property.
- Reduction of the impact of natural hazards in the 'Siq' through the implementation of landslide/flashfloods risk mitigation interventions on the 'Siq' slopes in line with the priorities identified
- Training of national and local staff to be aware of the risks and to be able to address the management of landslide specific risk at the site and implement mitigation measures in coordination with international experts.

The mission considered this project as crucial in terms of risk prevention in the property, and training as a good example of local capacity building and skills transfer.

## **Recommendations**

### **Rock Falls**

- Pursue the PDTRA, DoA and UNESCO joint engagement in the Siq Stability project activities due to its crucial importance for public safety.

## **3.3 Construction projects within the property and its setting**

### **3.3.1 Backroad**

In the Statement of OUV under **Integrity** it is noted that: 'The property is under pressure from tourism, which has increased greatly since the time of inscription, particularly congestion points such as the Siq which is the main entrance to the city from the east'. The SOC (1.7 and 3.2) draws further attention to the problem of the narrow Siq being the primary access and egress from the property. Apart from the issues of exposing visitors to the risks of rock falls and flash flooding

(discussed above) visitors have currently no option but to pass through the Siq twice – on both entry and exit. This double visitor footfall is advantageous to traders currently stationed at the property, but also adds to the problems of congestion and possible risk.

The Petra back road which has been built along the Wadi Turkmenia Road is seen by the PAP as the answer to visitor congestion and risk mitigation in case of emergency, as an exit for visitors in case the Siq path is blocked (Figures 24 - 26). The back road will allow the creation of a one-way system for visitors. Visitors will continue to enter the site via the Siq as at present; they will then pass along the main trail, but will exit the property via the new back road. This project is summarised in SOC 3.2.

The Wadi Turkmenia joins the Wadi Musa at the western end of the main city (Figure 16). The Wadi is a sandy valley with 100m high cliffs on its northern side. About 1km along the Wadi is the rock cut Turkmenia Tomb, the entire bottom half of which has been swept away by floodwaters. Up to now the Wadi was used as an unsurfaced, but drivable, track which was the only vehicular route into the property. The track was susceptible to flooding.

The original track has now been replaced by a tarmac-surfaced road which starts at a terminus at its southern end with a turning circle and shelters for visitors waiting for shuttle buses (Figure 25). The road is approximately 1,800m long. It is wide enough for proposed two-way shuttle bus traffic and it is provided with hard shoulders. The mission was informed that the current black surface should weather to a colour nearer to that of Petra's natural rock. The road itself has been engineered to withstand flooding by the use of embankments, gabions and bridges (Figure 26). In order to restrict traffic to the road heavy metal crash barriers and stone walls have been installed. At its northern end the road climbs in a series of bends up the hill to the back gate of PAP at Umm Sayhun. The road is clearly visible from the main trail below (Figure 21). Once the back road is in operation the shuttle buses will become very intrusive as they run to the site to collect visitors and then return to Wadi Musa or the proposed Heritage Village.

The SOC states 'the project design is the result of assessment and careful design to minimize impacts'. An Environmental and Social Impact Assessment study was conducted and the site was monitored during construction for environmental impacts, including archaeology. One positive outcome of the scheme is that in order to help stop further erosion of the Turkmenia Tomb the line of the new road and the Wadi was diverted away from its base and the Tomb itself was 'structurally supported, and protectively covered'.

The mission recognized the practical benefits that the back road offered in terms of visitor management, risk prevention and protection of the Turkmenia Tomb. The mission was also made aware of the opposition to the road from the local community which has traditionally sold souvenirs on the site. As with the flood management measures, described above, the mission realised that the scheme was only recently completed and that features such as the black tarmac road surface would weather in time. Nevertheless the mission felt that the road was unnecessarily wide and very heavily engineered so that it is very visually intrusive both within the PAP

boundaries and when viewed from the Main Trail. The mission felt that such a significant modern intrusions into the property should have been subject to more careful attention to its impact on the landscape.

## Recommendations

### Infrastructure works

- Ensure utmost care be given to mitigate the impact of infrastructure works on the cultural and environmental assets, in addition to the vital and necessary prior archaeological excavations and watching briefs.
- Provide adequate landscaping for all types of works within the property, and undertake appropriate consultations with the World Heritage Centre and ICOMOS prior to the implementation of any works.

### 3.3.2 Future projects

The property is hidden in a valley between two jagged mountains of the Shara range (Figure 25). This dramatic natural setting of is a key aspect of the property's OUV. The **Brief Synthesis** of the statement of OUV emphasizes the natural landscape of the property 'surrounded by mountains' and set in a 'dominating red sandstone landscape'. The statement of **Integrity** further draws attention to the setting of the WHP 'within the arid landscape of red sandstone cliffs and gorges'. The PDTRA management clearly recognizes the importance of the property's setting: SOC 1.6 refers to the WHP's 'spectacular geo-archaeological landscape'; and SOC 1.5 also states that the area for development in the 'Buffer Zone' is restricted by both the terrain and visibility.

During its visit to the property the mission was able to further consider the setting of the property. The Mission noted that the resettlement of the Bdul (Bedouin tribe) after the property's Inscription in 1985, had led to the new settlement of Umm Sayhun being built as a highly visible feature in the landscape looking north east from the Main Trail (Figure 21). This comparatively recent intrusion has robbed the property of some of it original feeling of a 'Lost City' hidden in the hills. The buildings of Umm Sayhun have now been added to, on their north western side, by a solar farm and the new back road (see above). These features can also be clearly seen from the Main Trail.

The mission also noted that moving traffic was visible looking south east from the Main Trail on the so-called Scenic Road which links Wadi Musa with Taybeh and Rajif; the buildings of the Marriot Hotel which enjoys panoramic view over the Petra valley, are also in full view (Figure 23). The mission felt that all these recent intrusions were regrettable because of their impact on the OUV of the property.

The mission was given a presentation by the PDTRA on its published Investment Map - Petra Region (IMPR). Included in these proposed investment projects were two in the setting of the property which gave the mission particular concern, because of their potential impact on the OUV

of the property The first project is a Cable Car whose aim, according to the text published in the IMPR, is 'to create an entertaining transportation facility, which will allow the tourists to enjoy the charming view of Petra' (IMPR 7, 10 and 11). The second project is the so-called Petra Giant Wheel, which it is stated 'will allow tourists to enjoy a fantastic view over the Ancient City of Petra and the surrounding area through an entertaining ride'. By definition, if passengers on the Cable Car and the Giant Wheel would be able to see the property, these proposed engineering structures would be fully visible from the property and would have a major negative impact on its OUV. The mission was assured that this impact was not intended.

The Mission recommends that the Investment Map be reconsidered in light of the agreement by the Jordanian authorities to inscribe Petra's sustainable economic and social development within a larger integrated territorial plan, wherein investment opportunities could take place without exerting pressure or entailing visual or environmental impacts on the World Heritage property and its setting. Moreover, due consideration should be given to keep the spirit of Petra, its mystery and magic, as opposed to creating large entertainment facilities within the property or in its vicinity.

The Mission welcomed the IMP Management Policies 'B7' and 'B8' which aim to protect the property's 'unique setting'. These policies propose the preparation of a detailed land-use map of the land controlled by PDTRA and areas of influence outside this area with the aim of identifying key views to and from the site and views critical to the setting of the site. These studies will lead to the production of management and development guidelines to prevent future developments negatively impacting the OUV of the property. IMP Management Policy 'B8' also specifies that areas of future investment should, as far as possible, lie outside the PAP's boundaries and its planned buffer zone. The IMP correctly states that any project that might affect the OUV of the property should be referred to World Heritage Centre under paragraph 172 of the Operational Guidelines.

The mission **recommends** that the proposals to safeguard the setting of the property should be given high priority. Following the agreement of the Jordanian authorities to undertake broad territorial planning and to reconsider its planned regulations for the buffer zone and the property's setting, the mission considers that, no further new buildings or infrastructure should be built which would be visible from the property and that, in particular, the elevations of any new buildings should not rise above the crest of the hills and mountains overlooking the property.

## **Recommendations**

### **Development plans in the Buffer zone and larger setting of Petra**

- Reconsider the Investment Map - Petra Region in light of the agreement by the Jordanian authorities to inscribe Petra's sustainable economic and social development within a larger integrated territorial plan, and mitigate visual or environmental impacts on the World Heritage property and its setting.



- Give high priority to the proposals in the RMI to safeguard the setting of the property; devise new regulations for the buffer zone and the larger setting, in line with a new integrated territorial planning approach.
- Freeze new buildings or infrastructure that are visible from the site, in particular, the elevations of any new buildings that rise above the crest of the hills and mountains overlooking the property.

### 3.4 Management of archaeological excavations and conservation

The **Brief Synthesis** in the statement of OUV states that Petra is one of the ‘world’s richest and largest archaeological sites’. Accordingly it has attracted many excavations, as witnessed by SOC 2.4.1, which draws attention to the more than 15 International archaeological research projects (survey, documentation, excavation [8 projects], maintenance and restoration) which took place at property in 2016 in cooperation with the DoA and PAP.

So much research by so many different teams inevitably poses a problem of coordination of the results. The DoA has transferred a large quantity of data on research and site work to the PAP Documentation Centre. SOC 3.3.6 states that the Italian National Research Council’s Institute for Technologies Applied to Cultural Heritage (ITABC – *Istituto per le tecnologie applicate ai beni culturali*) is assisting in further developing the Documentation Centre by bringing together archaeological and conservation data from different archaeological missions in a consistent database. Data standards for future excavations will also be created.

