

## **Chapter 3 Tourist Trails and Panorama Lookouts**

The proposed route and site of Tourist Trails and Public Spaces have been selected from those streets and pedestrian paths as well as focal points (historical houses and landmarks) and nodes (public spaces and plazas) relevant to enhance the concept of Eco-Museum in the Old Salt.

Because the hilly terrain of Salt creates a unique landscape with those historical developments in the Ottoman days, walks between the narrow and meandering ancient facades and courtyards are exciting for tourists.

In order to improve the walking environment for tourists and people of Salt, this work-component has been designed.

### **3.1. Existing Conditions**

#### **3.1.1. Location**

(1) Location

1) Tourist Trails

The proposed tourist trails stretch approximately 7km between the city centre of Old Salt, Suq Hammam, and 4 panorama lookouts in higher locations. Within those tourist trails, Model Tourist Trails were selected, total length 2.3km (900m for stone pavement and 1.4km for asphalt pavement), linking Suq Hammam with landmarks and historical buildings, which are significant in terms of various heritage values and authenticity of Salt.

2) Panorama Lookouts

As for the 4 Panorama Lookouts, two panorama lookouts are situated a short walking distance from Suq Hammam on the northern and southern slopes, and other two are situated at higher locations, one at Hill-top Park with a children's playground and another at Madrassa, the oldest high school in Jordan.

3) Public Spaces

4 Public Spaces are nominated in conjunction with the Model Tourist Trails, where urgent solutions are required to ease congested car parking problems and have a potential for improving as key nodes for pedestrians, at As Sa'aha, Baladia Plaza, Maydan Plaza and Hammam Plaza.

The location of these components is shown in Figure 1.1.

#### **3.1.2. Site conditions**

(1) Tourist Trails

Most trails selected for the Model Tourist Trails are on steep steps meandering between old houses and courtyards constructed in the Golden Age of Salt.

Because Salt City developed on a steep hilly terrain, pedestrian paths and courtyards merge with public and semi-public spaces to create an enclosed unique atmosphere and experience without interference of vehicles.

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(2) Panorama Lookout Points

Panorama lookouts were selected at vacant land on slopes along Tourist Trails where panoramic views of the city centre can be enjoyed. Two sites near the city centre are allocated, both on narrow strips of land with existing trees and shrubs along adjacent roads.

A panorama lookout at Hilltop Park is situated below the children's playground overlooking one of best panoramic views to the whole city of Salt. The site is always busy with the children playing in the park after school hours and has relatively wide space with pine and eucalyptus trees planted recently.

Another panorama lookout is located under the school plaza at Madrassa. The site is already organised in the terraced school gardens and has a nice stand of old pine trees.

(3) Public Spaces

There are 4 Public spaces to be improved to enhance tourism in Salt.

Sa'aha (the Central Plaza) is located at the west entry point of Suq Hammam, surrounded by Salt Ground Mosque, the Daoud Triangle, and the buildings of the Ministry of Education and the Police Department. During the Golden Age of Salt, Sa'aha was the centre of government, business and social activities. However, due to the introduction of heavy traffic flows by motor vehicles in the modern age, Sa'aha lost the spirit and sense of the place, and now it exists merely as a traffic node, except the large shaded tree stands in the island park and a remembrance of Ain (a creek) which flew in the site.

Baladia Plaza is located at the T-intersection of Baladia Street and Suq Hammam. The Plaza is a vital location for both shop owners for their deliveries of goods and for customers' access to the middle of the Suq. However, the Plaza is presently occupied by cars parking on site and openness of the space is lost.

Maydan Plaza is located at the T-intersection of Baladia Street and Maydan Street. The major feature of this area for tourists is the Cultural Centre, which is situated at the entry location to Salt coming from Amman. However, because the site is an important intersection for motor vehicles, it is difficult to develop only for pedestrians.

Hammam Plaza is located at the T-intersection of Maydan Street and Hammam Street. Taxis and private cars parking on site presently occupy the Plaza. The Plaza is an important access point for shop owners for their deliveries of goods and the east entry point of Suq Hammam.

