

# A Strategic Master Plan For the Petra Region



## Strategic Plan for TAYBEH and surrounding areas

June 2011

DESIGNWORKSHOP

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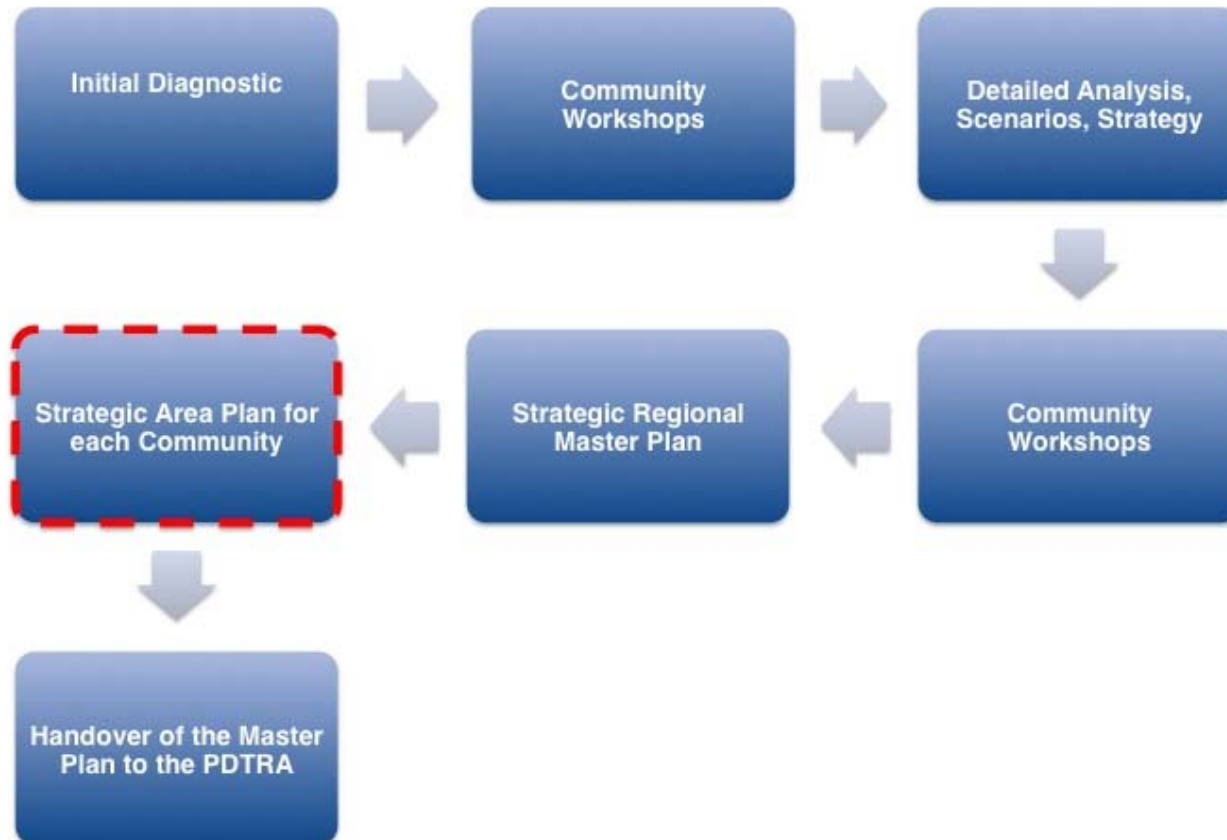
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**June 2011**

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### Steps of the Preparation of the Master Plan for Petra Region



## ABOUT THE PREPARATION OF THE MASTER PLAN

### Overall objective

The overall objective of the project is to provide the **Petra Development and Tourism Region Authority (PDTRA)** with a Strategic Master Plan that guides planned development of the Petra Region in an efficient, balanced and sustainable way over the next 20 years for the benefit of the local population and of Jordan in general. Special consideration is required for protecting the globally significant Petra Archaeological Park, which lies completely within the area governed by PDTRA.

### Project Duration

11 months (July 2010 – June 2011)

### Process

The process of developing the Strategic Master Plan for the Petra Region incorporated a diagnostic phase, including stakeholder interviews and workshops. The findings of this initial phase were the basis for the elaboration of the “detailed analysis, scenarios and strategy, including guidelines and regulations to encourage private investment while protecting the park” for the entire Petra Region. Before starting the final elaboration phase of the Strategic Master Plan workshops took place to present and discuss the intermediate results with the population of the Petra Region.

In addition to the general report for the Petra Region, individual reports for each of the six communities located within the region have been prepared presenting balanced, well focused, efficient and sustainable “Selected Strategic Area Plans” taking into account the characteristics of each of the communities.



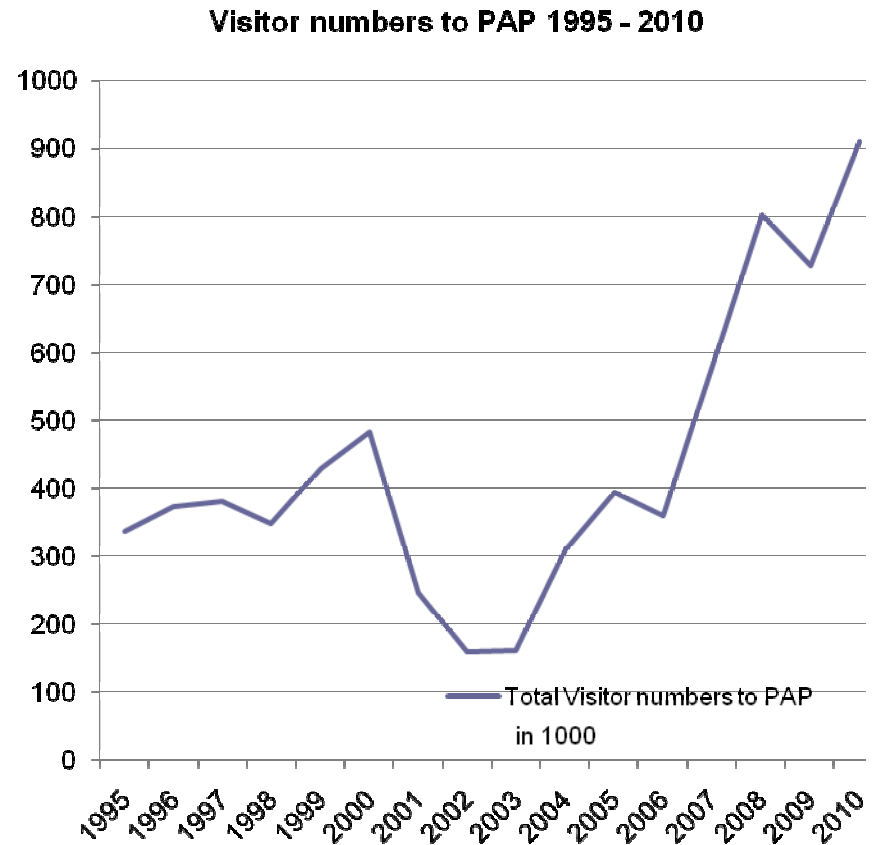




## IMPORTANCE OF THE PAP FOR THE PETRA REGION

The Petra Region's most important aspect for the economic as well as the social development is the tourism sector, in which the Petra Archaeological Park (PAP), one of the world's richest and largest archaeological parks, plays a major role. The dramatic rock-cut temples and tombs as well as the water collection, distribution and storage system of the Nabataeans represent unique artistic and technical achievements. Due to its outstanding universal value, Petra became a UNESCO World Heritage site in 1985. In 2007, the world public elected Petra as one of the "Seven Wonders of the World", which is an excellent indicator for the dramatic rise in popularity of the site. The Cultural Space of the Bedu was inscribed in 2008 on the UNESCO Intangible Cultural Heritage List of Humanity.

In 2010, the total visitor number of PAP has reached more than 900,000 visitors, rapidly approaching the maximum carrying capacity of the park, which was estimated by UNESCO at 1.26 million in 1994. The dramatic rise in visitor numbers over the last 10 years has also increased the pressure on the PAP. The Petra Archaeological Park plays not only an important role for the development of the regional economy, but also for the national economy. However, its economic potential both from tourism as well as related sectors is far from being utilized to its full extent; also the protection of the PAP as well as of the other regional natural and cultural resources is insufficient. Infrastructure deficiencies of the communities further limit the economic development and aggravate environmental problems. As a result the population of the Petra Region is not benefitting as much as it would be possible considering the unique assets and opportunities of their region. Therefore, considerable infrastructure improvements are being recommended to facilitate economic growth.



## MAIN CHALLENGES OF THE PETRA REGION

Improvements within the PAP as well as other tourism related products and services could - with careful planning - enhance the economic situation and living quality, reduce social disparities and tensions and protect the region's natural and cultural resources. The Strategic Master Plan addresses the most pressing socio-economic and environmental issues related to the PAP, tourism growth, efficient land-use, as well as other social and infrastructural challenges, which were expressed in the course of the numerous personal interviews, community workshops and discussions in the communities. The main challenges for the further development of the Petra Region come from

### 1.) a socio-economic perspective:

- Decrease disparities between the communities and tribes in Petra Region in terms of income, number and quality of jobs, education and human development in general;
- Enhance the competitiveness of sectors related to tourism so that a regional supply chain for tourism can develop;
- Provide alternative sources of employment for area residents not directly engaged in the field of tourism;
- Promote endogenous and foreign investments of the private and public sector in the local economy.

### 2.) the perspective of Petra Archaeological Park:

- Optimize carrying capacities and visitor flow in the interest of visitor satisfaction and protection of the World Heritage site;
- Increase service quality and variety of products offered in the PAP in order to increase visitor satisfaction and money spent while reducing its negative impact on the PAP;
- Establish an advance booking and ticketing service as well

as a visitor flow concept that will help to ensure a more even visitor distribution over the day and over the year;

- Establish a well-defined "animal policy" for PAP;
- Define PAP and the World Heritage site boundaries in a clear and logical way agreed on by all stakeholders.