This is essential work, but the Reactive Monitoring mission **recommends** that, building the on ITABC project and based on past research, the PAP should aim to create an Archaeological Research Framework for Petra. This Framework should provide an up to date overview of the current understanding of the property derived from the synthesising of all past excavations. From this synthesis a Research Agenda should be prepared which would identify gaps in knowledge - e.g. the Byzantine period, - and provide questions to target these gaps. This Agenda would enable the PAP to coordinate academic research by outside project teams anxious to work in Petra and provide a research focus for PAP’s salvage projects brought about by any future infrastructure projects within the property. The Agenda would provide: the framework within which future archaeological research at the property can be carried out, strengthen existing partnerships, and promote new ones.

#### Recommendation

##### Archaeological research and coordination

- Create an Archaeological Research Framework for Petra and reinforce coordination and research.

### **3.5 Conservation and archaeological excavations at the property**

The property suffers from many conservation challenges. The section on **Integrity** in the property's Statement of OUV emphasizes that: 'The monuments are subject to ongoing erosion due to wind and rain, exacerbated in the past by windblown sand due to grazing reducing ground cover. The resettlement more than twenty years ago of the Bdul (Bedouin) tribe and their livestock away from their former seasonal dwellings in the Petra basin to a new village at Umm Sayhun was aimed in part at arresting this process'. In the same section it is stated that: 'The natural decay of the sandstone architecture threatens the authenticity of the property in the long-term'.

In addition to damage caused by these natural phenomena and flooding (see above) the property inevitably suffers from the impact of the number of visitors visiting, particularly at peak periods when large numbers of cruise ship passengers are combined with the normal flow of visitors. There are also two other conservation issues: the chipping off of fragments of both worked and natural rock for sale as souvenirs; and the damage caused by the hoofs of the hundreds of donkeys which carry visitors around the site.

In this regard, the PAP is addressing conservation issues through various initiatives but not yet through a comprehensive conservation plan. For instance a database of features is being compiled which notes physical conditions and prioritises conservation action (SOC 2.3.2). A graphic database is proposed in order to monitor the deterioration of the fragile structures over time based on a 3D survey of the major/tombs and archaeological structures (SOC 3.3.6). These initiatives have been picked up in the IMP Management Policies B1 and B2, which identify priority and urgent actions necessary to avoid further degradation or damage to the property. Conservation measures and techniques have not yet been identified and put in place for the totality of the property.

The Mission recommends that the DoA be actively involved in diagnosing conservation problems at the property and addressing them through appropriate research and with adequate competencies. This process should lead to taking emergency measures where needed and undertaking a conservation plan for the property in the medium term.

In addition to the conservation of excavated structures, the mission notes that the PAP is addressing the issue of the conservation of excavated finds. IMP Management Policy 'B3' for example identifies the need for a strategy for the storage of archaeological material and objects through a dedicated storage/research facility.

IMP Management Policy 'B6' addresses the issue of donkey damage and states that the PAP will 'Work with donkey and horse owners to reduce damage caused to the site'. This will involve, amongst other actions, the identification and marking of areas by PAP are too fragile for donkeys

to use and specific trails on which donkeys will be permitted. The PAP will also identify the number of donkeys that can be permitted on the property at any one time.

During its visit to the property the MPP was able to witness contrasting approaches to the conservation of excavated historic structures subject to erosion by natural processes. The two sites examined were: the Petra Church and the Temple of the Winged Lions (Figure 16, 22 and 23).

The Petra Church is a Byzantine building which was excavated by the American Center of Oriental Research (ACOR) starting in 1992. The church is a tripartite basilica structure first built around AD 450 which was partially destroyed by fire around AD 600. In the north and south aisles are a series of highly detailed mosaics. To the west of the church is its baptistery. In order to protect the structures fragile mosaics from weather erosion two light weight roof structures were completed in 1998. These structures undoubtedly fulfil their purpose, but at the same time have introduced intrusive features into the landscape of the property.

A different approach is being taken at the 1<sup>st</sup> century AD Temple of the Winged Lions (Figure 23). This temple was excavated in the 1980s and 1990s by the American Expedition to Petra (AEP). Unfortunately the AEP left behind architectural fragments, open excavation trenches, obtrusive spoil heaps and piles of rubble. In 2009 the Temple of the Winged Lions Cultural Resource Management (TWLCRM) was formed by ACOR, DOA and PAP with the aim of stabilizing and conserving the Sanctuary of the Temple, and recording, consolidating and backfilling the north western exposed areas, carefully re-examining spoil and encouraging new native vegetation to re-establish itself. This work is being undertaken through the United States Agency for Development's (USAID) Sustainable Cultural Heritage Through Engagement of Local Communities Project (SCHEP), a non-governmental organization whose purpose is to enable communities to preserve their cultural heritage resources and to market them (SOC 3.3.2).

The MPP considered that the approach to conservation being taken by the above-mentioned TWLCRM provides a good practice for the conservation of future excavation sites at the property and accordingly **recommends** that permission to excavate in future should only be given when the project includes a costed and financed plan for the conservation, consolidation and backfilling of the given site. Permanent site covers should only be employed in exceptional circumstances.

## **Recommendations**

### **Conservation and archaeological excavations at the property**

- Actively involve the DoA involved in diagnosing conservation problems at the property and addressing them through appropriate research and with adequate competencies. Undertake emergency conservation measures and prepare a conservation plan for the property.
- Give permission to excavate on the condition that the project includes a costed and financed plan for the conservation, consolidation and backfilling of the given site.

- Plan permanent site covers only in exceptional circumstances and in close consultation with the World Heritage Centre and ICOMOS.

### **3.6 Social factors**

#### **3.6.1 Local communities**

The issue of the involvement of the local communities in the management of the property needs to be highlighted. Besides the fact that the Bdul Bedouin community still claims to have traditional rights over the site where they used to live, and feel that they have not been granted fair compensation for the limitations following their displacement from the site, the involvement of the resident population in the management the site is very limited. Relationships between the communities and the Governmental authorities are complex and need to be addressed carefully.

During the mission, two meetings were conducted with local communities; each meeting consisted of a small group representatives who described their situation and the challenges faced. The main challenge was that they feel disenfranchised and need a suitable framework from regional authorities to address privately owned land within the planned buffer zone, individual economic growth and better management of the Petra site. The group representing Um Sayhoun presented the mission with a petition from their community demanding rights to build on their land.

The main issue raised by the local communities include their lack of involvement with the planning and general structure of managing the Petra site and region. The regional authorities have imposed a 'No Construction' for private land owners until the planning of the buffer zone has been finalized and proposed for endorsement but have continued to implement projects within the buffer zone at the entrance of the site (museum, extension of the Crown Plaza Hotel, Visitors' Centre, etc.) -which has caused tension and resentment towards the authorities.

Through the IMP, and in particular the group working on Local Communities, the national authorities are currently exploring different approaches to address the existing tensions between local communities and regional authorities. It is encouraging to note that the new Deputy Chief Commissioner for Sustainable Development and Local Communities – who was appointed after the mission - is the same person who has ably led the group in charge of Local Communities during the IMP elaboration process.

#### **Recommendations**

##### **Local communities**

- Pursue a constructive dialogue with local communities and ensure, where possible, participative planning.
- Integrate local communities in the management and conservation of the PAP, as actors of change and beneficiaries of economic development.

- Include the legal, social and economic concerns of the local communities in the future planning for Petra and its larger territory.

### **3.7 Child labour and school drop outs**

There is a high school dropout rate especially from the Umm Sayhoun village where the Bdul community lives, that is also linked to children working on the property. Poor conditions at schools, including overcrowding, lack of adequate play spaces and parents working on part of the factors cited for the situation. Research on the area has shown that children are not benefitting from education and have less access to employment as adults. There is a need to hold parents and guardians accountable for their children not being educated, dropping out of school and working long hours.

Furthermore, teachers within the region are not accustomed to teaching local children and struggle to connect with them or keep them engaged as they require a specific syllabus as opposed to the standardized Jordanian schools' syllabus. This is necessary in order to make tailor made education more appealing to children in the region than getting hundreds of dollars a month from tourism related services.

The Petra World Heritage property and area offer exceptional educational opportunities in terms of conservation, archaeology, history, geology, hydrology, natural sciences and heritage management that could be introduced in the school curricula and would prepare the children to know and respect their environment, and to learn about future opportunities in the tourism and eco-tourism sectors.

## **Recommendations**

### **Child labour and school drop-outs**

- Enforce international and national child protection laws while continuing to raise awareness on education.
- Envisage enhancing knowledge and awareness of Petra's cultural and natural values in the school curricula and activities.

### **3.8 Animal welfare**

Around 3000 sheep, 7000 goats, 70 camels and 400 donkeys and mules, 400 horses owned by locals graze within the park and adjacent areas, affecting the archaeological site through their movement and at the same time damaging the natural habitats. No specific studies have yet been conducted on the impact of animal grazing on the natural resources in the area (source:

nomination file for Petra Natural Proposed Protected Area). Although the horses and other domestic animals are important parts of the local culture and represent sources of income, the use of those animals as mean of transport inside the PAP is an issue because it is not well organized in terms of numbers of animals, area existence (specific routes) and carrying capacity in an environmentally and culturally acceptable way. Most importantly, the mistreatment of animals is widely acknowledged, although the local authorities have introduced fines and work bans in cases of mistreatment. UNESCO receives regular complaints from tourists on this issue with some suggesting to introduce the use of electric cars.