### 3.1.3. Physical Conditions Survey

(1) Topographic Survey

Topographic Surveys were conducted in the following manner:

1) Tourist Trails

Plane table survey for the trails 2.3km long to provide plans at a scale of 1/200.

2) Public spaces

Plane table survey with an optical micrometer system for 4 public spaces to provide plans at a scale of 1/200.

3) Panorama lookouts

Boundary and topographic survey with an optical micrometer system for 4 lookouts to provide plans at a scale of 1/200.

- (2) Soil Investigations

### **3.1.4. Major issues of Tourist Trails**

- (1) Constraints along the trails and lookouts
- Lack of amenities and comforts to draw attention of pedestrian tourists
  - No seating or sheltered places along the Trails and Lookouts
  - Monotonous pedestrian walks with straight lines of concrete
  - Steep slopes and steps
  - Degraded scenes created by modern intrusions onto historical façade
  - Rainwater drainage problems primarily due to its hilly terrain
  - Lack of safety measures
- (2) Constraints on the public spaces
- Disordered car parking problems
  - Heavy vehicle traffic along the roads beside the spaces
  - No seating or sheltered place for pedestrians
  - No clear demarcation of vehicles and pedestrians

### **3.2. Review of Scope of Work**

Based on a series of discussions with the Technical Committee representing Salt Municipality, as well as various site investigations, the scope of the Tourist Trails and Public Spaces work-component was reviewed and confirmed with the Jordan side.

#### **3.2.1. Comparison of scope**

A comparison of the proposed facility component and scope with the SAPROF Study is shown below:

**Table 3.1 Comparison of Scope between SAPROF and this Study (1)**

SAPROF Study	JICA D/D Study
1) For all Tourist Trails including Model Tourist Trails - Providing interpretation board for major buildings of interest - Providing attractive signs at major corners and at adequate intervals	1) For all Tourist Trails including Model Tourist Trails - Providing interpretation board for major buildings of interest - Providing attractive signs at major corners and at adequate intervals
2) For all Model Tourist Trails - Improving physical structure of trails (pavement, drainage, water supply piping, lighting, garbage collection, etc)	2)-1 Stone pavement for Model Tourist Trails 2)-2 Asphalt pavement for Model Tourist Trails - Improving physical structure of trails (pavement, drainage, water supply piping, lighting, garbage collection, etc) - Improvement of the existing facades with paint and plastering where applicable - Introduction of Wooden Pergolas and flower benches.
3) Providing 5 panorama lookout points with shelter, benches, panorama map and rubbish bins	3) Providing 4 panorama lookout points with shelter, benches, panorama map, planting and rubbish bins
4) For selected 4 Tourist Nodes - Improving physical structure (pavement, landscaping, drainage, parking, lighting, etc) - Providing Town Guide Map board - Providing attractive street furniture and art works	4) For selected 4 Tourist Nodes - Improving physical structure (pavement, landscaping, drainage, water supply piping underground electric wiring, parking, lighting, etc) - Providing Town Guide Map board - Providing attractive street furniture and art works
5) Establishing following encouragement measures - Guidelines for the suitable building façade and activities - Incentives and guidance for the establishment of high standard souvenir shops, restaurants, stylish hotels	5) Providing following enhancement measures - Recommendations for the suitable building façade and activities - Recommendations to adapt and enhance 5 selected historical houses within the historical city core in close geographic relationship with the tourist trails (e.g. building of small bakery 20 m <sup>2</sup> )

Source: JICA Study Team

### 3.2.2. Major Changes from SAPROF Study

As shown in the above table, the major changes in the scope of the work-component are as follows:

(1) Pavement materials

As a result of discussions with the Technical Committee, the location of the subject tourist trails were determined with the type of pavement materials to be applied. New stone pavement will be applied to approximately 900m of tourist trails and new asphalt pavement will be applied to approximately 1,400m of tourist trails.

(2) Reduction in the number of panorama lookout points

Originally, the number of panorama lookout points was five. As a result of discussions with the Technical Committee, however, it was decided that one panorama lookout point was to be excluded from the scope due to unavailability of land, and the total number of the panorama lookout points became four.

(3) Improvement of Façade

Originally, improvement of façades was made only as a form of recommendation in the scope. As a result of the study and discussions with the Technical Committee, however, it was decided that prominent façades need to be improved in order to enhance the project.