### 3.) the perspective of Petra's tourism product:

- Consider, plan and implement tourism activities outside of PAP, which complement the services of the park;
- Package, market and organize a variety of activities and attractions in such a way that tourists stay longer in the region;
- Increase revenues and profits by offering more innovative and more valuable local products that are also marketed and merchandised in a more professional way;
- Support smaller businesses and family businesses working together in more or less formal cooperatives;
- Create personal guiding services with well-educated and well-trained local personnel that offers a large potential for the creation of numerous new jobs;
- Establish a "hop-on/hop-off" shuttle transportation service in order to increase the mobility of both tourists and locals.

### 4.) a land use perspective:

- Establish boundaries that conform to heavy concentrations of archaeological sites, land ownership, ecological units, or physical features like roadways;
- Provide and communicate a clear definition of existing or proposed land use zones within the Petra Region;
- Gather reliable GIS data and maps, which are urgently needed to establish a reliable basis for land use planning;
- Control and plan urban development more efficiently;
- Consider a formal policy statement on the appropriateness or



prohibition of mining in some areas of the Petra Region in order to protect the archaeological sites and resources of the PAP and the Petra Region;

- Suggest specific zoning and land use plans for regions or towns that are missing.

5.) an environmental perspective:

- Set up mechanisms to establish an accurate, reliable, and comprehensive database of information about land within the region including flora, fauna and other types of resources;
- Set up more stringent regulations to protect the natural environment of the region, especially regarding grazing and fuel-wood collection practices;
- Integrate protected areas planned by the RSCN into the regional development plan through establishing close communication and coordination between the PDTRA and RSCN.

6.) a social and infrastructural perspective:

- Balancing the lack of social services and its uneven distribution across the region;
- Strengthen the cooperation between PDTRA and regional utility providers to establish a clear Utility Extension Policy;
- Shape the institutional and stakeholder environment in a way that allows for a clear communication between the PDTRA and the ministries by avoiding an overlapping of activities;
- Allow for a better information flow and more communication between PDTRA and local residents;
- Provide a state-of-the-art local transportation system to minimize the negative ecological impact of diesel buses and increasingly congested traffic (particularly in Wadi Musa).

The identified main challenges for the further development of the

Petra Region need to be addressed in detail in order to make sure that both the vision and the strategic master plan fit the individual strengths, weaknesses, opportunities and threats of both the Petra Region and its six communities.



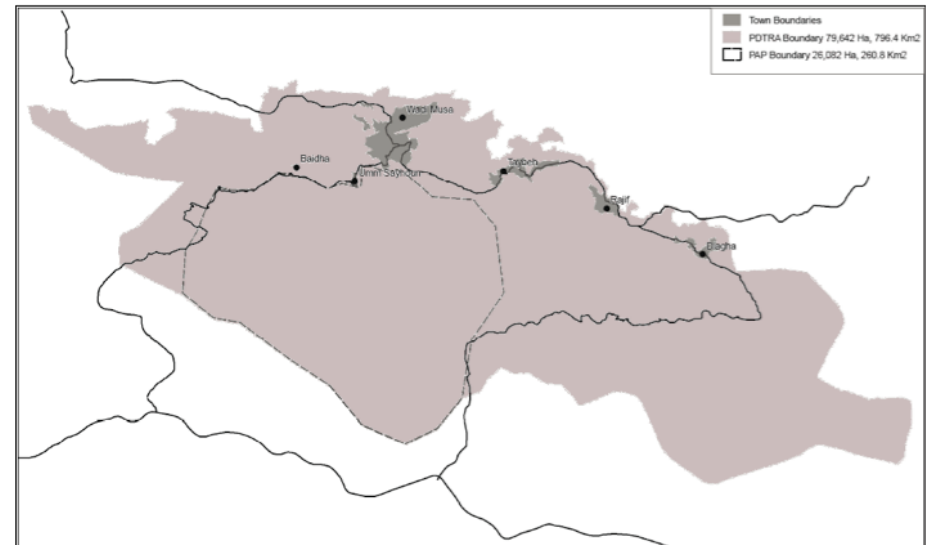
## OVERVIEW OF THE PETRA REGION

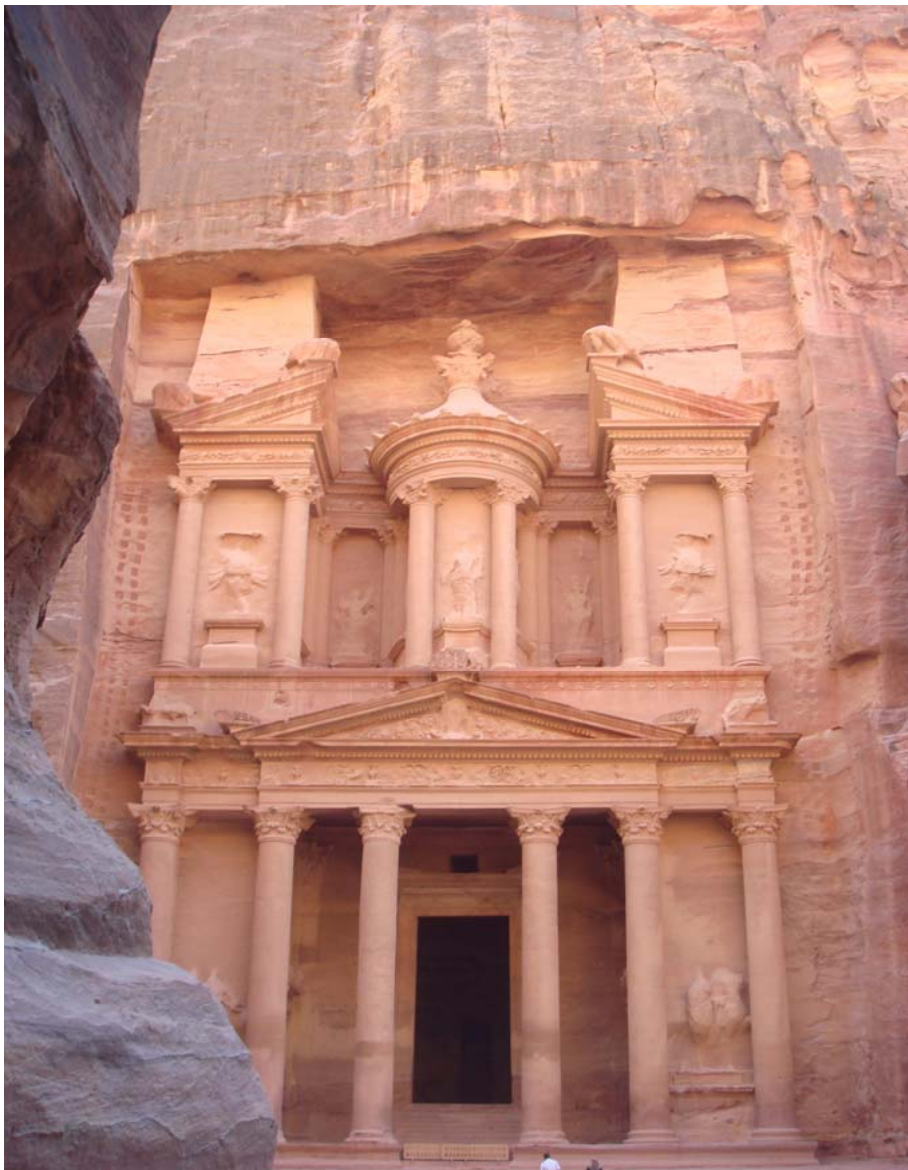
The Petra Region under the administration of the Petra Development and Tourism Regional Authority (PDTRA) is a 796.41 donum semi-autonomous district including the 260.82 donum of the Petra Archaeological Park. Within the region the six communities Dlagha, Rajif, Taybeh, Wadi Musa, Umm Sayhoun and Baidha, which have a total population number of 27,944 inhabitants (DOS 2009), are situated. These communities are connected to each other through well-maintained highways: Baidha and Umm Sayhoun, located in the North of the region, are connected to Wadi Musa through the Wadi Araba highway, Wadi Musa, Taybeh and Rajif are located along the King's highway ("Scenic Road"). Dlagha, the community located at the Southern end of the region, is connected to Rajif through the Masoudha highway.

Community	Population (DOS 2009)	Area existing within town boundaries (in donum)	Tribe (qabilah)
Baidha	401	63	Amaariin
Umm Sayhoun	1,631	290	Bidoul
Wadi Musa	17,085	7,360	Layathnah
Taybeh	5,719	3,120	Layathnah
Rajif	1,674	1,880	Rawajfah
Dlagha	1,434	1,630	Saidiyyiin
<b>Total</b>	<b>27,944</b>	<b>14,343*</b>	

\*Excluding Al Hayy, an area of Wadi Musa that is classified as residential zone but is not yet

developed





## OVERALL VISION FOR THE PETRA REGION

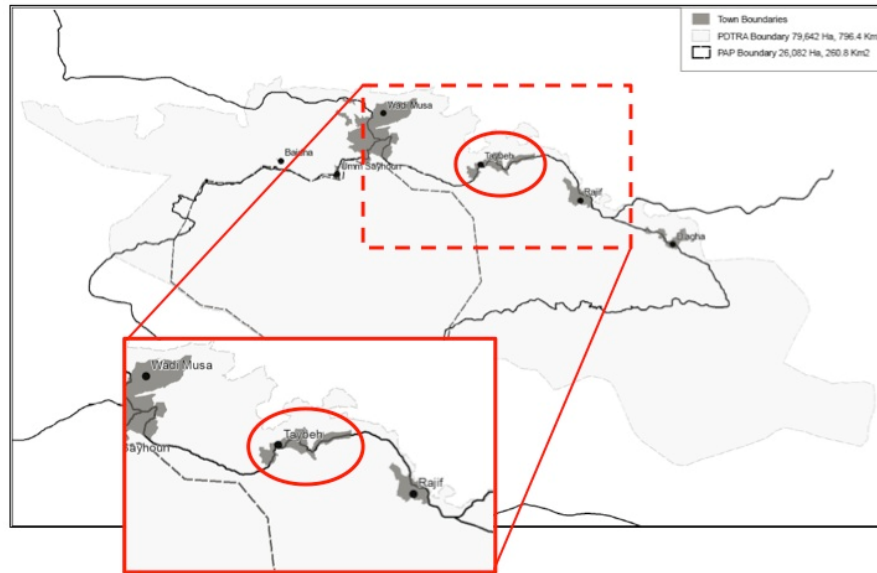
⇒ **Change from a mere Attraction to a World-Class Tourism Destination** based on its unique, well-preserved and authentic cultural and natural heritage, outstanding service quality and high environmental standards.