Replacing animals with electric cars raises two issues: the impact on the site from vehicular traffic; and the impact on the source of income of local communities who possess animals, who often rely on their job to provide for whole families. Cars would not affect the integrity of the site i.e. its physical attributes. However, they would negatively affect its atmosphere. Traffic jams and queues of electric cars are not desirable in Petra's Siq.

There needs to be more awareness about animal treatment (several actions are taking place in this regard), and more regulations with appropriate sanctions in case of animal mistreatment (measures exist but are not yet fully enforced). Animal mistreatment is visible in Petra because the property is visited by large numbers of tourists but animals are mistreated elsewhere too. The problem is therefore more profound and should be addressed at various levels, including through educational programmes at a national level.

The mission recommends that systematic and efficient actions be taken to stop animal mistreatment and increase awareness thereon, suggests combining sanctions with incentives, and encourages awareness raising programmes in schools and with the animal owners..

Sheep and goat overgrazing can easily destroy the ground vegetation and affect the natural plant regeneration unless grazing is organized in number, season, and areas of activities. The carrying capacity of the property for the impacts of domestic animals in the tourism sector and for the impacts of grazing are not identified. The Mission also recommends reinforcing regulations on the number of animals allowed on site, the conditions for their access, allowed speed, and the mitigation of their environmental impact.

## **Recommendations**

### **Animals within the property**

- Take systematic and efficient actions to stop animal mistreatment and increase awareness raising programmes in schools and with the animal owners.
- Reinforce regulations on the number of animals allowed on site, the conditions for their access, allowed speed, and the mitigation of their environmental impact.

#### **4. Assessment of the State of Conservation of the Property**

The detailed assessment of management and conservation issues at the property and its setting, described in section 3 above, shows that the values, on the basis of which the property was inscribed on the World Heritage List, and the conditions of integrity face various challenges:

The follow-up measures to previous decisions of the World Heritage Committee on the state of conservation of the property and the measures, which the State Party plans to take to protect the Outstanding Universal Value of the property, are in section 5 below.

#### **5. Conclusions and Recommendations**

During the Mission, the national authorities in Jordan indicated their readiness to undergo a shift in territorial planning and to reverse former decisions to protect Petra from urban pressure. The Jordanian Prime Minister appointed a new Board of Commissioners for the PDTRA who will be entrusted in implementing a new way forward for Petra.

Therefore, the Reactive Monitoring Mission appreciates the undertaking by the national authorities to freeze ongoing constructions and to elaborate realistic and feasible national plans given the important legal and financial implications that such decisions entail, and recommends setting a long-term vision for Petra's future within a larger geographical scope, through integrated territorial planning and broad sustainable development approaches.

The Reactive Monitoring mission recommendations are summarized as follows:

##### **I. Institutional framework and management structure**

- Significantly reinforce the role of the DoA in the conservation and the management of the property, particularly when infrastructural interventions take place within its boundaries (e.g. the back road and the flash floods channels).
- Reinforce stakeholder collaboration, especially at the governmental level.
- Reinforce the institutional link between the PDTRA and the Ministry of Environment and mainstream environmental laws and bylaws into the PDTRA mandate and conservation and management efforts.

##### **II. The vision for Petra's future and territorial planning**

- Set the vision and the way forward for the protection of Petra at the level of the larger territory, through integrated territorial planning and broad, sustainable economic, social and environmental development approaches.

- Divert urban growth towards the east of the World Heritage property, within the larger boundaries of the Ma'an Governorate.
- Freeze planned new constructions in the area located at the entrance of the World Heritage site, including the Crown Plaza Hotel extension, and refrain from densifying urban growth in the planned buffer zone and larger setting, including the Heritage Village and the Eco-Village.
- Take the necessary measures to reduce the environmental footprints and visual impact of projects under construction.

### **III. Development plans in the buffer zone and larger setting of Petra**

- Reconsider the Investment Map – Petra Region in light of the agreement by the Jordanian authorities to inscribe Petra's sustainable economic and social development within a larger integrated territorial plan, and mitigate visual or environmental impacts on the World Heritage property and its setting.
- Give high priority to the proposals in the RMI to safeguard the setting of the property; devise new regulations for the buffer zone and the larger setting, in line with a new integrated territorial planning approach.
- Put in place a permanent moratorium on new buildings or infrastructure that are visible from the site, in particular, the elevations of any new buildings that rise above the crest of the hills and mountains overlooking the property, as well as the proposed cable car and giant wheel.

### **IV. Integrated Management Plan (IMP)**

- The action plan of the IMP should concentrate on key achievable results and targets, with their appropriate milestones and performance indicators.
- Provide a cost estimate and an indication of the financial feasibility and timetable for the implementation of the IMP and explore alternative sources of funding the implementation of the IMP.
- Reinforce DoA presence in Petra with adequate financial and human resource support to address archaeological conservation and physical interventions at the property. This would need to be reflected in the IMP and implemented as a matter of urgency.
- Improve liaison and stakeholder collaboration at the governmental level and with the local communities.
- Develop an accurate GIS-based map of Petra showing its precise boundaries, topography and location of all its component attributes.
- Develop the linkages between natural and cultural heritage values of the PAP and reflect them in the IMP.



- Integrate appropriate environmental protection measures to be implemented by the PDTRA in its structure, obligations and mandate, as foreseen by the law and with appropriate monitoring tools; devise strict protective measures to regulate proposed tourism and agricultural activities in the PAP that might affect environmental and cultural heritage assets.
- Ensure the inclusion in the IMP of provisions for the participation of local communities in the management of the property and its setting.

#### **V.Designation of the PAP as a Natural Protected Area**

- Pursue the designation of the PAP as a Natural Protected Area, coupled with the appropriate protection measures and sustainable environmental practices, to reinforce the protection and conservation of Petra's natural and cultural resources and protect its setting, since it would provide a de-facto buffer zone.
- Based on the environmental protection law, strictly regulate activities inside and around the PAP.
- Elaborate a specific monitoring programme for the natural values of the Natural Protected Area.
- Integrate appropriate environmental protection measures to be implemented by the PDTRA in its structure, obligations and mandate, as foreseen by the law with appropriate monitoring tools; devise strict protective measures to regulate proposed tourism and agricultural activities in the PAP that might affect environmental and cultural heritage assets.

#### **VI.Conservation and archaeological excavations at the property**

- Actively involve the DoA in diagnosing conservation problems at the property and addressing them through appropriate research and with adequate competencies. Undertake emergency conservation measures and prepare a conservation plan for the property.
- Give permission to excavate on the condition that the project includes a costed and financed plan for the conservation, consolidation and backfilling of the given site.
- Plan permanent site covers only in exceptional circumstances and in close consultation with the World Heritage Centre and ICOMOS.

#### **VII.Archaeological research and coordination**

- Create an Archaeological Research Framework for Petra and reinforce coordination and research.

## **VIII. Infrastructure works**

- Ensure utmost care be given to mitigate the impact of infrastructure works on the cultural and environmental assets, in addition to the vital and necessary prior archaeological excavations and watching briefs.
- Provide adequate landscaping for all types of works within the property, and undertake appropriate consultations with the World Heritage Centre and ICOMOS prior to the implementation of any works.

## **IX. Water management and flash floods**

- Pursue the Wadi Stabilization Project (WBS) and address, as a matter of priority, through a holistic and scientific approach, water management and watershed planning, by paying particular attention to the root causes of flash floods.
- Ensure that the vital and necessary prior archaeological excavations and watching briefs are conducted prior to undertaking any works within the property and its buffer zone, including water management works.
- Integrate water management concerns (flow, distribution, wastewater discharge, etc.) in all proposed projects in the PAP and allocate a special section in any Environmental Impact Assessment for that purpose, to avoid water quality deterioration.
- Promote traditional water harvesting techniques for agricultural purposes, landscaping and other suitable uses.
- Provide adequate landscaping for all types of works within the property, and undertake appropriate consultations with the World Heritage Centre and ICOMOS prior to the implementation of any works.

## **X. Rock falls**

- Pursue the PDTRA, DoA and UNESCO joint engagement in the Siq Stability project activities due to its crucial importance for public safety.

## **XI. Local communities**

- Pursue a constructive dialogue with local communities and ensure, where possible, participative planning.
- Integrate local communities in the management and conservation of the PAP, as actors of change and beneficiaries of economic development.
- Include the legal, social and economic concerns of the local communities in the future planning for Petra and its larger territory.

## **XII. Intangible heritage values**

- Establish linkages between the tangible and intangible values of the site and integrate them in the management of the property to reinforce the role of local communities in

management and conservation, and contribute to their sustainable economic and social development.

### **XIII. Child labour and school dropouts**

- Enforce international and national child protection laws while continuing to raise awareness on education.
- Envisage enhancing knowledge and awareness on Petra's cultural and natural values in the school curricula and activities.

### **XIV. Animals within the property**

- Take systematic and efficient actions to stop animal mistreatment and increase awareness-raising programmes in schools and with the animal owners.
- Reinforce regulations on the number of animals allowed on site, the conditions for their access, and the mitigation of their environmental impact.