Therefore, improvement of facades was included in the scope, provided that the subject façades should be limited only to public buildings.

(4) Enhancement measure

Instead of establishing general guidelines for the enhancement measure, concrete recommendations for functions and improvement in particular buildings will be made in order to improve the effectiveness of the work-component.

In this regard, five historical houses were selected along the Model Tourist Trails for an enhancement measure in order to recommend future usage and functions for the buildings and to facilitate some engineering guidelines.

(5) Encouragement of community participation

In order to implement the project successfully as well as maintain sustainability of the project, community participation will be encouraged. PMU, MOTA in co-ordination with Salt Municipality will execute the opinion survey and hold awareness meetings with the local community of Salt.

### 3.2.3. Work Items

The followings are the work items included in this Component according to the study results on the existing conditions and the review of the SAPROF Study as well as discussions with the responsible agency(ies).

(1) Signage

Provision of interpretation and orientation boards and direction signs for tourists and pedestrians along Tourist Trails (7.0km long) at major corners or prominent locations.

(2) Model Tourist Trails

- Stone pavement for a length of 900m, and
- Asphalt pavement for a length of 1.4km

Small pedestrian paths as a Model Tourist Trail with provision of pavement, street furniture, lighting and improvement of sub-surface utilities, in order to provide;

- 1) Pedestrian linkage among tourism assets and historical houses.
- 2) Design solutions with safe, comfortable and pleasing trails to walk on.

(3) Panorama Lookouts (4 places)

Development of panorama lookouts of more than 200m<sup>2</sup> each along the Model Tourist Trails with the provision of shelters, benches, safety measures, pavement, planting and signs, in order for tourists and pedestrians to enjoy panoramic views and to rest along their way.

(4) Public Spaces

Improvement of 4 public spaces in As Sa'aha, Baladia Plaza, Maydan Plaza and Hammam Plaza, including with the improvement of pavement, planting, street furniture, car parking, lighting and sub-surface utilities.

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(5) Enhancement Measures

Five historical houses were selected along the Model Tourist Trails for an enhancement measure in order to recommend future usage and functions for the buildings and to facilitate some engineering guidelines. The selected historical houses include; Said al Bahara School in al Jada', the second floor from top of the Sukkar House in al Jada', the bakery in the Rummanat stairs, Dawoud House overlooking the Ain Plaza, and the Hmoud House overlooking Maydan Plaza.

### **3.3. Design Premises**

#### **3.3.1. Design Standard**

(1) General

- Jordanian codes and standards
- BSS/BSI: British Standards and Codes of Practice

(2) Mechanical

The design of the mechanical work shall generally be in accordance with the following standards, codes, and regulations where applicable:

- ASHRAE: American Society of Heating, Refrigeration and Air Conditioning Engineers.
- LPC: Loss Prevention Council.
- CIBSE: The Chartered Institution of Building Services Engineers-U.K
- General and specific requirements of the local water and drainage authority, local public health officer, and the regulations of the local Civil Defence Department.

(3) Electrical

Design will be mainly based on the following standards and shall be carried out accordingly:

- National Electrical Code (NEC).
- International Electrical and Electronics Engineers Association Regulations (IEEE).
- National Fire Protection Code (NFPA).
- The requirements of Jordan Civil Defence Department.
- The Jordan Telecommunication Corporation requirements.

Any other standards and/or regulations and/or codes of practice and norms issued by institutes and or authorities of other countries such as Japan and Europe, provided they are found applicable and acceptable to perform the job.