### Strategic objectives for the Petra Region:

- Long-term protection and preservation of the unique cultural and natural values must have precedent over short-term economic benefits;
- Encouragement of entrepreneurial behavior and a market economy within a strictly enforced set of transparent and coherent rules and regulations;
- Strengthen regional value creation from economic activities and development of region-specific competitive advantages;
- Urban development in compact and delightful urban forms that can be served in an efficient way by infrastructure and public services and allow future populations to be accommodated with the minimal consumption of land;
- Provision of basic infrastructure and public services throughout the region in order to create equal opportunities.

**The mission of the Petra Development and Tourism Region Authority (PDTRA)** will be to act responsibly in every possible way to protect the archaeological treasures of the area and to foster and maintain development in a sustainable way. The PDTRA will act in the best interest of the people of the region and will strive for social equality and equal opportunities for all citizens of the region alike. The PDTRA will ensure to actively engage each of the six communities in the future development processes of the region.

## TAYBEH IN THE CONTEXT OF THE PETRA REGION



Taybeh is located in the center of the Petra Region at about 8km from Wadi Musa. The community is built along the King's highway leading to Wadi Musa in the North and to Rajif in the South. One of the main hotel areas is located along the section of the King's highway connecting Taybeh to Wadi Musa commonly called the Scenic Road because of its stunning views into the Wadi Taybeh and the mountains behind. As this area is of great interest for the development of touristic facilities previous studies such as the Sigma report and the Dar al Handasah study have provided recommendations on its zoning.

Among the six communities, Taybeh is with its 5,719 inhabitants (2,904 males and 2,815 females DOS 2009) and its area of about 3,120 donum (area existing within town boundaries) the second largest community of the Petra Region after Wadi Musa. In 2009 the population density (based on area existing within the town boundaries) amounted to 1.8 people per donum, which is slightly lower than the regional average of 2 people per donum. The Sigma Study calculated the population growth rate of Taybeh at 1.9% for the ten years period 1999 - 2009. The large majority of the Taybeh population belongs to the Shour clan of Layathnah. The Layathnahs are also one of the main tribes living in neighboring Wadi Musa.

Until the 1990's, when the five-star hotel Taybet Zaman was constructed in Taybeh, the population of Taybeh has not been significantly involved in tourism. At the time of its opening, it was the first five-star hotel in the Petra Region. However, as the majority of the shares of the hotel belong to non-local investors and it is managed by non-locals the direct benefits of the hotel to the population of Taybeh is relatively low. In addition, it is currently not permitted to open up small guesthouses or similar types of accommodations



within the community, which is further limiting the income opportunities from tourism. Therefore, the main economic base of Taybeh is livestock husbandry and agriculture. Other significant sources of income are government employment and pensions from civil and military service. Some of the PDTRA offices are located in Taybeh.

Taybeh was originally established on (relatively) level areas related to the water sources. At present Taybeh is sprawling in every direction into steeper slopes. However, as Taybeh is located in visual proximity of the PAP and to the Scenic Road, special regulations are applying to Taybeh. The Sigma report of 2000 outlined three zones - A, B, C - to serve the Scenic Road between Wadi Musa and Taybeh. Zone A, near Wadi Musa is considered the most sensitive landscape where development is totally prohibited due to visual, environmental, topographical or geotechnical constraints. Zone B is considered to be a sensitive landscape where restricted development could be allowed under strict development regulations, control measures and by-laws. Zone C, the one closest to Taybeh, is considered to be a sensitive landscape where limited development could be allowed under less strict regulations.

Due to its closeness to the center of the region, Wadi Musa, and to the region's main touristic attraction, the PAP, Taybeh is one of the more advantaged communities of the region in terms of public facilities (medical services, schooling, telecommunication, transportation infrastructure). Furthermore, the Taybeh population can easily take advantage of the services located in Wadi Musa, due to its proximity and its generally higher mobility as people in Taybeh have more private cars than the ones in other communities.

The Taybeh area has suffered, similarly to the rest of the Petra region, from the drying out of springs and from lack of precipitation.

In Taybeh currently two cooperatives exist, of which the more active one is the Taybeh Women's Association, which produces Nabataean inspired pottery.



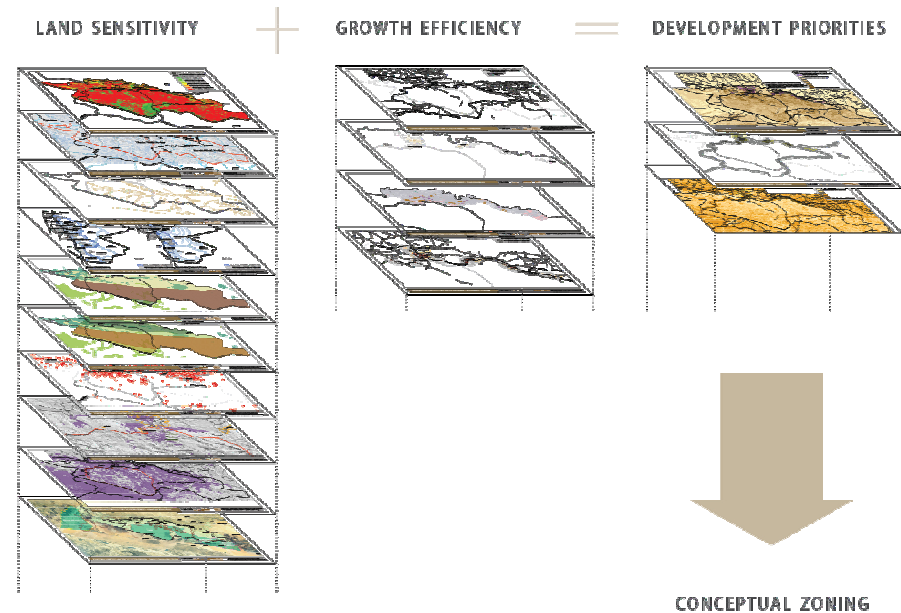
## LAND SENSITIVITY ANALYSES

A Development Priorities Map for the region and each community was prepared by combining the Land Sensitivity Maps with the Growth Efficiency Maps. The Development Priorities Maps are used to identify land areas where development can occur with the least impact on important archaeological and natural resources and allowing for the greatest ease and efficiency of providing public services. These maps are based on several objective criteria.

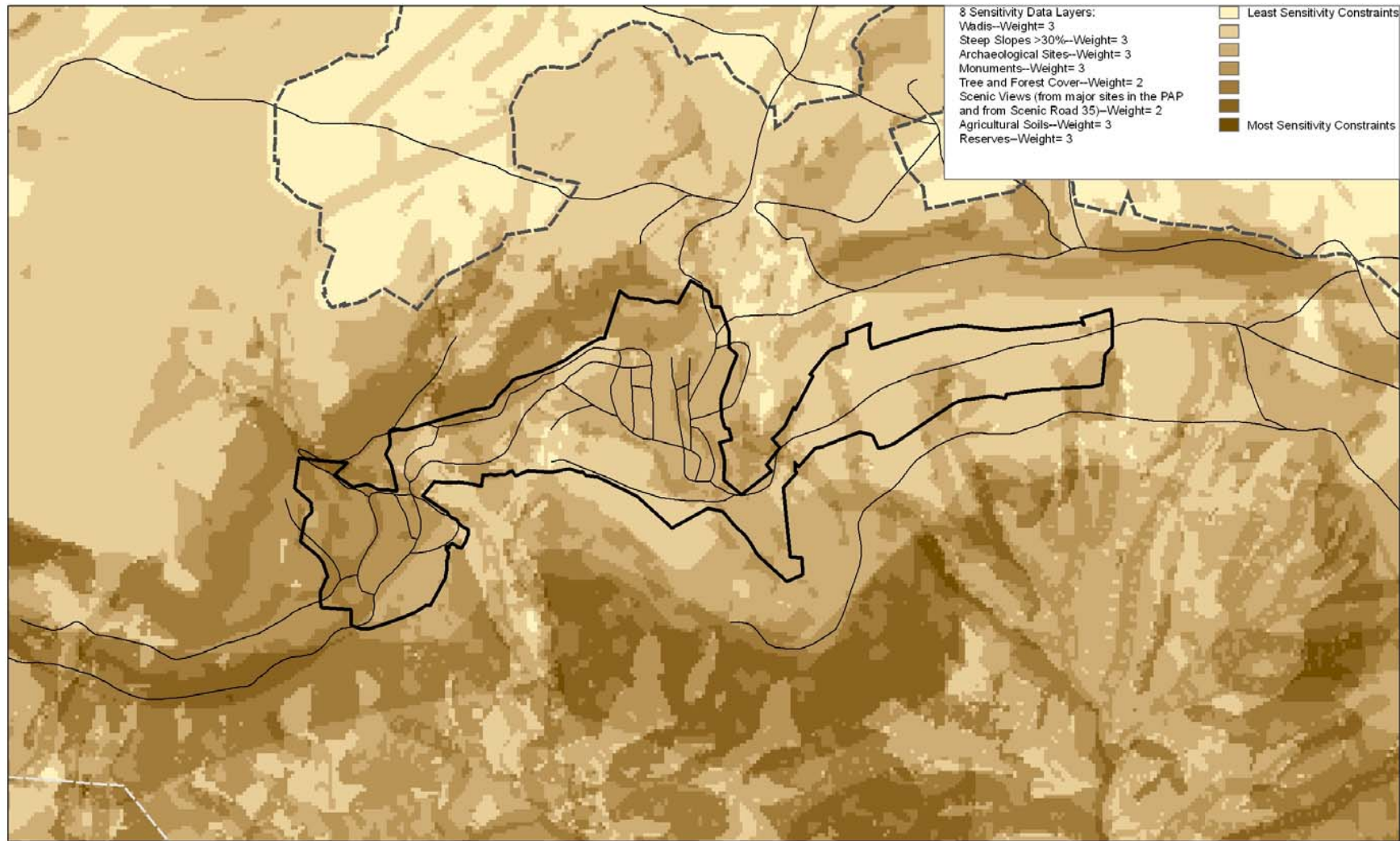
### Objective criteria include:

- Topography and slopes
- Hydrology and geology
- Vegetation (types, zones)
- Archaeological Sites
- Agricultural Soils
- Closed Forests
- Bare Rock
- Significant Views
- Transportation Infrastructure
- Water and Sewer Infrastructure
- Electricity Network
- Proximity to Schools
- Landmarks
- Health services
- Accommodation/tourism infrastructure
- Public space and recreation facilities

Please note: That the criteria listed is not exhaustive and that they may vary from one community to another.