## 6 ANNEXES

### 6.1 The mission

#### 6.1.1 The Terms of Reference of the Mission:

A. The objectives of the Reactive Monitoring Mission are to:

- Assess the current state of conservation of the property with a focus on the attributes, which convey its Outstanding Universal Value (OUV);
- Assess recent and proposed interventions and plans at the property, its proposed buffer zone and the larger setting, for their potential impact on the integrity of the property and its OUV, including an assessment of whether proposed interventions are in accordance with the conservation objectives of the Petra Archaeological Park. These assessments should take into account at least the following elements:
  - The clarification and definition of the property's buffer zone, with its zoning.
  - The mitigation of urban pressure and encroachment
  - Recently- proposed interventions at the property, its proposed buffer zone and its setting (e.g. the Eco-lodge project).
  - The development of a Master Plan for the property, its proposed buffer zone and its setting
  - The finalization and adoption of the Management Plan, including the legal framework, the urban regulations and protection measures
  - The Conservation Plan for the property
- Consider the implications of the decision of Petra Development and Tourism Regional Authority to modify land-use regulation to favour development around the property; and
- Discuss with the responsible authorities the follow-up to the decision by the World Heritage Committee to request that the State Party submit a minor boundary proposal to establish the buffer zone;

B. The mission will:

- Visit the property according to the programme prepared by the State Party, in consultation with the members of the Reactive Monitoring Mission;
- Participate in the meetings foreseen by the State Party to exchange with the concerned stakeholders in Petra and Amman on the conservation and management of the property;

C. The State Party shall:

- facilitate necessary field visits to key locations at the property;

- facilitate meetings with the relevant Jordanian authorities at national and local levels, including Ministry of Tourism and Antiquities and the Petra Regional Authority as well as other stakeholders, including i) local communities, ii) NGOs, iii) researchers/scientists, iv) tour operators;
- provide the mission experts with access to and copies of reports and documentation related to the management of the property and proposed interventions, including but not limited to implementation of the Siq Stability Monitoring Programme, the Petra Museum, the Eco-lodge project, works to the Crown Plaza Hotel, and the proposed Heritage Village.

D. Based on the results of the above-mentioned assessments and discussions with the different stakeholders, the mission will develop recommendations for the State Party with the objective of providing guidance to the responsible authorities to allow them responding to the requests of the World Heritage Committee, set in its decision 41 COM 7B.80, as well as other previous decisions if need be. The recommendations will be made available in a written report rather than during the mission.

E. The mission will prepare a concise report on the findings and recommendations within six weeks following the site visit, using the World Heritage Centre Reactive Monitoring Mission report format.

### **6.1.2 Decision: 41 COM 7B.80**

The World Heritage Committee,

1. Having examined Document WHC/17/41.COM/7B,
2. Recalling Decision **39 COM 7B.52**, adopted at its 39th session (Bonn, 2015),
3. Regrets that the Management Plan has not been finalized yet and expresses concern that a number of major projects foreseen in the planned buffer zone have reached an advanced level of development prior to their submission to the World Heritage Centre and review by ICOMOS, in accordance with Paragraph 172 of the Operational Guidelines;
4. Also regrets the decision of the State Party not to submit a minor boundary modification proposal towards the adoption of the boundaries of the planned buffer zone and considers that nonetheless the setting of the property must be adequately protected and requests it to clarify the protective urban regulations of the planned buffer zone including its zoning as a matter of urgency, in the context of the development of an overall Master Plan;
5. Also requests the State Party to invite, as soon as possible, a joint World Heritage Centre/ICOMOS/ICCROM/IUCN Reactive Monitoring mission, with additional fields of expertise as needed, to assess the situation at the property and in the planned buffer zone,

particularly those where the development projects are located or foreseen and to discuss the development of a Master Plan;

6. Urges the State Party to put the ongoing or planned development projects on hold and to control urban development in the planned buffer zone, until the Reactive Monitoring mission has visited the property, and to submit to the World Heritage Centre, in accordance with Paragraph 172 of the Operational Guidelines, detailed information on each of the development projects implemented or foreseen in the vicinity of the property, prior to the mission, **for review by ICOMOS**;
7. Further requests the State Party to submit to the World Heritage Centre, by **1 February 2018**, an updated report on the state of conservation of the property and the implementation of the above, for examination by the World Heritage Committee at its 42nd session in 2018.

### 6.1.3 Mission Programme

#### 21 November:

Arrival in Amman

Dinner at Farina Costanza Residence

#### 22 November:

Departure for Petra

Meetings at PDTRA with Petra Park Commissioner and Director of Antiquities

-PDTRA and DoA Staff presentations on buffer zone, impact on the site, investment projects foreseen in the buffer zone, flood prevention, animal rights and treatment

Visit to Heritage Village, Eco lodge and Buffer zone areas

Dinner offered by PDTRA

#### 23 November:

Meeting with Minister of Tourism

-presentation to PDTRA, DoA and Minister of Tourism

Visit to Crown Plaza Expansion, Petra Museum, Main trail, Siq, Backroad and Solar plant.

Meetings with Local Communities

Dinner with DoA, PDTRA and Minister

#### 24 November:

WHC Internal Meeting and discussions.

#### 25 November:

Meeting at DoA

Lunch with Minister and DoA

#### 26 November:

Departure from Amman

#### **6.1.4 Mission Team**

Nada Al-Hassan, Chief, Arab States Unit, UNESCO WHC  
Tom Hassall, ICOMOS expert  
Mohamed Al Hennawy, IUCN expert

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##### Other persons met

Dr. Maram Frehat

## 6.2 Reports presented to the World Heritage Committee and decisions thereon since the inscription of Petra (1994, 1995, 1996, 1997, 1998, 2000, 2001, and 2010, 2011, 2013, 2015, 2017)

### Decisions

2017

#### **Petra (Jordan) (C 326) Decision: 41 COM 7B.80**

#### **The World Heritage Committee,**

1. Having examined Document WHC/17/41.COM/7B,
2. Recalling Decision **39 COM 7B.52**, adopted at its 39th session (Bonn, 2015),
3. Regrets that the Management Plan has not been finalized yet and expresses concern that a number of major projects foreseen in the planned buffer zone have reached an advanced level of development prior to their submission to the World Heritage Centre and review by ICOMOS, in accordance with Paragraph 172 of the Operational Guidelines; Decisions adopted during the 41st session WHC/17/41.COM/18, p. 159 of the World Heritage Committee (Krakow, 2017)
4. Also regrets the decision of the State Party not to submit a minor boundary modification proposal towards the adoption of the boundaries of the planned buffer zone and considers that nonetheless the setting of the property must be adequately protected and requests it to clarify the protective urban regulations of the planned buffer zone including its zoning as a matter of urgency, in the context of the development of an overall Master Plan;
5. Also requests the State Party to invite, as soon as possible, a joint World Heritage Centre/ICOMOS/ICCROM/IUCN Reactive Monitoring mission, with additional fields of expertise as needed, to assess the situation at the property and in the planned buffer zone, particularly those where the development projects are located or foreseen and to discuss the development of a Master Plan;
6. Urges the State Party to put the ongoing or planned development projects on hold and to control urban development in the planned buffer zone, until the Reactive Monitoring mission has visited the property, and to submit to the World Heritage Centre, in accordance with Paragraph 172 of the Operational Guidelines, detailed information on each of the development projects implemented or foreseen in the vicinity of the property, prior to the mission, for review by ICOMOS;



7. Further requests the State Party to submit to the World Heritage Centre, by 1 February 2018, an updated report on the state of conservation of the property and the implementation of the above, for examination by the World Heritage Committee at its 42nd session in 2018.

**2015**

**39 COM 7B.52**

**The World Heritage Committee,**

1. Having examined Document WHC-15/39.COM/7B.Add,
2. Recalling Decision **37 COM 7B.50**, adopted at its 37th session (Phnom Penh, 2013),
3. Notes the considerable progress made by the State Party to improve the conservation and management of the property in response to the concerns voiced by the World Heritage Committee, and in particular the adoption of the Petra conservation action plan;
4. Reiterates its request to pursue the progress made to manage the property and submit a Management Plan for review by the World Heritage Centre and the Advisory Bodies, while ensuring synergies with existing planning initiatives (e.g. the 2015 Conservation Action Plan and the Petra Archaeological Park Operational Priorities Plan of 2010- 2015), and undertake the necessary adoption process to ensure its effective enforcement;
5. Encourages the State Party to sustain its efforts in creating opportunities for sustainable local development around the property;
6. Also encourages the State Party to create the conditions necessary for the sustainable livelihood of the local communities displaced from the World Heritage property;
7. Requests the State Party to sustain on-going efforts, with particular attention to the following:
  - a) Pursue the progress made to adopt the buffer zone and develop adequate regulatory measures to ensure its protection, and submit a minor boundary modification proposal by **1 February 2017**, for review by the World Heritage Committee at its 41st session in 2017,
  - b) Strictly control urban development in accordance with the planned buffer zone, until the adoption of the above minor boundary modification,

c) Pursue the efforts to address Disaster Risk Reduction and secure the necessary resources for its implementation, prioritizing the stabilization of the Siq;

8. Also requests the State Party to submit the final architectural drawings for the Petra Museum Project for review by the World Heritage Centre and the Advisory Bodies prior to the start of the works;

9. Further requests the State Party to submit to the World Heritage Centre, by **1 December 2016**, an updated report, including a 1-page executive summary, on the state of conservation of the property and the implementation of the above, for examination by the World Heritage Committee at its 41st session in 2017.