#### **3.3.2. Planning and Design Criteria**

In order to achieve comfort and convenience of pedestrians, while maintaining the variation of spatial sequential experiences of tourists, the following functions and aspects should carefully be integrated into the Design:

(1) Spatial Criteria

Spatial modulation of the trails should be considered both horizontally and vertically, thus, the following dimensions should be studied in conjunction with the purpose of the trail and the existing or expected intensity of use:

- Width of trail: a function of expected pedestrian volume, acceptable density, desirable rate of movement, and requirement of physical obstructions (i.e. platform of residences or shops, rubbish bins, light fixtures, benches, etc.)
- Longitudinal slope: user abilities, design objectives, safety, and aesthetic context
- Cross slope: surface drainage

(2) Pavement Criteria

Several factors influence the selection of pavement material. However, the most dominant factor is that the trails and public spaces are not newly constructed, but an improvement of the existing streets or pedestrian paths. In this regard, the following criteria should be studied in the Design:

- Aesthetic harmonisation: Pavement pattern, colour, and visual texture
- Durability: Temperature, precipitation, and quality of skilled labour, intensity and volume of traffic, availability of materials
- Safety: weather conditions, required traction ratings, surface texture, slopes
- Costs: Long-term and short-term basis, installation cost, reparability, and maintenance, cleaning

(3) Visual Criteria

Hierarchical ordering of the public spaces within the context of human activities and the direction of views should be reflected into the Design. The following considerations should be taken for the Design:

- Eye level: Standing and seating position, adults and children, direction of focal point, signage location
- Cone of vision: Framed view, vertical and horizontal degrees, signage location
- Perception: Vertical and horizontal enclosure of a space, settings of outdoor furniture and planting, scale and form of a space, flow of pedestrians

(4) Structure

1) Design Codes and Standards

For the building and structure design, priority is given to Jordan's code and standards and also to general and specific requirements noticed by local authorities concerned. When those are not sufficient for the building design, however, international codes and standards can also be applied. The following codes and regulations are adopted in the building design for the planning and design of Historic Old Salt Development.

British Standard for the Structural Use of Concrete (BS 8110) is employed for reinforced concrete structural analysis and design.

British Standard for the Structural Use of Steelwork in Building (BS 449 and BS 5950) is employed for structural steel analysis and design.

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Jordan code for Loads and Forces is employed for the definition of Dead, Live, Wind, and Seismic Loading.

The British Standard for Foundations (BS 8004) is employed for the design of Foundation and Substructures. The British Standard Specification for bending dimension and scheduling of reinforcement for concrete (BS4466) is employed for reinforcements details.

The German Standard DIN 1025/6/7 is employed for structural steel sections.

## 2) Load

- Dead load
  - Weight of Reinforced Concrete =24.0 kN/m<sup>3</sup>
  - Weight of Water =10.0kN/m<sup>3</sup>
- Live Loads
  - Look out 3.0kN/m<sup>2</sup>
  - Roof 2.0kN/m<sup>2</sup>

## 3) Materials and Strength

### Concrete

The characteristic strength of the concrete employed, as defined by standard 150mm cube at 28days, is :

- 20MPa for plain concrete
- 30MPa for reinforced concrete columns
- 25 MPa for reinforced concrete members

### Reinforcement

Reinforcing bar shall comply with BS 449, BS446, BS4483.

All reinforcing bar of a diameter larger than 8 millimetres shall be deformed high strength steel bars of Characteristic Strength equal to:

$$f_y = 420 \text{ Mpa}$$

Bars of 6 and 8 millimetres diameter shall be mild steel of Characteristic Strength equal to:

$$f_y = 280\text{Mpa}$$

## (5) Mechanical

According to the architectural design, portable water shall be supplied for horse bib, toilet, and fountains. Water is taken from the nearest city network point and all work items have separate water meter.

## (6) Electrical

Criteria for lighting is listed below:

Street and asphalt-coated trails (Illumination level 30-100lx)

Minimum distance between lighting poles: 25 meters.

Paved Stairs and Viewing Terraces (Illumination level 50-150lx)

Number of lighting fixtures: 1 pole/ 20 m<sup>2</sup>

The stone paved areas (Illumination level 30-100lx)

Distance between lighting fixtures: 10-20m

### **3.4. Detailed Design**

#### **3.4.1. General Planning Policy**

The spatial requirements differ in various trails, panorama lookouts and public spaces as a function of usual densities of people, heritage, social and environmental values. However, most area concerned are enclosed by either buildings, walls or slopes, and it is difficult to alter the spatial arrangements except for the panorama lookout at the Hill-top Park where people can experience the openness of wide views to the City.