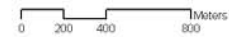




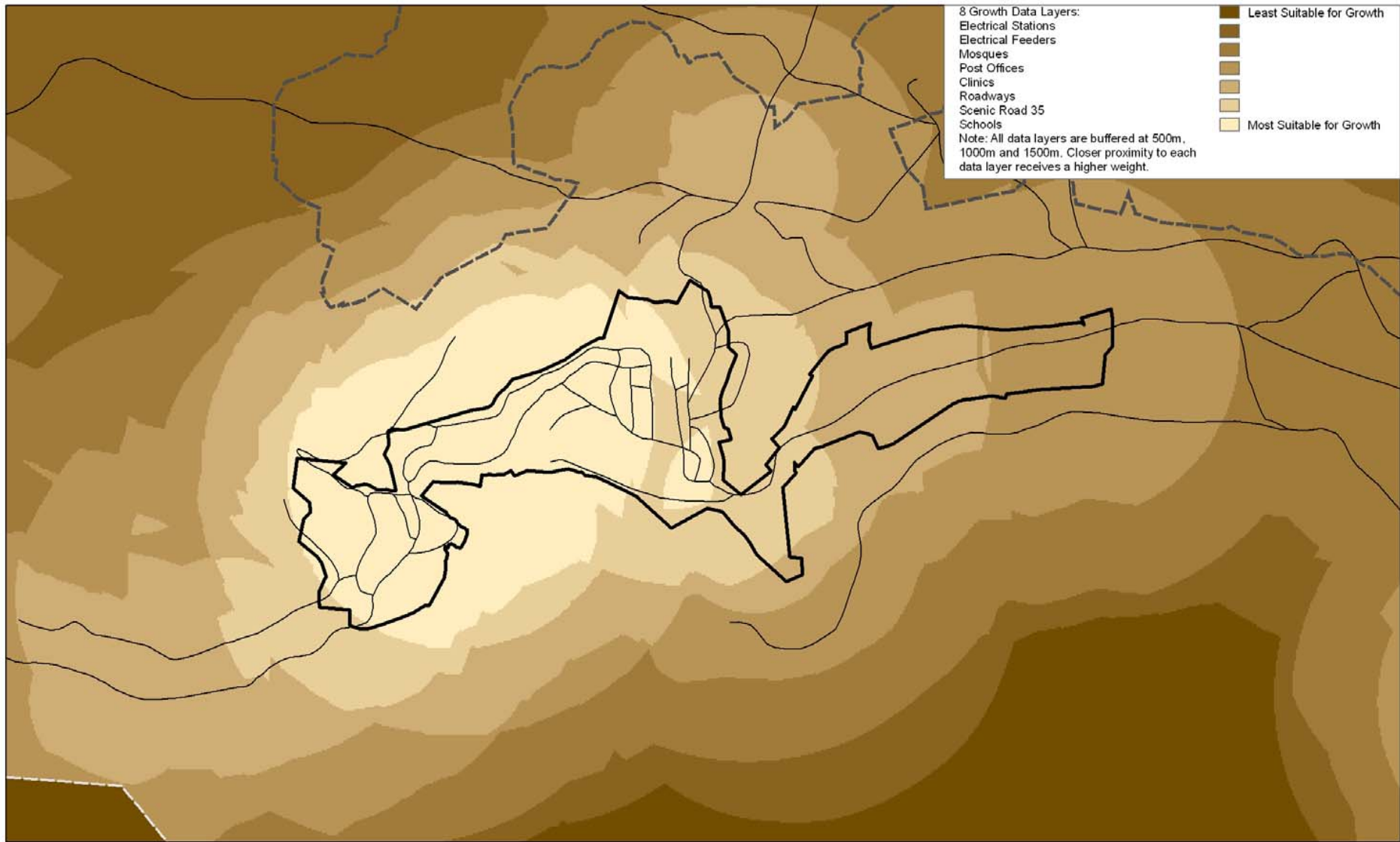


STRATEGIC MASTER PLAN FOR THE PETRA REGION -  
LAND SENSITIVITY | TAYBEH AND SURROUNDING AREA

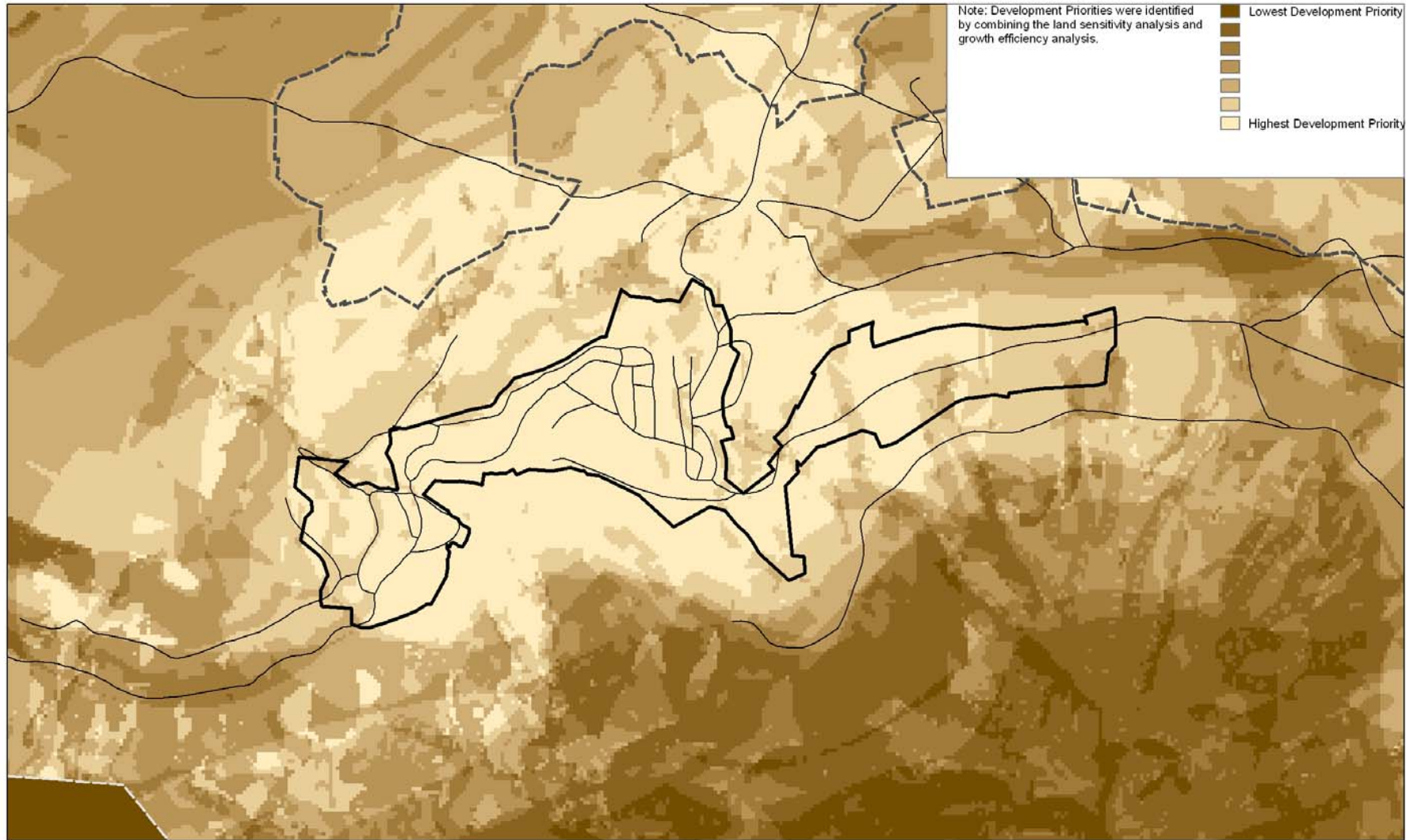
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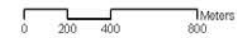






STRATEGIC MASTER PLAN FOR THE PETRA REGION -  
DEVELOPMENT PRIORITIES | TAYBEH AND SURROUNDING AREA

1 centimeter = 200 meters



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## SWOT ANALYSIS OF TAYBEH

Based on a thorough analysis, specific Strengths, Weaknesses, Opportunities and Threats were identified for Taybeh:

### STRENGTHS

- General infrastructure in good condition
- Proximity to Wadi Musa: therefore benefit from services and job opportunities in Wadi Musa
- Proximity to regional hospital providing job opportunities and services to the Taybeh population
- The Taybeh women association produces original ceramics inspired by Nabataean designs
- A successful tourism facility built in traditional local style Taybet Zaman provides some – however limited - income to the local population
- Great view over the Wadi Taybeh and easy access to the Wadi
- Can benefit from tourism without suffering from as many negative side effects as Wadi Musa e.g. traffic congestion

### WEAKNESSES

- Bad neighborhood roads and facilities
- Lack late night transportation
- Lack specialized (also female) doctors at the hospital, dentists and a women clinic, as well as health awareness raising campaigns e.g. family planning
- Expensive Internet access
- Insufficient water available for agriculture, drying out of springs and lack of water catchment systems
- Difficult topography and climatic conditions for farming
- Expensive land prices and shortage of buildable land to allow for more investment and development
- Lack of housing area and public space for the growing population
- Lack of public spaces, parks and sports centers (e.g. youth centers for boys and girls)
- Insufficient specific training e.g. in English, IT or marketing to increase the chances to be involved in tourism
- Besides Taybet Zaman, few accommodation facilities provide sources of income and jobs (particularly locally owned ones)
- Lack of tourist attractions limits potential benefits to Taybeh from tourism
- Lack of suitable employment possibilities for women
- Difficulty to sell the produced handicraft goods due to lack of marketing and strategic points of sale

## OPPORTUNITIES

- Development of tourism activities and investments in accommodation facilities is relative attractive:
  - Location at the entrance of Wadi Taybeh is conducive for eco-tourism
  - Available space for outdoor activities and camping at Al Batha
  - Geographic proximity to Wadi Musa and the PAP
- Offer horse/camel/donkey tours between Wadi Musa and Taiba Batha and Sabra
- Set up a strategic place for Taybeh women to sell their products e.g. PAP entrance or bus station located close to Taybeh
- Provide licenses to be able to run small guesthouses
- Development of accommodation capacities
- Improved public transport connection to the PAP and Wadi Musa enhances the potential for investments in tourism accommodation facilities

## THREATS

- Taybeh may become an outskirts of Wadi Musa leading to a potential loss of its own identity and development of negative agglomeration effects
- The supply of developable land might not be sufficient to account for the growth in population and tourism
- Negative attitudes towards tourism may result from increased traffic rushing throughout town without producing benefits to Taybeh
- Obtain no or only little benefit from future newly built hotels or tourism facilities in the area if the local population is not more involved, can lead to further frustration and a negative attitude

## TAYBEH: A VISION FOR A BETTER FUTURE

**The overall vision for Taybeh is to enhance the community in order to turn it into a nicer place for living and to give its population a true sense of identity. In addition, it will be crucial to create more income opportunities in Taybeh through involving the community more in the tourism industry and, thus, have them benefit more from tourism.**

The recommended focus for Taybeh is less on developing tourism products in the Taybeh itself, but much more on further developing tourism facilities (e.g. accommodation, restaurants and shops) and services for tourism sites in its surroundings. This would allow its population to be more involved in tourism and - most importantly - benefit from increasing job opportunities.