**2013**

**37 COM 8D**

### **Clarifications of property boundaries and areas by States Parties in response to the Retrospective Inventory**

The World Heritage Committee,

1. Having examined Document WHC-13/37.COM/8D,
2. Recalling Decision **36 COM 8D**, adopted at its 36th session (Saint Petersburg, 2012),
3. Acknowledges the excellent work accomplished by States Parties in the clarification of the delimitation of their World Heritage properties and thanksthem for their efforts to improve the credibility of the World Heritage List;
4. Recalls that the World Heritage Centre and the Advisory Bodies will not be able to examine proposals for minor or significant modifications to boundaries of World Heritage properties whenever the delimitation of such properties as inscribed is unclear;
5. Takes note of the clarifications of property boundaries and areas provided by the following States Parties in response to the Retrospective Inventory, as presented in the Annexes of Document WHC-13/37.COM/8D:
  - Algeria: Kasbah of Algiers;
  - Brazil: Sanctuary of Bom Jesus do Congonhas; Brasilia; Historic Centre of São Luís;
  - Cuba: San Pedro de la Roca Castle, Santiago de Cuba;
  - Dominican Republic: Colonial City of Santo Domingo;

- Germany: Hanseatic City of Lübeck; Völklingen Ironworks;
- Jordan: Petra;
- Mexico: Sian Ka'an; Pre-Hispanic City and National Park of Palenque; Historic Centre of Puebla; Historic Town of Guanajuato and Adjacent Mines; Historic Centre of Morelia; Whale Sanctuary of El Vizcaino; Historic Centre of Zacatecas; Rock Paintings of the Sierra de San Francisco; Archaeological Zone of Paquimé, Casas Grandes; Historic Monuments Zone of Tlacotalpan;
- Panama: Darien National Park;
- Paraguay: Jesuit Missions of La Santísima Trinidad de Paraná and Jesús de Tavarangue;
- Peru: City of Cuzco; Historic Sanctuary of Machu Picchu; Chavin (Archaeological Property); Chan Chan Archaeological Zone; Historic Centre of Lima; Río Abiseo National Park; Lines and Geoglyphs of Nasca and Pampas de Jumana;
- Russian Federation: Historic Centre of Saint Petersburg and Related Groups of Monuments; Kizhi Pogost;
- Spain: Old Town of Ávila with its Extra-Muros Churches; Historic City of Toledo; Historic Walled Town of Cuenca; Palau de la Música Catalana and Hospital de Sant Pau, Barcelona;
- Viet Nam: Complex of Huế Monuments;
- 6. Requests the States Parties which have not yet answered the questions raised in the framework of the Retrospective Inventory to provide all clarifications and documentation as soon as possible and by **1 December 2013** at the latest.

**2013**

**37 COM 7B.50**

**The World Heritage Committee,**

1. Having examined Document WHC-13/37.COM/7B,

2. Recalling Decision **35 COM 7B.49**, adopted at its 35th session (UNESCO, 2011),

3. Acknowledges the information provided by the State Party on the implementation of conservation and management measures to address existing conditions at the property;

4. Urges the State Party to sustain on-going efforts, with particular attention to the following:

- a) Finalize the delineation of the buffer zone and develop adequate regulatory measures to ensure its protection, and submit a minor boundary modification proposal by **1 February 2014** for review by the World Heritage Committee at its 38th session in 2014,

- b) Finalize the Petra Conservation Plan and develop a comprehensive Management Plan for the property, building on previous documents and ensuring synergies with existing planning initiatives; ensure official endorsement of existing plans (e.g. Operational Priorities Plan 2010-2015 or the Strategic Master Plan 2011- 2030) by the governing bodies; submit all completed plans related to the conservation and management of the property for review by the World Heritage Centre and the Advisory Bodies, and undertake the necessary adoption process to ensure their effective enforcement,
- c) Finalize the development of the Disaster Risk Reduction Plan and secure the necessary resources for its implementation, prioritising the stabilization of the Siq,
- d) Finalize the development of a visitor management strategy, including regulations for public use, in consideration of the carrying capacity of the property,
- e) Identify priority capacity building needs and implement the necessary measures to address them,
- f) Ensure that Heritage Impact Assessments, in relation to the Outstanding Universal Value of the property, are carried out for development works foreseen, and submit, in accordance to Paragraph 172 of the Operational Guidelines, project proposals and their technical specifications to the World Heritage Centre for review prior to committing to their implementation; Decisions adopted by the World Heritage Committee WHC-13/37.COM/20, page 103 at its 37th session (Phnom Penh, 2013)

5. Requests the State Party to submit to the World Heritage Centre, by **1 February 2015**, an updated report on the state of conservation of the property and the implementation of the above, for examination by the World Heritage Committee at its 39th session in 2015.

**2011**

**35 COM 7B.49**

**The World Heritage Committee,**

1. Having examined Document WHC-11/35.COM/7B.Add,
2. Recalling Decision 34 COM 7B.56, adopted at its 34th session (Brasilia, 2010),

3. Acknowledges the information provided by the State Party on the implementation of its recommendations and urges it to finalise the process to establish functioning management arrangements with adequate resources for operation;

4. Expresses its deep concern about the state of conservation of the property and the continued need for implementation of holistic strategies to address pressing conservation, maintenance and protection issues;

5. Notes the results of the December 2010 joint World Heritage Centre/ICOMOS reactive monitoring mission, endorses its recommendations and requests the State Party to:

a) logistically support and collaborate with UNESCO Amman in the continuation of their comprehensive risk management plan for the property, based on updated Decisions report WHC-11/35.COM/20, p. 95 surveys to identify emergency measures and action plans for monitoring and interventions to mitigate potential threats,

b) develop and implement an integrated conservation plan, based on recommendations of existing management and operational plans, updated condition recording surveys, and identify required conservation, maintenance and protection measures to ensure the conservation of heritage assets and define conservation guidelines and principles to guide future interventions at the property,

c) minimize archaeological excavations until current conservation and maintenance needs are fully addressed and develop regulations for archaeological research at the property,

d) conduct necessary assessments to formally identify and adopt a buffer zone for the site that ensures conformity with the Outstanding Universal Value of the property;

6. Also requests the State Party to submit to the World Heritage Centre, by **1 February 2013**, a report on the state of conservation of the property and on the implementation of the above, for examination by the World Heritage Committee at its 37th session in 2013.

**2010**

**9 EXT.COM 4.1**

**Examination of international assistance requests**

**The World Heritage Committee,**

1. Having examined document *WHC-10/9 EXT.COM/4*,

2. Decides to approve the following request:

Jordan: Urgent Investigation of the Rock Stability in the Siq in Petra, for an amount of US\$ 67,579, under the category 'Conservation & Management'.

**2010**

**34 COM 7B.56**

**The World Heritage Committee,**

1. Having examined Document WHC-10/34.COM/7B.Add,
2. Takes note of the information provided by the State Party and expresses its concern regarding the state of conservation of the Siq and the lack of a comprehensive conservation and management policy, for the property coordinated among stakeholders;
3. Requests the State Party to take all appropriate measures as soon as possible to ensure that the necessary work is carried out on the unstable rock on the south 107 side of the Siq in order to ensure the safety of visitors as well as to limit any further damage;
4. Also requests the State Party to carry out adequate studies to determine the impact of the planned tourist related activities on the property, to inform the World Heritage Centre of any construction projects planned in the Dara area for examination by the World Heritage Centre and the Advisory Bodies, and to refrain from initiating any activity which may affect the integrity of the property;
5. Urges the State Party to finalize the Management Plan for the property, integrating the successive draft management plans and studies, and have it legally endorsed and implemented;
6. Also urges the State Party to establish as early as possible a clear management mechanism and adequate structure with the priority of maintaining the Outstanding Universal Value of the property;
7. Further requests the State Party to invite a joint World Heritage Centre / ICOMOS reactive monitoring mission to Petra to assess the state of conservation of the property, the advancement of the works on the Siq and to discuss the planned actions, as well as the progress in the finalization of the Management Plan;
8. Also requests the State Party to submit to the World Heritage Centre, by **1 February 2011**, a report on the implementation of the above recommendations for examination by the World Heritage Committee at its 35th session in 2011.

2010

## Adoption of retrospective Statements of Outstanding Universal Value

### 34.COM/8E

#### The World Heritage Committee,

1. Having examined Document WHC-10/34.COM/8E,

2. Adopts the retrospective Statements of Outstanding Universal Value, as presented in the Annex I of Documents WHC-10/34.COM/8E, WHC-10/34.COM/8E.Add and WHC-10/34.COM/8E.Add.2 for the following World Heritage properties:

- Algeria: Al Qal'a of Beni Hammad; M'Zab Valley; Djémila; Tipasa; Tassili n'Ajjer; Timgad; Kasbah of Algiers;
- Austria: Historic Centre of the City of Salzburg; Palace and Gardens of Schönbrunn; Hallstatt-Dachstein / Salzkammergut Cultural Landscape;
- Bulgaria: Boyana Church; Madara Rider; Thracian Tomb of Kazanlak; Rock-Hewn Churches of Ivanovo; Rila Monastery; Ancient City of Nessebar; Thracian Tomb of Sveshtari;
- Côte d'Ivoire: Comoé National Park;
- Democratic Republic of the Congo: Okapi Wildlife Reserve;
- Denmark: Jelling Mounds, Runic Stones and Church; Roskilde Cathedral;
- Ethiopia: Simien National Park;
- Israel: Masada; Old City of Acre; White City of Tel-Aviv - the Modern Movement; Incense Route - Desert Cities in the Negev; Biblical Tels - Megiddo, Hazor, Beer Sheba;
- **Jordan: Petra**; Quseir Amra; Um er-Rasas (Kastrom Mefa'a);
- Lebanon: Anjar; Byblos; Baalbek; Tyre; Ouadi Qadisha (the Holy Valley) and the Forest of the Cedars of God (Horsh Arz-el-Rab);
- Malawi: Lake Malawi National Park;
- Mauritania: Banc d'Arguin National Park; Ancient Ksour of Ouadane, Chinguetti, Tichitt and Oualata;
- Morocco: Ksar of Ait-Ben-Haddou; Historic City of Meknes; Archaeological Site of Volubilis; Medina of Essaouira (formerly Mogador); Medina of Fez; Medina of Marrakesh; Medina of Tétouan (formerly known as Titawin); Portuguese City of Mazagan (El Jadida);
- Niger: Air and Ténéré Natural Reserves; W National Park of Niger;
- Oman: Bahla Fort;
- Portugal: Laurisilva of Madeira;
- Senegal: Island of Gorée; Niokolo-Koba National Park;
- Seychelles: Aldabra Atoll; Vallée de Mai Nature Reserve;
- South Africa: Fossil Hominid Sites of Sterkfontein, Swartkrans, Kromdraai, and Environs.
- Spain: Cathedral, Alcázar and Archivo de Indias in Seville ;
- Sudan: Gebel Barkal and the Sites of the Napatan Region;