Thus, the differences between the transitional space and nodal space should be enhanced within the sequential experience in the pedestrian and tourist movement. In this regard, the modulation of transitional spaces represented by steps, landing areas and courtyards, and the accentuation with the hierarchical ordering of nodal spaces represented by panorama lookouts and public spaces in the Tourist Trails have become design principles.

The functional aspect of a pedestrian network and system is of prime importance for both tourists and local people in Salt. In particular, visual cues determine the degree of orientation and direction to a given destination point from an origin. However, an excessive introduction of direction signs will spoil not only the pristine landscape of Salt, but also the quality of uncertainty and excitement of an exotic area for tourists.

In this regard, the aspect of visual cues should be enhanced, by highlighting landmarks, historical building facades and established trees as focal points within the tourists' visual sequential experience.

An important aesthetic aspect is that the ancient city of Salt has an impressive visual cue derived from intensive light and darkness of narrow paths, stairs and semi-private courtyards. These traditional design aspects should remain cognisant.

Another important aspect for achieving convenience of people is the relative ease of moving from one destination to another without confusion or obstructions. Pedestrian and gathering density in tourist trails and public spaces plays an important role to maintain the convenience of people.

Conflict at intersections, confusion at existing or potential gathering spots should be solved with design solutions. In this regard, location of physical obstructions such as rubbish bins, benches, planting, moving or parked cars, public telephones, electric poles, light fixtures, nuisance of excessive litter, and so on must be integrated in an overall planning scheme to suggest purposes and expected behaviour to the pedestrians using the facilities.

Amenities for pedestrians are defined into two major aspects, namely natural and cultural aspects. Although natural amenities are created by the introduction of planting materials and public spaces onto the existing landscape, cultural amenities including the attraction of human activities is already existing there, but further enhancement by the physical design is necessary. In order to achieve an Eco-tourism concept for the sub-project, social interaction, both passive and active, is extremely important and the cultural amenities are the primary determinant

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regarding enjoyment of a place by tourists. Therefore, aesthetic aspects of tourist and pedestrian circulation should be enhanced, in particular, the sensory and intellectual experiences enjoyed by tourists when moving through various locations in the Historic Old Salt.

In this regard, the design should integrate the many cultural factors that contribute to the enjoyment of outdoor spaces and should provide a richness of experience and a depth of meaning to all whom potentially may enjoy participation in tourist trails and public spaces.

(1) Tourist Trails

The proposed Tourist Trails were identified after extensive research and field inspections. Salt Municipality and JST, jointly, participated in the selection of the tourist trails based on the previous Study Reports. The Tourist Trails stretch approximately 7 km, spread between the historic city core (represented by al Ain Plaza), Suq al Hammam, and four panorama lookouts in higher locations in the city.

Within those tourist trails, Model Tourist Trails were selected, with a total length of 2.3 km (900 m for stone pavement and 1.4 for asphalt pavement), which are linking to the city centre in walking distance, and act as an access for the prominent historical buildings and panorama lookouts.

The Model Tourist Trails include:

- Jada' East Stairs
- Said al Bahra Street
- Jad'a West Stairs
- Rummanat Stairs
- Khader Stairs
- Hammam Street
- Iskafyiah Stairs
- Haddadin Stairs
- Upper Haddadin Steps (East)
- Upper Haddadin Steps (West)

(2) Rummanat Stairs:

The Rummanat Stairs form a significant physical and visual spine in the city connection of Hammam Street with the Qal'a residential neighbourhood. It is heavily used by the local residents since it leads to different neighbourhoods. It is rich in its visual variety and provides different sequential visual experiences to the visitor. The existing situation of Rummanat Stairs with a ruined Bakery Building is not attractive for tourists' point of view.

However, its starting point from Hammam Street begins from a location opposite to the Small Mosque entrance that adds to spatial significance and contribution to a sense of place.

Urban design consideration would stem from an understanding of its character and would be based on providing different stops along the way that would enhance the experience of the visitor (e.g., the Bakery). The heritage conservation (rehabilitation) of the old existing Bakery along the way would add positively to the overall experience of the Stairs since the Stairs visually opens onto this historic and significant feature.

Heritage conservation work at the Bakery would include a small theatre for seating and an opening in the front façade after the rehabilitation of the deteriorated cross vault and the addition of suitable floorings. The idea is attempting to create a dialogue with the memory of

the place and to revive the role of that place-creating interaction between tourists and local residents.