At the same time a nicer and more attractive surrounding will be created in the community through greening spaces and establishing pleasant parks, which will benefit tourists and locals alike.

However, it is also important to provide a variety of alternative job opportunities to the local population (especially for women) in order to avoid the risk of being dependent on tourism. Therefore, it is suggested that the development of biological vegetable farming in greenhouses will be supported.

In addition raising the education level (regarding tourism related subjects and not-related ones) of the population will be of great importance. In order to achieve this goal it is crucial to improve the local infrastructure of Taybeh, especially regarding schooling and telecommunications.

In order to create such a vision for Taybeh and allow for its realization, initiatives in the following fields are recommended:

- Tourism Activity
- Accommodation Facilities
- Tourism Services and Products
- Other Economic Activity
- Residential Zone
- Developable Land and Land Use
- Public Transportation
- Public Facilities and Services
- Social Issues
- Water Demand, Water Waste Treatment and Rainfall
- Energy Management
- Environment



## TOURISM ACTIVITIES

Currently, Taybeh has no specific tourism products to offer except Taybet Zaman and is therefore rarely visited by tourists. However, its location close to Wadi Musa, along the Scenic Road and its proximity to impressive natural sites, which could be discovered through hiking or biking tours etc. in the Wadi Taybeh, will allow Taybeh to become a starting point for tours and treks in and around Petra.

Taybeh already contains one wonderful tourism facility, Taybet Zaman. However, the community has not fully leveraged the economic benefits of this facility. By more properly scaling and improving the Scenic Road and extending the retail experience along the Taybet Zaman access road, tourist can be drawn into the heart of Taybeh to dine and shop. The existing facility at Taybet Zaman could be used as a point of departure for a street of shops upslope in what is currently a dilapidated, but scenic area. The restoration of the ancient buildings along the hotel entry drive from the Scenic Road could provide venues for this retail experience. The road from the Scenic Road to the hotel contains a number of old stone buildings which appear to have been partially remodeled, but not yet converted to retail uses.

This intersection of the Taybet Zaman Road and the Scenic Road also roughly falls at the center of Taybeh's retail district. The greatest potential to provide tourism revenue in the town would come from strategic investments in this area. However, the current width, traffic speed, and through bus traffic on the Scenic Road through Taybeh is not conducive to a pleasant shopping experience. Further, the pavement section in this area needs to be narrowed, principally by formally stripping and designating parking spaces (some perhaps bus parking spaces) on either side of the Scenic Road.

These measures will contribute to create a pleasant surrounding for tourists to spend time and will be of great advantage to the local population, who could open their businesses there or also have a pleasant walk.

Thus, Taybeh may become a tourist town that is meeting World-Class standards with emphasis on:

- Establish excellent accommodation facilities (guest houses, "Boutique Hotels") within Taybeh and along the Scenic road leading to Wadi Musa
- Adhering to a strict building code that will guarantee construction in the local style
- Buildings with a maximum height of up to four stories for hotels
- Creating a pleasant environment in the town center to shop and dine through regulating the traffic and allow the development of cafés, restaurants and shops along the street leading to Taybet Zamen
- Greening the town through a set up of attractive and well maintained public areas and parks

Investors from Taybeh or other parts of the Petra Region communities but also from outside should be invited. However, local participation by becoming equity partners and starting a business venture should always have precedence over simply selling land and spending the proceeds on consumer products. This could also mean to expand or duplicate some of the Public Private Partnership models, which already exist in the region.





## TOWN CENTER TOURIST AREA

The street leading from the King's road to Taybet Zaman and to the parks would be a good place to locate facilities such as shops and cafés for tourists. These would not only be targeted by visitors staying in Taybet Zaman or those staying in other accommodation facilities within Taybeh, but also to those who would come to discover Taybeh or eat in the local restaurants.

It will be important to set up shops and restaurants, which would provide an original experience and therefore attract visitors to come to Taybeh. Mainly local products should be sold here, such as the pottery ware made by the Taybeh Women Association. Especially for people staying in the hotels located at the Scenic Road the new Taybeh leisure area would provide a nice destination for hiking and biking etc., which may be more relaxed and calmer alternative to the denser areas of the Petra Area. It will be important in this context to especially support business initiatives from the local population in order to ensure that they benefit from these new facilities.



## Schematic plan locating future tourism and leisure facilities in Taybeh



A preliminary calculation with an estimate of space and construction requirements and with an indicative investment budget is shown in the table below. An estimation of possible annual revenue is indicated, together with a potential number of jobs created. A Public Private Partnership model is likely to bring the best results.

TAYBEH Town Center Tourist Area	Estimated space requirement in m2	Estimated Cost of Construction per m2 in JOD	Estimated Construction Cost Total in JOD	Estimated Cost Furnishing JOD per m2	Estimated Furnishing Cost Total in JOD
4 Shops at 50 m2	200	600	120.000	200	40.000
Café Restaurant à 120m2	120	750	90.000	250	30.000
Admin & Storage	100	600	60.000	120	12.000
Total indoor space	420		270.000		82.000
Planning & Unforseen(20%)					70.400
<b>Estimated Total</b>					<b>492.400</b>
Estimated Ratio of Public/Private Stake in the Project					<b>30:70</b>
Estimated Annual Revenue Prognosis (3% of Petra Visitors à JOD 10.-)					<b>240.000</b>
Estimated Number of Jobs Created					<b>15</b>

## TOURISM PRODUCTS

### Public Garden

Below the Scenic Road at the first intersection in Taybeh and roughly adjacent to Taibet Zaman, relatively flat land can be found. Depending upon land ownership, this land could provide a good location for the sports fields and central park, which would provide a recreation area for the local residents as well as for the visitors coming to Taybeh. Such a park would further strengthen the area around this intersection as a highly walkable amenities district for residents and tourists alike.

### Departing Point for Tracking

Just below Taybet Zaman is a quality track, which could serve as a point of departure for guided hikes into the Wadi systems below, connecting to Masoudha and Bir Mathkour. The Taybeh camps located in Al Batha should serve as waystations within this long-stay network. At the same time this would require that trails would be further developed or improved and 4x4 (Jeep) tracks repaired to connect Taybeh to the Masoudha Special Conservation Area and the larger system of camps and small guesthouses proposed. It is suggested to train specific guides for these tracks, as well as eco-guides, geology guides, Neolithic trail guides to serve the regional network of camps/trails. The Taybeh population will have the choice to decide if and how they want to be involved in this activity. Depending of their education level they would be able to join one of programs for educating guides or escorts at the AHU.

### Horse-, Donkey-Lane

The Scenic Road, where many hotels are already located, has splendid views to offer, however especially at night it is not attractive or animated. Tourists staying there are therefore complaining about

the lack of entertainment and the difficulty to move to other places from there (e.g. Wadi Musa or Taybeh). As the Scenic Road is quite large at this point it could be considered to create an extra lane for riders, horse- (or donkey-) drawn carriages and possibly bikers along the Scenic Road between Wadi Musa and Taybeh. This would allow offering rides with outstanding views particularly to the residents of the hotels, which could then ride from their hotels along this road and back. Again, if the population of Taybeh desires to be involved in this animal business they shall get the opportunity to do so.



## TOURIST HOTEL SCENIC ROAD

An additional 150 room units have been projected for expansion of the existing hotels along the Scenic Road between Wadi Musa and Taybeh. It would be preferable to expand existing facilities, which already require transportation services and which have already impacted their given sites, that to encourage sprawl into new, currently undeveloped areas of the Petra Region.

A preliminary calculation with an estimate of space and construction requirements and with an indicative investment budget is shown in the table below. An estimation of possible annual revenue is indicated, together with a potential number of jobs created.

<b>TAYBEH 4-Star 150 room Tourist Hotel along Scenic Road</b>	Estimated space requirement in m2	Estimated Cost Construction / Landscaping JOD per m2	Estimated Construction Cost Total in JOD	Estimated Cost Furnishing JOD per m2	Estimated Furnishing Cost Total in JOD
Land Needed (no parking, little landscaping)	8.000	40	320.000	0	0
150 Rooms at 45 m2	6.750	900	6.075.000	200	1.350.000
Restaurant	600	1.000	600.000	400	240.000
Recreation & Entertainment	800	1.200	960.000	300	240.000
Admin & Storage	600	900	540.000	180	108.000
Total indoor space	8.750		8.495.000		1.938.000
Pool & Outdoor Activities	1.000	400	400.000	150	150.000
Planning & Unforseen(20%)					2.086.600
<b>Estimated Total</b>					<b>12.519.600</b>
Estimated Ratio of Public/Private Stake in the Project					<b>00:100</b>
Estimated Annual Revenue Prognosis (55% Occu-pancy à JOD 140.--revenue/room)					<b>4.215.750</b>
Estimated Number of Jobs Created					<b>135</b>







## TOURIST HOTEL TAYBEH

Overall, the creation of another 200 hotel rooms in Taybeh is recommended. These would ideally be located near or adjacent to the existing Taybet Zaman and would extend the tourism district from Taybet Zaman up to the Scenic Road. These rooms could be configured as one major branded hotel or a series of smaller boutique hotels, or still more guest houses, depending upon the desires of local residents.