- Syrian Arab Republic: Ancient City of Bosra; Ancient City of Aleppo; Crac des Chevaliers and Qal'at Salah El-Din; City of Damascus; Site of Palmyra;
- Tunisia: Archaeological Site of Carthage; Amphitheatre of El Jem; Ichkeul National Park; Medina of Sousse; Kairouan; Medina of Tunis; Punic Town of Kerkuane and its Necropolis; Dougga / Thugga;
- Uganda: Tombs of Buganda Kings at Kasubi;
- United Kingdom of Great Britain and Northern Ireland: Saltaire; Dorset and East Devon Coast; Derwent Valley Mills; Royal Botanic Gardens, Kew; Liverpool - Maritime Mercantile City; Cornwall and West Devon Mining Landscape.
- United Republic of Tanzania: Selous Game Reserve; Kilimanjaro National Park;
- Yemen: Historic Town of Zabid;

3. Decides that retrospective Statements of Outstanding Universal Value for World Heritage properties in Danger will be reviewed in priority;

4. Further decides that, considering the high number of retrospective Statements of Outstanding Universal Value to be examined, the order in which they will be reviewed will follow the Second Cycle of Periodic Reporting, namely:

- World Heritage properties in the Arab States;
- World Heritage properties in Africa;
- World Heritage properties in Asia and the Pacific;
- World Heritage properties in Latin America and the Caribbean;
- World Heritage properties in Europe and North America.

**2010**

**Property Petra**

**Retrospective Statements of Outstanding Universal Value Id.**

**N° 326**

**Date of inscription 1985**

Brief synthesis Situated between the Red Sea and the Dead Sea and inhabited since prehistoric times, the rock-cut capital city of the Nabateans, became during Hellenistic and Roman times a major caravan centre for the incense of Arabia, the silks of China and the spices of India, a crossroads between Arabia, Egypt and Syria-Phoenicia. Petra is half-built, half-carved into the rock, and is surrounded by mountains riddled with passages and gorges. An ingenious water



management system allowed extensive settlement of an essentially arid area during the Nabataean, Roman and Byzantine periods. It is one of the world's richest and largest archaeological sites set in a dominating red sandstone landscape.

The Outstanding Universal Value of Petra resides in the vast extent of elaborate tomb and temple architecture; religious high places; the remnant channels, tunnels and diversion dams that combined with a vast network of cisterns and reservoirs which controlled and conserved seasonal rains, and the Adoption of retrospective Statements WHC-10/34.COM/8E.Add, p. 10 of Outstanding Universal Value extensive archaeological remains including of copper mining, temples, churches and other public buildings. The fusion of Hellenistic architectural facades with traditional Nabataean rock-cut temple/tombs including the Khasneh, the Urn Tomb, the Palace Tomb, the Corinthian Tomb and the Deir ("monastery") represents a unique artistic achievement and an outstanding architectural ensemble of the first centuries BC to AD. The varied archaeological remains and architectural monuments from prehistoric times to the medieval periods bear exceptional testimony to the now lost civilisations which succeeded each other at the site.

Criterion (i): The dramatic Nabataean/Hellenistic rock-cut temple/tombs approached via a natural winding rocky cleft (the Siq), which is the main entrance from the east to a once extensive trading city, represent a unique artistic achievement. They are masterpieces of a lost city that has fascinated visitors since the early 19th century. The entrance approach and the settlement itself were made possible by the creative genius of the extensive water distribution and storage system.

Criterion (iii): The serried rows of numerous rock-cut tombs reflecting architectural influences from the Assyrians through to monumental Hellenistic; the sacrificial and other religious high places including on Jebels Madbah, M'eisrah, Khubtha, Habis and Al Madras; the remains of the extensive water engineering system, city walls and freestanding temples; garden terraces; funerary stelae and inscriptions together with the outlying caravan staging posts on the approaches from the north (Barid or Little Petra) and south (Sabra) also containing tombs, temples, water cisterns and reservoirs are an outstanding testament to the now lost Nabataean civilization of the fourth century BC to the first century AD.

Remains of the Neolithic settlement at Beidha, the Iron Age settlement on Umm al Biyara, the Chalcolithic mining sites at Umm al Amad, the remains of Graeco-Roman civic planning including the colonnaded street, triple-arched entrance gate, theatre, Nymphaeum and baths; Byzantine remains including the triple-apses basilica church and the church created in the Urn Tomb; the remnant Crusader fortresses of Habis and Wueira; and the foundation of the mosque on Jebel Haroun, traditionally the burial place of the Prophet Aaron, all bear exceptional testimony to past civilizations in the Petra area.

Criterion (iv): The architectural ensemble comprising the so-called “royal tombs” in Petra (including the Khasneh, the Urn Tomb, the Palace Tomb and the Corinthian Tomb), and the Deir (“monastery”) demonstrate an outstanding fusion of Hellenistic architecture with Eastern tradition, marking a significant meeting of East and West at the turn of the first millennium of our era.

The Umm al Amad copper mines and underground galleries are an outstanding example of mining structures dating from the fourth millennium BC.

The remnants of the diversion dam, Muthlim tunnel, water channels, aqueducts, reservoirs and cisterns are an outstanding example of water engineering dating from the first centuries BC to AD.

### **Integrity (2010)**

All the main freestanding and rock-cut monuments and extensive archaeological remains within the arid landscape of red sandstone cliffs and gorges lie within the boundaries of the property that coincide with the boundaries of the Petra National Park. The monuments are subject to ongoing erosion due to wind and rain, exacerbated in the past by windblown sand due to grazing animals reducing ground cover. The resettlement more than twenty years ago of the Bdul (Bedouin) tribe and their livestock away from their former seasonal dwellings in the Petra basin to a new village at Umm Sayhun was aimed in part at arresting this process.

They are also vulnerable to flash flooding along Wadi Musa through the winding gorge (Siq) if the Nabataean diversion system is not continually monitored, repaired and maintained.

The property is under pressure from tourism, which has increased greatly since the time of inscription, particularly congestion points such as the Siq which is the main entrance to the city from the east.

The property is also vulnerable to the infrastructure needs of local communities and tourists. A new sewerage treatment plant has been provided within the property to the north with the recycled water being used for an adjacent drip irrigation farming project. Further infrastructure development proposed inside the boundary includes electricity supply and substation, a community/visitor centre, an outdoor theatre for community events, picnic areas, camping ground and a new restaurant near the Qasr al Bint temple, all of which have the potential to impact on the integrity of the property.

### **Authenticity (2010)**

The attributes of temple/tomb monuments, and their location and setting clearly express the Outstanding Universal Value. The natural decay of the sandstone architecture threatens the

authenticity of the property in the long-term. Stabilization of freestanding monuments including the Qasr al Bint temple and the vaulted structure supporting the Byzantine forecourt to the Urn Tomb Church was carried out prior to inscription.

Protection and management requirements (2010) Under Jordanian National law, responsibility for protection of Antiquities sites lies with the Department of Antiquities, a separate entity under the Ministry for Tourism and Antiquities.

The property is a protected area within the Petra Archaeological Park managed by the Ministry of Tourism and Antiquities. However responsibility for the overall planning and implementation of infrastructure projects at the site rests largely with the Petra Regional Authority (PRA) - originally the Petra Regional Planning Council (PRPC) - but now expanded to cover the social and economic wellbeing of the communities in the locality.

Increased staff numbers have enabled campaigns of inspection and control and strategies have been developed to manage tourist access and local community involvement, including the location and design of community-managed shop/kiosks.

Regulations and policies developed under the Petra Archaeological Park Operating Plan will cover infrastructure projects undertaken by the PRA including electrification of the Petra Archaeological Park and works associated with water recycling farming projects including tree-planting. They will also cover visitor facilities such as park lighting, tourist trails and interpretative signage, restaurants and shops, community recreation areas and businesses, as well as public events and activities within the park.

There is a long-term need for a framework for sustainable development and management practices aimed at protecting the property from damage resulting from the pressure of visitors, while enhancing revenues from tourism that will contribute to the economic and social viability of the region.

## **2001**

### **CONF 205 V.212-215**

V.212 The Secretariat informed the Bureau on the contents of the Draft Petra Park Operational Plan for the management of the site, prepared by a U.S. National Park Service team with funding from a World Bank Project. This Operational Plan was presented to a group of stakeholders, including UNESCO, during a Workshop held in Amman in January 2001. A copy of this Operational

Plan was requested and obtained by ICOMOS for consultation. Report of the Rapporteur WHC-2001/CONF.205/10, p: 38

V.213 The Bureau noted that this Operational Plan does not constitute a duplication of the Master Plan prepared by UNESCO in 1996 for Petra, but rather aims to provide an operational framework for its implementation.