Sketches include Figure 3.1 and 3.2 (Section in the Rummanat Stairs). From the section and layout, one notices the significance of the sequential movement experiences and the different points of attraction of which the Bakery is just one.

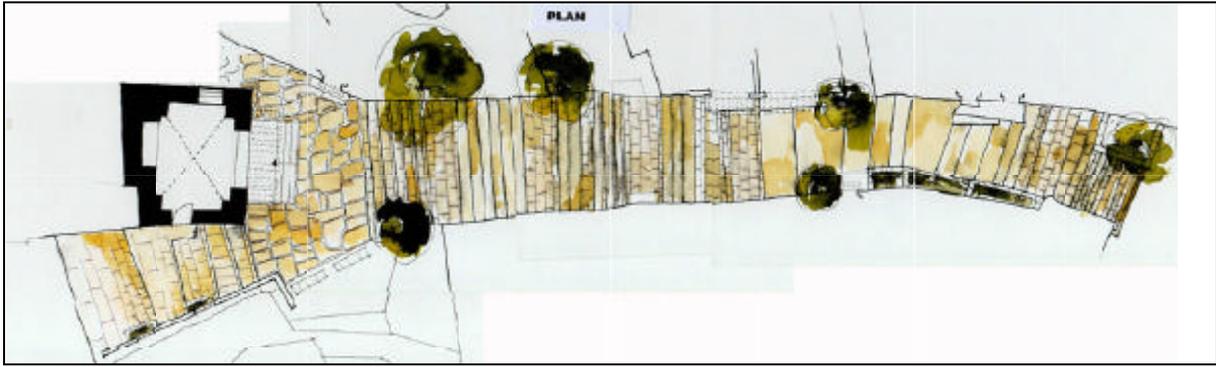
Figure 3.1 Al Rummanat Tourist Trail  
with recommended Bakery Shop and Trail Lighting



Source: JICA Study Team

Proposed layout plan, which shows the relationship between Rummanat Stairs and Bakery, is shown in Figure 3.2.

Figure 3.2 Proposed layout of Rummanat Stairs

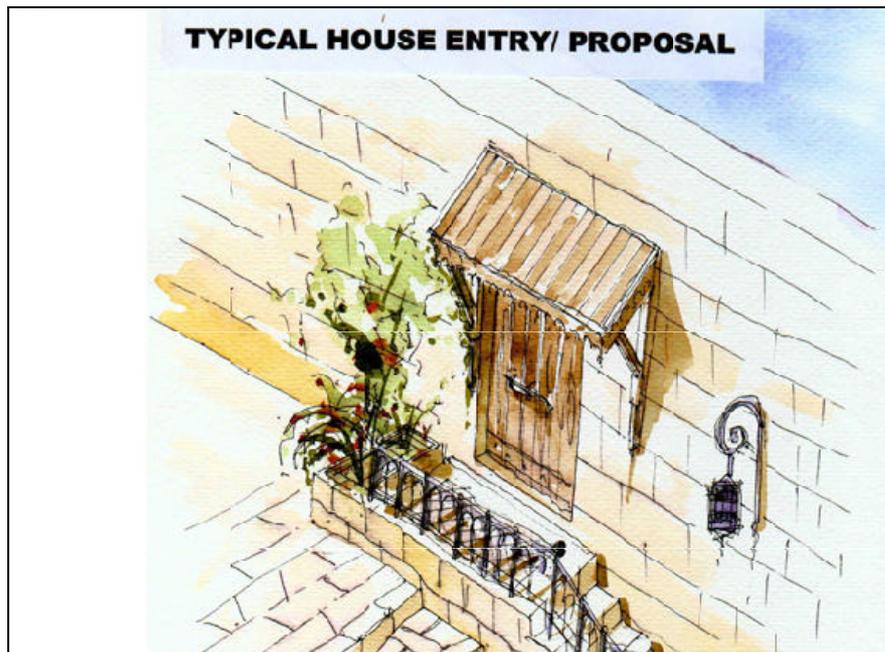


Source: JICA Study Team

(3) Haddadin Stares:

The Haddadin Stairs links the main historic core (al Ain Plaza) with residential neighbourhoods in al Qala'. The Stairs are significant for their facades representing main historic resources in Salt (e.g., Al Rae al Saleh Church, Grand Mosque, English Hospital).