It is proposed to start the tourism development in Taybeh by attracting investors to construct a new medium-sized hotel resort (about 60 rooms) near the entrance to Taybeh as a high-quality standard accommodation. This resort would be constructed in a "local" traditional style and should provide a relaxing place for visitors who do not wish to stay in the busier tourist areas of the Petra Region.

A preliminary calculation with an estimate of space and construction requirements and with an indicative investment budget is shown in the table above. An estimation of possible annual revenue is indicated, together with a potential number of jobs created.

<b>TAYBEH</b>	<b>3-</b>	Estimated space requirement in m2	Estimated Cost Construction / Landscaping JOD per m2	Estimated Construction Cost Total in JOD	Estimated Cost Furnishing JOD per m2	Estimated Furnishing Cost Total in JOD
<b>Star 60 room Tourist Hotel</b>						
Land Needed (no parking, little landscaping)		800	40	32.000	0	0
60 Rooms at 30 m2		1.800	800	1.440.000	150	270.000
Restaurant		300	800	240.000	300	90.000
Admin & Storage		200	600	120.000	150	30.000
Total indoor space		2.300		1.832.000		390.000
Planning & Unforeseen(20%)						444.400
<b>Estimated Total</b>						<b>2.666.400</b>
Estimated Ratio of Public/Private Stake in the Project						<b>00:100</b>
Estimated Annual Revenue Prognosis (50% Occu-pancy à JOD 90.--revenue/room)						<b>985.500</b>
Estimated Number of Jobs Created						<b>40</b>

## OTHER ECONOMIC ACTIVITIES

In addition to income opportunities directly related to tourism there are several possibilities of no or only indirect involvement with the tourism sector, allowing for more economic diversification. This would especially offering women a chance to find suitable job opportunities. One of these options is the production of unique high-quality souvenirs, which has already started in Taybeh.

### Handicraft Production

The Taybeh Women Association, established in 2005 to enhance the quality of life for women and their families in the Wadi Musa/Taybeh area, is producing handmade pottery ware modeled after ancient Nabataean designs. The cooperative owns a retail outlet that is strategically located on the main road of Taybeh, however only few visitors are stopping by as it is off the main tourist circuit revolving mainly around Wadi Musa.

As it is frequently the case with regional cooperatives, they are lacking marketing strategies, which are urgently needed for their future development. Besides selling their products to tourists coming to visit Taybeh, it would be important that the inhabitants of Taybeh also get shop spaces in a new Souq that would be strategically located at the entrance of the Petra Archaeological Park. In order to be able to compete and add value to the local handicraft products it will be crucial to sell unique, traditional pieces in Taybeh. The new tourism district in Taybeh would help to the better promote the sales of their ceramics.

The set up of new associations specialized in the creation of other types of original handicraft should be well supported, if the local population wishes to be involved and has sound business ideas.

### Pottery Making Session and Creative Holiday Programs

In addition, pottery making and other handicraft sessions could be initiated which would allow visitors to watch the women of the association making their products and even learn themselves to do these kind of products. This offer could be extended to providing special creative-holiday programs, where participants could learn about the local arts and crafts through visiting the heritage of the region, and at same time be creative themselves through learning how to make pottery. This type of offer would attract another type of tourist and significantly contribute to extend their stay in the region.



## BIOLOGICAL VEGETABLE FARMING

Another option for economic diversification is to revitalize the local agriculture on which the economy of the Petra Region has traditionally relied in the past. The importance of agriculture has diminished compared to tourism because of the higher income possibilities in tourism and the increasingly difficult climatic conditions for agriculture. However, agriculture and pastoral farming also have an important tourism - and social - dimension since they preserve the indigenous local cultures. Introducing small-scale agriculture to grow local products could augment income through the sale of farm and garden products, which can be sold to the local touristic infrastructure (e.g. hotels, restaurants). Therefore it is suggested that the Taybeh population sets up several middle-sized greenhouses allowing to farm different types of vegetables.

A preliminary calculation with an estimate of space and construction requirements and with an indicative investment budget is shown in the table below. An estimation of possible annual revenue is indicated, together with a potential number of jobs created. A Public Private Partnership model is likely to bring the best results.

		Estimated Ratio of Public/Private Stake in the Project		50:50	
		Estimated Annual Revenue Prognosis		500.000	
		Estimated Number of Jobs Created		35	
TAYBEH Biological Vegetable Farming for the Petra Tourism Industry	Esti space requirement in m2	Construction per m2 in JOD	Construction Cost Total in JOD	Estimated Cost Furnishing JOD per m2	Estimated Furnishing Cost Total in JOD
Land Needed for Glass Houses	5.000	40	200.000	0	0
20 Glass Houses at 22X6 m2	2.640	20	52.800	50	132.000
Admin & Storage	500	500	250.000	150	75.000
Total indoor space	3.140		502.800		207.000
Planning & Unforseen(20%)					141.960
<b>Estimated Total</b>					<b>851.760</b>



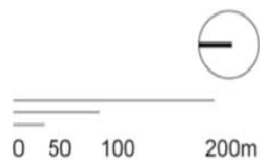


## Taybeh Town Plan - An Example for Future Development



### LEGEND

- |   |                         |                             |
|---|-------------------------|-----------------------------|
| 1 | Public Garden at Mosque | --- Bus Route - Regional    |
| 2 | Public Parking          | ..... 500m walking distance |
| 3 | Town Park               |                             |
| 4 | Post Office             |                             |
| 5 | School                  |                             |
| 6 | Beit Zaman              |                             |
| 7 | Enhanced Park at        |                             |



D E U

## DEVELOPMENT OF RESIDENTIAL NEIGHBORHOOD

The existing municipal center of Taybeh is envisioned as a combination of residential, service and commercial areas, supplemented by adequate amounts of open space. In this way, a mix of uses shall be achieved to keep the center vital. It is aimed that people in Taybeh identify with their hometown. This can be achieved by creating an attractive city center where locals but also tourists passing by like to take a short break, do their groceries and meet friends. Therefore, attractive public space is essential to ensure a pleasant atmosphere in the city center.

Neighborhood centers will be located in-between the residential expansion areas and will offer the most important communal central functions. The living quality of area residents will be greatly enhanced by local service facilities within walking distance of their homes. These services would include a mosque, elementary and middle schools, a neighborhood park and playground, as well as local shops. It is anticipated that these neighborhood centers will require approximately forty donum each. The precise location and configuration of the smaller local centers should be determined at the time the residential areas they serve are developed. The Land Use Plan represented on the following page only shows diagrammatically where these neighborhood centers could possibly be located.

The neighborhood centers must not compete against, but rather supplement the main city center of Taybeh. They shall cover the expanded community area in a way that all newly built residences will be located within a five minutes walking radius to a local center.

Thus, a network of local centers connected through attractive walkways shall be established for Taybeh.

The Town Plan provides an impression of how Taybeh could possibly develop and where the main infrastructure services could be located.

## PUBLIC TRANSPORTATION

Regarding the future development of public transport in Taybeh, the aim is to serve all residences with a bus station within 500-meter walking distance. Under present conditions and in the short run (three or seven years) a state-of-the-art bus system is recommended to ease the obvious problems with public transport in the region. The Petra bus system should be established as quickly as possible and should integrate the concept of a new Regional Transportation Facility (Interception Lot) at the main access roads to Wadi Musa from Amman, Maan and Aqaba; the planned bus from the back exit of Park near Umm Sayhoun should be linked with the new system, which would completely replace the current public transportation system.

It is proposed as a system for the local population and for tourists alike:

- For the local population it is recommended to offer a ticket for protected parking at the Regional Transport Facility with a bus ticket for maximum user comfort. This should motivate local residents who do not use their cars for commercial purposes to use public transportation instead.
- For tourists, the price for using the buses ought to be included in their PAP Entrance ticket, so they can use the busses of all lines in a hop-on/hop-off way that will motivate them to visit other tourism attractions and installations in all parts of the Petra Region, which in turn will be of great benefit to the local business community.