V.214 The Bureau took note of the observations of the Secretariat and recommended that the present Draft be further improved to ensure the feasibility of the Plan. In particular, the Bureau found that three aspects of the Operational Plan needed to be addressed: 1) the institutional/legislative framework; 2) the financial sustainability of the Petra Park; and 3) the need to develop a local capacity and adequate human resources for the implementation of the Plan.

V.215 The Bureau thanked and commended the Jordanian authorities for elaborating an Operational Plan for Petra, whose implementation will constitute an essential step towards a sound management and conservation policy for this World Heritage site. The Bureau recommended that the Jordanian authorities work closely with the World Heritage Centre to ensure that the final version of the Petra Park Operational Plan takes into account the above observations, prior to its adoption by the State Party.

## **2000**

### **CONF 204 VIII.iii.35-43**

#### **State of conservation reports of cultural properties which the Committee noted**

VIII.35 Brasilia (Brazil)

Peking Man Site at Zhoukoudian (China)

The Potala Palace, Lhasa (China)

VIII.36 Islamic Cairo (Egypt)

VIII.37 Roman Monuments, Cathedral St Peter and Liebfrauen-Church in Trier (Germany)

Palaces and Parks of Potsdam and Berlin (Germany)

Classical Weimar (Germany)

Hortabagy National Park (Hungary)

VIII.38 Khajuraho Group of Monuments (India)

Sun Temple of Konarak (India)

Petra (Jordan)

Luang Prabang (Lao People's Democratic Republic)

Byblos (Lebanon)

Ksar Ait Ben Haddou (Morocco)  
VIII.39 Island of Mozambique (Mozambique)  
Lumbini, the Birthplace of the Lord Buddha (Nepal)  
Fortifications on the Caribbean Side of Panama: Portobelo - San Lorenzo (Panama)  
Archaeological Site of Chavin (Peru)  
VIII.40 Rice Terraces of the Philippine Cordilleras (Philippines)  
VIII.41 Baroque Churches of the Philippines (Philippines)  
VIII.42 Cultural Landscape of Sintra (Portugal)  
VIII.43 Istanbul (Turkey)  
Complex of Hué Monuments (Vietnam)

## **2000**

### **CONF 202 IV.B.68**

The Deputy Director reported on his mission to Jordan at the beginning of May and in particular his visit to Petra where he worked with the representatives of the Antiquities Directorate and the "Petra Regional Planning Council". He also met with the President of the Petra National Trust that financed the cleaning-up operations and the presentation of the "Siq". He briefly reported to the Bureau on the situation at the archaeological site and its environmental problems, including the urban expansion in Wadi Musa and the disputes with the inhabitants of the area. He also informed the Bureau of the success in transposing the hotels from Wadi Musa to Taybé, located at a fair distance from the site.

The Delegate of Morocco insisted on the importance of the problem with the population at Petra and suggested that a synergy with the adjacent Dana Biosphere Reserve be sought. The Delegate of Greece suggested that the ICOMOS Committee on Cultural Tourism be associated with the work of the Secretariat concerning Petra. Renovation works at the site could be financed partly by income coming from tourism.

The Bureau commended the authorities and the parties involved for the protection and presentation work already undertaken. It requested the Secretariat to agree to the request of the "Petra Regional Planning Council" to send a mission for the tourism management of the site and the physical and economic development of the vicinity, including the possibility of integrating the Dana Reserve into this work. The Bureau also requested ICOMOS to include in the same mission a specialist to evaluate the state of conservation and the presentation of the archaeological site. Finally, the Bureau requested that a detailed report on Petra be submitted to its twenty-fifth session in 2001.

**1998**

**CONF 201 V.B.47**

After having taken note of information provided by the Secretariat, the Bureau warmly commended the Jordanian authorities effort to follow-up to the recommendation made by UNESCO in 1994. The Bureau also thanked UNESCO for the forthcoming transfer of a specialist to the UNESCO Office in Amman to provide technical co-operation on cultural heritage, mainly for Petra.

**1997**

**CONF 204 IV.B.44**

After having noted the report of the Secretariat on Petra and the report of the Director of the Department of Antiquities dated December 1996, the Bureau thanked the Jordanian authorities for their efforts to protect the site, but again insisted that preservation measures be urgently undertaken and that the coordination of on-site activities be reinforced with the support of UNESCO. Amongst these measures, it would be appropriate to provide the Petra Regional Council and the Coordination Group of the Ministry of Antiquities and Tourism with the means to function; to urgently regulate and limit the construction of hotels too near to the site, buildings and the extensions to houses in the vicinity of the site and on the Taybeh road; to closely study the negative impacts of measures encouraging uncontrolled influx of tourists, such as the widening of roads; and to preserve the natural environment through the conservation of all green and wooded areas (Hishe oak forest, the pine forest and agricultural terraces close to the entrance of the site). They also requested the authorities to refrain from undertaking restoration work within the site until the condition of the monuments has been carefully recorded.

**1997**

**Decision : CONF 204 IV.B.63**

**State of conservation**

Following discussions of the looting of the site museum at Butrinti, Albania, the Secretariat recalled that illicit traffic was a severe problem at a number of World Heritage sites (Angkor, Baalbek, Petra, Kathmandu Valley, Saqqara, etc.) and that support could be provided by UNESCO in training, contact with other international networks such as INTERPOL and ICOM, and recovery

(UNESCO press releases and Notices of Stolen Cultural Property). It also could support states to implement the UNESCO Convention on Illicit Traffic (1970) and the UNIDROIT Convention on Stolen or Illegally Exported Cultural Property (1995). There are 150 States Parties to the World Heritage Convention but only 86 to the 1970 Convention. Further information about participation of States in these conventions was requested and a table with information was circulated.

**1996**

#### **CONF 202 IV.7**

After having taken note of the report of the Secretariat concerning several problems threatening the conservation of Petra, the Bureau recommended that the authorities of the Royal Kingdom of Jordan undertake the measures necessary to ensure the long-term conservation of the World Heritage site of Petra, and more particularly that it:

- halt all projects for the construction of new tourist roads, and carefully evaluate the impacts of the road-widening project from Wadi Musa to Taybeth;
- carefully evaluate the location of the water purification station;
- prolong the interdiction of building authorizations for hotels until the zoning regulations as proposed by the UNESCO experts can be adopted;
- halt all construction of new houses, as at Um-Sayhun, or the elevation of existing houses for tourist purposes and enforce the construction regulations;
- prohibit the use of reinforced concrete in developing or repairing the site, such as for the stairway leading to Djebel al-Khubta;
- protect the juniper trees and the vegetation of the natural environment of the site.

The Bureau encouraged the national authorities to continue the implementation of effective long-term protection for the site, and the measures advocated by the Petra Management Plan of the UNESCO experts.

**1995**

#### **CONF 203 VII.C.2.40/41**

#### **SOC**

The Secretariat recalled that during its eighteenth session, the Committee was informed of the different threats (hotel constructions near the site, insufficient waste water evacuation systems, uncontrolled urban development, proliferation of shops) menacing the preservation of the integrity of the site.

It informed the Committee that by letter of 13 March, the Permanent Delegation of Jordan had sent the Centre a proposal for an extension of the site under the name Petra Natural and Archaeological Park, which was subsequently withdrawn pending completion of the proposal. Furthermore, by letter of 18 March, the Minister of Tourism and Antiquities had informed the Centre of a certain number of measures undertaken to improve the protection of the site: limiting the daily intake of visitors and horses, improvement of sanitary arrangements, regrouping of street stalls, recruitment of a refuse team, creation of a centre for stone conservation and a team to study rock erosion, the improvement of some sites through descriptive panels and trails, establishment of a special bureau to follow up these different projects.

On 14 September the Director of the UNESCO Office in Amman was informed by the Ministry of Antiquities and Tourism, that the Jordanian authorities were also fully aware of the problems caused by the construction of new hotels and that the deliverance of building permits had been halted. The Minister had emphasized the importance of establishing zoning regulations and guidelines for constructions at Wadi Musa which would be prepared with assistance from The World Bank.

If several of the short-term recommendations contained in the Management Plan had already been implemented, the long-term recommendations will be the subject of further studies. A Regional Planning Council for the Petra Region was established, chaired by the Minister of Antiquities and Tourism. It is responsible for all action in the region, including that for Petra. A Technical Committee was established to draw up the zoning regulations, as the first step towards the creation of an independent authority for the site.

The Committee thanked the Jordanian authorities and in particular the Minister of Antiquities and Tourism, for all their efforts and the measures undertaken to ensure the long-term preservation of Petra. It gave them its full approval to proceed as quickly as possible with the establishment of zoning regulations and construction guidelines in order to avoid the proliferation of hotels and buildings, as well as the setting up of an independent local protection and management body endowed with the necessary authority. It invited them to continue to devote their efforts towards the active implementation of the Petra Management Plan prepared with the help of UNESCO experts, and to the extension of this World Heritage site, with the necessary means for ensuring its preservation. It invited the national authorities to keep the Committee informed by April next, through its Secretariat, of progress accomplished.

**1995**

#### **CONF 201 VI.22**

After having taken note of the Secretariat's report, and additional information from ICOMOS, the Bureau thanked the Jordanian authorities for having undertaken the measures outlined by the Committee without delay and congratulated them on their desire to ensure long-term conservation of the site. In order to have available all the necessary elements for the evaluation of the proposed extension of the site, it requested the authorities to confirm by 1 October that no new hotel construction projects will be authorized at Wadi Musa and along the Taybeh road, that



the Petra National Park Management Plan will be fully implemented and that a specific management authority will be created at the site.