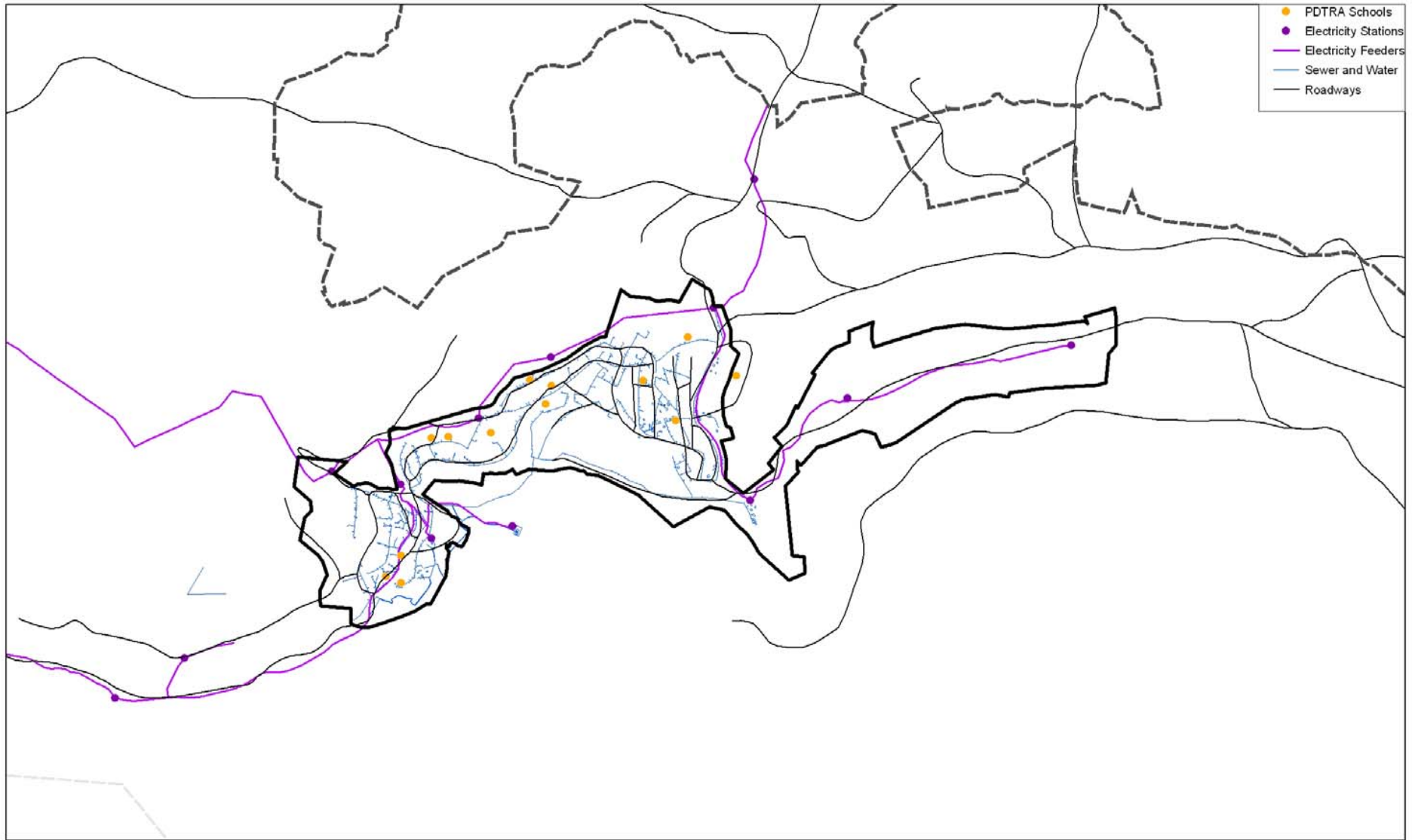
### Proposed new Bus system



For the Taybeh community, only the Blue Line will be of direct relevance (the other lines only when changing busses). The Blue Line leads from Baidha to Dlagma (about 40km) and serves as the regional line to meet the needs of both the local population and the tourists who are accommodated outside of the very center (i.e. along the Scenic Road or in the villages or camps in the vicinity).

The blue bus line is anticipated to have an average turnaround time of about 96 minutes (Baidha-Dlagma-Baidha, incl. stops) and a capacity of 50 persons per bus, causing an average needed number of busses of 10 and a frequency of 6 busses per hour and direction.





## **PUBLIC FACILITIES AND SERVICES**

In general, infrastructural facilities in the Taybeh community are in good condition. Especially the proximity to Wadi Musa allows the area to benefit from public services provided in Wadi Musa.

### **Parks**

Workshop discussions with the residents of the region suggest that there is a substantial shortfall of developed recreation areas within the communities. Land for active recreation - where it does exist - is comprised primarily of school grounds. While these areas do provide some room for active recreation for children, there is little ground for active recreation for adults. However, even the dimension and quality of sports fields at schools are often inadequate.

A lack of public spaces, parks and sports centers (e.g. youth centers for boys and girls) is noticed for the Taybeh community. However, there currently is an existing park area of 72 donum and six sports fields located. Until the year 2030, calculations project a need for 131 donum new park areas and eleven more sports fields.

### **Police and Fire Protection**

Taybeh currently has one Police or "Civil Defense" (emergency service) station.

### **Places of Worship**

Generally, places of worship are financed by the private sector. However, additional mosques will need to be created over time. By calculating the ratio of the current population to places of worship, the future needs of the region can be estimated. Taybeh currently is well served by three mosques. Until 2030 one more places of worship could be needed.

### **Location of Public Facilities and Services**

Ideally, the sites for all these service providers will be clustered in each neighborhood with schools, parks, medical facilities, and retail facilities in order to create cohesive community centers for each neighborhood.

By placing housing within easy walking distance of all services, the transportation needs of the community can be reduced. As the development within the Petra Region expands into new areas, sufficient public space needs to be set aside for such new all-round service centers to serve the new residents.

### **Information and Communication Technology (ICT)**

Public services and Information & Communication Technology (ICT) networks are lacking in parts of the Petra Region, resulting in unequal opportunities for business and tourism. Taybeh is one of the communities better equipped with basic ICT infrastructure.

The Internet plays a fundamental role in education, not only as a source of information, but also to enroll in universities, identifying education and job opportunities as well as to participate in courses and classes that are supported by online tools. Therefore, it is a common objective to ensure the equal provision of basic Information and Communication Technology (ICT) networks throughout the Petra Region. For Taybeh as one of the advantaged communities, the need for action is not as big as for the more peripheral and more rural communities of the region. However, area-wide Internet access for the community and at least the maintaining of current standards of ICT infrastructure as well as the conducting of some necessary improvements need to be ensured for the future.

## SOCIAL ISSUES

### Education

At the moment Taybeh is well served with thirteen existing schools, which are all located within a 500-meter walking distance from the residences. Based on the existing ratios of schools to population in the Petra Region and an assumed 3.5% population growth rate, it is estimated that until the year 2030 Taybeh will require at least another thirteen schools. These ratios should be considered a minimum, as separate schools for girls and boys as well as for schools with different education levels may be needed.

The existing schools in Taybeh are recommended to upgrade their equipment and facilities such as science labs, computer labs and sports facilities. Offering modern equipment, with possibilities for self-studying (e.g. Internet access) and a wide range of different study subjects at school is an essential way to enable children to fully explore their talents and acquire a sound knowledge-base which is required for their future careers. However, girls who desire to increase their knowledge and skills in fields not generally perceived as suitable for them (e.g. tourism) feel restrained due to social norms. Therefore, it is important to develop specific awareness programs regarding the challenges girls and women are facing.

#### Recommendations:

- Better equip schools with – among other things - computers with Internet, sports and science equipments, a library, etc.
- Develop specific educational trainings and awareness raising programs and curricula to promote education skills. This may have the advantage to reinforce culture and promote the value of Petra communities and solve specific social issues.

### Health & Medicinal Infrastructure

Currently one clinic/health care center for ambulatory patients is located in Taybeh, but no hospital. However, the proximity to the regional hospital (the Queen Rania Hospital is located on a mountain plateau above the Scenic Road between Wadi Musa and Taybeh) provides important medical services to the Taybeh population.

It is recommended to improve and extend the services of the existing clinic by providing adequate equipment and offering consultation hours by specialized doctors such as for children allergies or gynecologists. It is also important to provide more medical advice on the issue of reproductive health and related awareness raising campaigns, which allows for better family planning and prevents women from potential health threats.

Until 2030 Taybeh needs at least one more clinic/health care center (based on an analysis of ratios of medical facilities to population in the Petra Region and an assumed annual population growth of 3.5%). However, a more detailed assessment of the health care needs of the Petra Region in general and Taybeh in particular is needed.

#### Recommendations:

- Increase the awareness on women's reproductive health, especially regarding the potentially negative effects of early marriages on female health. This could be done through specific programs run in the local clinic in cooperation with girls schools and associations in Taybeh.
- Provide couples that intend to get married with a free medical test in the local clinic in order to check the possibility of hav-

ing mentally challenged children. This test is provided in Amman and published through special programs done by religious leaders (Muslim & Christian) and the Ministry of Health.

### **Discrimination**

Especially women are lacking employment opportunities in Taybeh. Cultural norms are impeding them from working in the tourism industry and are further limiting their income earning possibilities. Another issue is that the Taybeh population feels disadvantaged compared to workers coming from outside the Petra Region or Jordan, as locals are paid lower wages when they work in local tourism facilities. Furthermore, non-locals own the biggest tourism infrastructure in town -Taybet Zaman - and the Taybeh population feels that the hotel employs not enough locals.

#### Recommendations:

- Develop other potential fields of employment not related to tourism, thus, providing suitable job opportunities especially for women such as for instance the cultivation of agricultural products for the tourism industry (e.g. restaurants, hotels).
- Support the establishment of a dynamic women's center, which provides Internet access and useful training classes to improve women's skills.
- Support local business ideas for tourism facilities and provide easier access to specialized training in the tourism field in order to have highly-qualified local workforce available. This is expected to enable locals to benefit from better income opportunities in the tourism industry.

### **Potential Influence of Tourism on Traditions and Culture**

Even if Taybeh is adjacent to Wadi Musa and located close to the main tourism attractions and facilities, only few visitors are coming to Taybeh and few facilities are catered to them. The population has brought forward many ideas on how to increase their involvement in tourism and no concerns about the influence of tourism on their culture and traditions were raised. This lack of awareness of the negative impact of tourism can be explained that unlike the "Southern peripheral communities" the population of Taybeh is less conservative and worried about the possibility of losing their traditions.

#### Recommendations:

- Raise the awareness of the Taybeh inhabitants on issues that might arise from increased influence from foreign cultures brought in through the tourists.
- Involve the Taybeh population actively in the plans for their community.
- Create a forum to discuss new and existing ideas regarding the involvement in tourism as well as its potential - positive and negative - impact on the community, which can result from foreign influences. The necessary steps in order to implement these ideas may be discussed in the forum as well.



## WATER - WASTEWATER TREATMENT & RAINFALL FLOODS

### Water Supply

Water supply within Jordan is regulated by the national government. The per-capita water allotment in Maan Governorate for the year 2007 was 214 liter per day. Due to water scarcity in Jordan this rate may well be lowered.

The water is currently supplied using ground water from the well fields in the region such as Qaa Well Field. In order to satisfy the growing demand for water, other sources need to be explored. The following options have been studied or are under construction:

- The Disi Conveyer: The work on this project started at the beginning of 2010 and will likely be completed by the year 2012. The new conveyer that is built will supply Amman with groundwater from the Disi-Mudawarra groundwater aquifer in the South of Jordan. The route of this project will pass along the desert highway about 30km to the East of Petra Region and building intake from the conveyer to PDTR may supply water to the region.
- Red-Dead Canal: This project foresees a canal from the Red Sea in Aqaba to the Dead Sea that will utilize gravity flow over most of the route. The hydropower will be used to generate electricity where part of that power will be used to desalinate seawater or brackish water from Wadi Araba ground water aquifer. This project is still in the study phase.
- Developing existing or new ground water well fields.

Overall, a lack of water supply, especially for agricultural purposes, is noticed in Taybeh.