It also recommended that a proposal for the extension of the World Heritage site which would provide its long-term protection be also submitted as soon as possible by the Jordanian authorities.

**1994**

**CONF 003 IX**

**SOC**

The Committee was informed of the findings of the UNESCO mission which took place in April 1994, concerning:

- impact of new hotels under construction in the vicinity of the World Heritage site of Petra - insufficiency or non-existence of sewage disposal facilities - uncontrolled development of villages in the vicinity of the site - proliferation of shops - insufficient conservation of antiquities, and - other encroachments upon the integrity of the site.

It was informed that the report has already been submitted to the Bureau of the World Heritage Committee during its eighteenth session in July 1994 and that the Bureau had already expressed its serious concern to the Jordanian authorities regarding the preservation of the integrity of the site (transmitted by the World Heritage Centre by letter of 18 July 1994) and had approved a request for the organization on site of a technical meeting associating the national authorities, national and international agencies concerned, and the two UNESCO coordinators for the Management Plan in order to accelerate the effective implementation of the Petra National Management Plan.

The Committee was informed that this technical meeting was held in Petra in October 1994 and that it had not resulted in any concrete decisions ensuring the preservation of the site, although the situation at the site had further deteriorated, notably by beginning to build two new hotels near the entrance of the site and the granting of building permits for several others.

The Committee therefore expressed to the Jordanian authorities its serious concern with regard to the degradation of the site.

It requested them to urgently undertake the following:

- 1) by measure of conservation, the prohibition to build any new hotel in the vicinity of the site;
- 2) the official creation of the Petra National Park and the implementation of the Petra National Park Management Plan established by UNESCO experts upon request from the national authorities of Jordan, which defines a precise perimeter for the Park, and including the creation of eight protected zones, the creation of a buffer zone in order to control the development of building construction, and establishment of a management authority; and

3) to address the World Heritage Centre before 1 May 1995 a detailed report on the measures that have been undertaken to be submitted to the nineteenth session on the Bureau of the World Heritage Committee.

**1994**

#### **CONF 001 VI.B**

The Bureau expressed concern following the report presenting the different threats to the integrity of the site of Petra, especially with regard to:

- 1) the serious impact of some ten new hotels planned or under construction, both on the visitor capacity of the site, their visibility from the site and the disproportion of several of them in relation to the village habitations, the destruction of archaeological vestiges which they cause, pollution and soil erosion;
- 2) the negative impact of the pumping station planned for Wadi Musa and its new hotels;
- 3) the risks caused to the site by projects for the development of residential zones such as those included in the master plan of Wadi Musa, as well as the absence of building specifications and building height restrictions;
- 4) the necessity of applying existing legislation governing businesses, especially in the proximity of the monuments of the site;
- 5) the necessity of ensuring proper conservation of the vestiges of the Temple of the Lion and the sculptured blocks scattered throughout the site.

The Bureau agreed to a contribution from the World Heritage Fund to organize, together with the Jordanian authorities, a select meeting of experts at the site to implement the master plan of the site of Petra as quickly as possible, and to take the necessary measures to ensure by all possible means the preservation of the values of the site.

**1987**

#### **CONF 005 X.25**

##### **Requests for International Assistance**

25. The Committee,

- examined the requests presented in document SC-87/CONF.005/7;
- noted that the Bureau had met on 09 December 1987 to consider these requests and, in accordance with the procedure set out in paragraphs 69 to 91 of the Operational Guidelines, had approved the requests amounting to no more than \$30,000;
- decided to approve the other requests taking into account of the Bureau's recommendations.

The requests approved are as follows:

### Preparatory assistance

China (People's Rep. of) for drawing up safeguarding plans for the cultural sites inscribed on the World Heritage List: \$25,000

**Total: \$25,000**

### Technical Cooperation

- Tassili N'Ajjer (Algeria) for equipment and consultant services to prepare a large scale project to implement the management plan: \$17,000
- Dja Faunal Reserve (Cameroon) as a contribution to the adoption and implementation of the draft management plan: \$30,000
- Petra (Jordan) as a contribution towards research work on weathering and subsequent protection of the property: \$50,000
- Selous Game Reserve (Tanzania) for equipment for anti-poaching measures: \$50,000
- Istanbul (Turkey) for equipment: \$30,000
- Durmitor National Park (Yugoslavia) for equipment for research on forest die-back and related conservation problems: \$50,000
- Khami Ruins National Monument (Zimbabwe) for safeguarding work: \$25,000

**Total: \$252,000**

### Training

- Brazil: for training in the conservation and restoration of historic areas: \$40,000
- China: as a contribution to the programme for the training of natural heritage conservation specialists: \$30,000
- For a study tour in Côte d'Ivoire for African francophone students at the Montpellier training course on forest and fauna protection: \$30,000
- Haiti: for training courses at the National History Park-Citadel, Sans Souci, Ramiers: \$25,000
- Mexico: for the training of specialists responsible for the conservation of cultural sites included in the World Heritage List: \$42,000

**Total: \$167,000**

### Emergency assistance

Ecuador, Quito: for the urgent work required for the consolidation of monuments damaged by the earthquake: \$70,000

**Total: \$70,000**

**1985**

**CONF 008 X.A**

**Inscription: Petra (Jordan)**

**C(i)(iii)(iv)**

The Committee noted that the boundaries of the site corresponded to those of the Petra National Park.

6.3 Figures



Fig 1 Flash Floods Canal



Fig 1.2 Flash Floods Canal



Fig 2 The Great temple of Petra



Fig 3 Nabataean Water Management System



Fig 4 Back Road/Shelters and Parking



Fig 4.1 Backroad Landscaping



Fig 4.2 Back Road



Fig 4.3 Back Road



Fig 5 Back Road



Fig 6 Back Road



Fig 7 Back Road



Fig 8 Crown Plaza Hotel



Fig 9 Foundations of structures at the Heritage Village



Fig 10 Foundations of structures at the Heritage Village



Fig 11 Ongoing Construction at the Heritage Village





Fig 12 Ongoing Construction at the Heritage Village

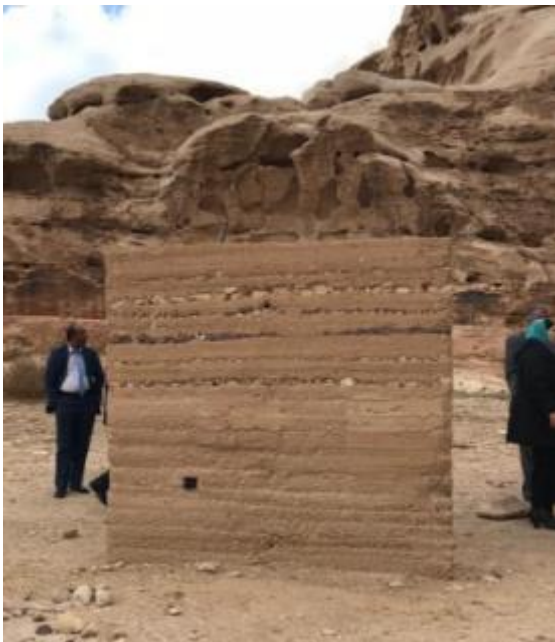


Fig 13 Samples of Construction at the Heritage Village



Fig 14 Ongoing Construction at the Eco Village



Fig 15 Animal Treatment and damage to the site – Climbing up the historic stairs at the site with donkeys



Fig 16 Petra looking east. Top: Wadi Musa (centre); Scenic Road (right). Centre: Back Road and Wadi Turkmenia (left); Petra Church cover buildings and Temple of the Winged Lions excavated remains (centre left); Wadi Musa and Colonnaded Street (centre). Photo Ref: APAAME\_20171001\_REB-0689. Photographer: Rebecca Banks. Courtesy of APAAME.



Fig 17 Petra Theatre and Wadi Musa with its retaining walls and bridges, looking south.  
Ref: APAAME\_20171001\_RHB-0416. Photographer: Robert Bewley. Courtesy of APAAME.



Fig 18 Petra Main Trail and Wadi Musa showing bridge and concrete drain pipes and retaining walls. Photo: Tom Hassall.



Fig 19 Petra Theatre with Main Trail and Wadi Musa showing retaining walls and concrete capping. Photo: Tom Hassall.



Fig 20 Petra The Colonnaded Street and Main trail (left) and Wadi Musa showing retaining walls looking west.



Fig 21: Petra Main Trail looking north towards, solar farm and top of Back Road (Centre left) and Umm Sayun (Centre middle and right). Photo: Tom Hassall.



Fig 22: Petra, looking south. Top: Great Temple (centre); Centre: Colonnaded Street, Main Trail and Wadi Musa; Bottom: Petra Church cover buildings (left); Temple of The Winged Lions (right). Photo Ref: APAAME 20171001 RHB-0393.



Fig 23: Petra, looking east towards the Sik (centre). Top: Scenic Road and Marriot Hotel; foreground: Temple of the Winged Lions (foreground). Photo: Tom Hassall



Fig 24: Petra Wadi Turkmenia and new Back Road (Bottom left to top centre); Umm Sayun (centre top). Photo Ref: APAAME\_20171001\_RHB-0388. Photographer: Robert Bewley. Courtesy of APAAME.



Fig 25: Petra Wadi Turkmenia with new Back Road Terminus with shelters and turning circle. Photo: Tom Hassall



Fig 26: Petra Wadi Turkmenia with new Back Road Terminus with shelters and turning circle. Photo: Tom Hassall