### Wastewater Treatment

Taybeh is connected to the sewer system. The current Waste Water Treatment Plant (WWTP) is designed to treat 3,400 cubic meters per day and with the projected generated wastewater rate of 7,190 m<sup>3</sup>/d by the year 2030, this WWTP needs expansion to accommodate another 3,800 m<sup>3</sup>/d.

In addition, the main conveyer serving wastewater from Wadi Musa and the other communities to the WWTP needs to be redesigned to accommodate the growing wastewater volumes.

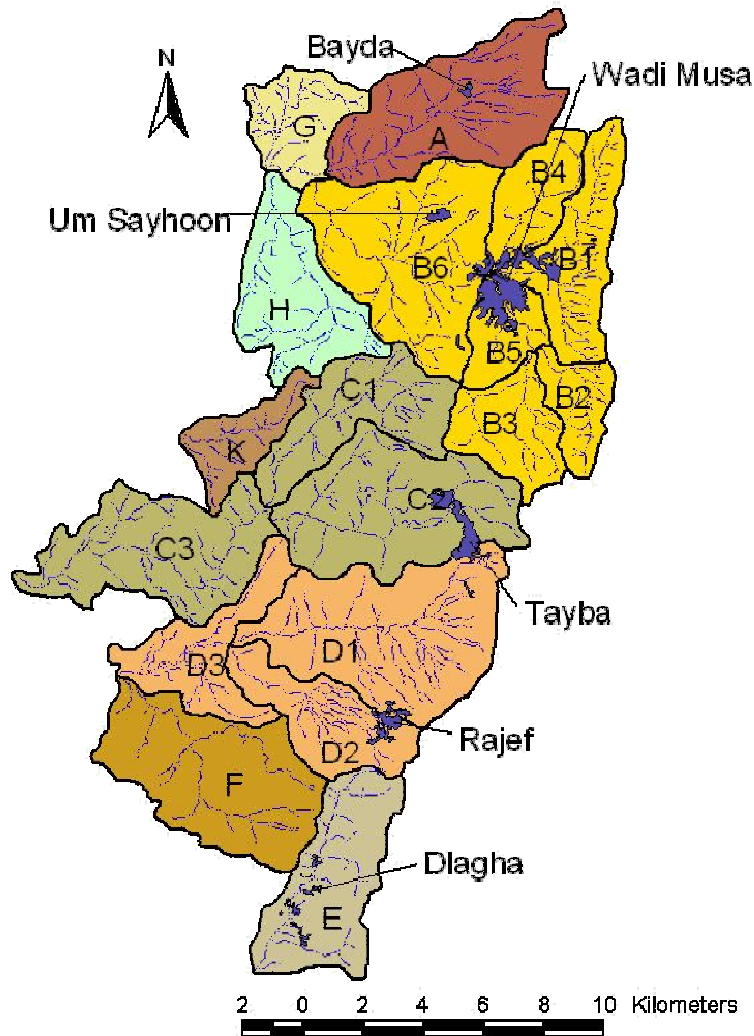
### Rainfall Floods

From an environmental perspective it does not make sense to look at the Region's communities simply as municipalities (*tanzimat*) isolated from their natural (and particularly hydrological) context.

The map on the next page shows the water catchments A, C, D, E, F, G, H and K lying within the Petra Region. These catchments can be used for water harvesting (i.e. to collect and store water for agriculture uses such as limited vegetable farming and animal watering).

The estimated volumes total runoff water from these catchments and their sub-catchments is about 2.9 million cubic meters. This water can be collected and stored using simple water systems such as small earth dams and ponds.

### Water Catchments in the Petra Region



The Taybeh area is defined as according to the Watersheds C1 to C3 as shown on the graph overleaf that are collecting floodwater and drain it into Wadi Araba to the West. Catchment area C2 extends over about 28,460 donum. The runoff volume is based on an average annual rainfall of 150 mm and a runoff coefficient of 8% results in about 0.34 million m<sup>3</sup>.

A flood protection and drainage system will become of great importance as the community of Taybeh grows. More open areas and fewer built areas would help to retain the runoff and increase water storage in the soil profiles.

## ENERGY MANAGEMENT

Energy use data with the PDTRA is not readily accessible. The Annual Report of the Ministry of Energy and Mineral Resources indicates that the average per capita use of electricity in Jordan is 1,999 kilowatt hours per year, or roughly one fourth of energy usage in the United States or Western Europe. This average figure does not, however, consider the considerable demand placed upon the system by hotels and other tourism facilities.

Taybeh is connected to the regional electricity network; there are one electricity station inside, and two stations just outside of the municipal area.

In the future, alternative energy sources shall be strongly focused on as a contribution to turn Taybeh into an eco-friendly community.

The implementation of “green” buildings standards for all structures within Taybeh will place an emphasis on energy conservation and help to reduce peak demand. Consideration should be given to the creation of solar arrays and/or wind turbine energy generation to provide green energy to Taybeh. Such facilities should, however, be located out of view of visitors to the Petra Archaeological Park and Scenic Road.

The Master Strategy for the Energy Sector in Jordan (2007 to 2020) includes some recommendations on the rational use of energy and the utilization of renewable energies, which are also valid for Taybeh and the whole Petra Region and whose application is highly recommended.



## ENVIRONMENT

For environmental considerations the Taybeh area is defined according to the Watersheds C1 - C3 as shown in the graph on page 41.

### **Soil Conservation/Erosion Control**

Soil conservation, erosion control and the effective banking of rain-water are accomplished by exactly the same measures. Terracing along the contour lines (i.e., perpendicular to runoff flow) achieves all of these desirable results. Such terracing, intensified within walking distance of Taybeh community, actually creates a context for small-scale agriculture to develop organic/regional products for local boutique restaurants and to develop small-scale farming of medicinal and aromatic plants.

Recommendations:

- Intensive terracing for small-scale agricultural plots within 500m of settled areas.

### **Rehabilitation and Re-Introduction of Historic Water Systems**

Throughout the region Nabataean and other historic water systems (often including terracing) still exist and many remain partially effective today even in their current state of disrepair. The existing remains of dams, check-dams, cisterns, wells, channels and terraces are strong clues to local hydrology and present basic infrastructure, which can be inexpensively rehabilitated for effective water conservation. These measures supply high-quality water for small-scale agriculture and animal husbandry – water that is now largely a wasted resource due to runoff.

The historic remains are plain evidence of sustainability: they still exist, and they are still working, despite the virtual absence of maintenance or inputs for decades in some cases, for centuries in most. Adapting their design for use today is an obvious measure. Furthermore, both the historic remains and the modern adaptations and innovations should be interpreted for the public.

There is no point in building huge protective structures designed for catastrophic events which are generally useless for most of the time and which then turn out to be insufficient when an exceptional flood does occur. It would be more appropriate to introduce a policy of small-scale hydraulic works, repairing banks and barrages, protecting the soil, preventing the formation of big floods by separately controlling the numerous tributaries and by holding back the water on the slopes.

Policy ought to be developed to manage water harvesting in such a way that downstream landowners are not deprived by upstream catchment. Likewise management of springs should be regulated so that springs on government lands may be exploited cooperatively, as are the waters of Ain Musa in Wadi Musa. The use of water from springs on private lands must also be regulated so that some water is released into the wadi systems to sustain the ecosystem and rangelands downslope.

Recommendations:

- Upper watershed (above 1,015m asl): simple, low-intervention, broad-scale terracing based on existing terraces throughout the region.
- Lower watershed (from 1,015m asl): larger dams for animals.



- Rehabilitate springs along “tor”. (“Tor” is a term used by the local population to designate a thick/tall stratum of sandstone that runs from Shaubak all the way South of Dlagha, on which most villages were originally established as it is perforated with springs.)
- Monitor the use of the springs on the “tor”, to allow some water to return to the ecosystem.
- Make roof and hardscape water catchment a building code requirement in Taybeh municipality (as in other municipalities).

### **Re-vegetation and Range Management**

Reforestation/re-vegetation stabilizes slopes, creates shade, banks rainwater, and creates contexts for tourism use while promoting biodiversity for a generally healthy ecosystem. The PAPOP guidelines already exist and are excellent, balancing the realities of conservation and environmental change. In order to halt the continuing existing damage to the remaining forest and to protect reforestation efforts, rangers must be hired and empowered to enforce existing forestry laws. The penalties especially for damage to old-growth trees needs to be intensified so that the penalty exceeds the value of the firewood thus obtained.

Managed grazing regimes protect sensitive ecosystem areas and sustainably exploit less sensitive areas. Zoning for tourism (intensive, medium, light use areas, designated and managed picnic areas) will create a more efficient context for trash and services management, will protect sensitive ecosystem areas and will exploit less sensitive areas in a sustainable way.

Within the context of tourism zoning, the development of trails creates infrastructure for extended stay activities, e.g., hikes, rides, camps and lodges and defines where horses, pack animals, hikers

and vehicles respectively, will be allowed or disallowed. In addition, road construction and unregulated off-road driving should be strictly prohibited to avoid further negative impact on soils and vegetation.

### **Recommendations:**

- At a broad scale, allow steppe vegetation to rejuvenate naturally.
- Evaluate a seed bank. If necessary seed the watershed with native seed collected from local plants.
- Where broad-scale, low-intervention terracing is implemented (not including agricultural land), vegetation should be allowed to recover naturally.
- Relieve pressure from steppe/range by implementing broad scale range management measures.
- Implement locally appropriate grazing and range management regime based on biomass and herd assessments.



## LIST OF ABBREVIATIONS

AHU	Al-Hussein Bin Talal University
asl	Above Sea Level
CBRR	Community-Based Rangeland Rehabilitation
DOS	Department of Statistics of the Hashemite Kingdom of Jordan
GIS	Geological Information System
ICT	Information and Communication Technology
IT	Information Technology
JOD	Jordanian Dinar
M&A	Medical & Aromatic
NGO	Non-Governmental Organization
PAP	Petra Archaeological Park
PAPOP	Petra Archaeological Park Operational Plan
PDTR	Petra Development and Tourism Region
PDTRA	Petra Development and Tourism Region Agency
PNT	Petra National Trust
R&D	Research and Development
RSCN	Royal Society for Conservation of Nature
RTF	Regional Transportation Facility
SWOT	Strengths, Weaknesses, Opportunities and Threats
UNESCO	United Nations Educational, Scientific and Cultural Organization
WWTP	Waste Water Treatment Plant