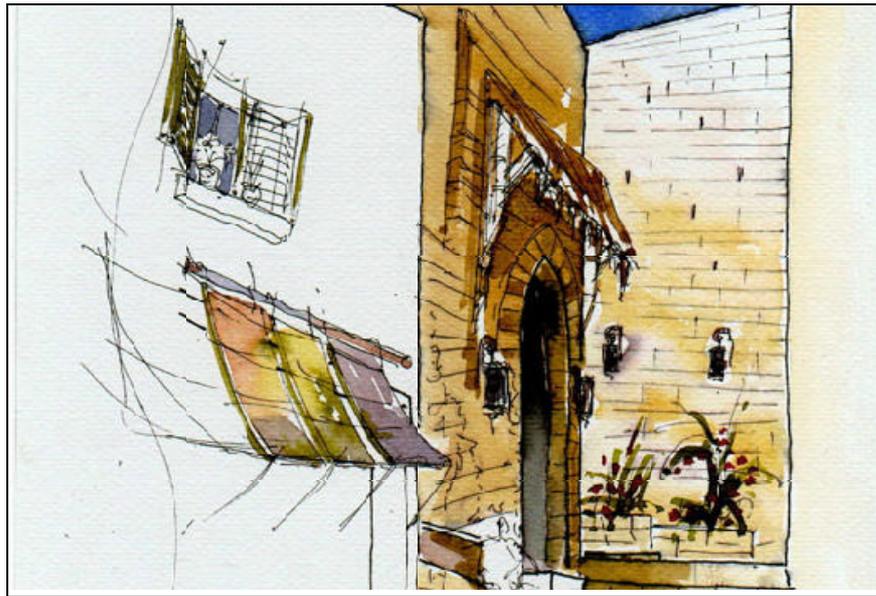
Figure 3.3 Haddadin Stairs, The existing and proposed Typical House Entry



Source: JICA Study Team

Currently, the façade of the Grand Mosque suffers from severe quality and visual problems in terms of its design and material. The urban design solution would include design treatment for this façade to suit the opposite facade of the Church and English Hospital.

Figure 3.4 Haddadin Stairs, The existing and proposed façade of Mosque Entry



Source: JICA Study Team

Since the Haddadin Stairs connects residential neighbourhoods with the historic city core, it could form an important place for interaction between the tourists and local residents. The design would accommodate seating especially in the upper parts where the stairs get wider, and soft landscaping in different parts especially at the beginnings of the Stairs at the lower parts (connection with al Ain Plaza)

Figure 3.5 Haddadin Stairs, Design solutions



Source: JICA Study Team

### 3.4.2. Design Concept

#### (1) Pavement and Step Design

Pavement in the Rummanat Stairs provides different varieties according to events taking place.

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At the starting point fronting the entrance of the Small Mosque, the journey starts with soft landscaping with dense greenery.

(2) Signage

Signage would provide interpretation boards that would address; direction, interpretative remarks, historic contexts, and drawings of certain historic resources such as The Small Mosque, and The Bakery. In addition, it might include interpretative drawings and text illustrating key features on Panorama Lookouts.

(3) Outdoor furniture

In general, outdoor furniture and lighting features would depend on appropriation of traditional detailing with new spirit (e.g., adaptation of existing traditional lanterns). They include pergolas at residential entrances and nodes with seating (Figure 3.6 Detailed Section and Pergola Design, and General View).

Figure 3.6 shows an introduction of Pergola and Planter Box on the Trail.

Figure 3.6 Introduction of Pergola and Planter Box on the Trail



Source: JICA Study Team

(4) Outdoor Lighting

The electrical power supply available in Jordan is 230/400 volts 4 wire (star) system when the power is taken from the existing distribution over head line network.

This condition is mainly for the electrical supply for the paved and asphalt tracks.

1) Lighting Fixtures

The lighting layout is based on the assumption that each area of the project is treated separately. The lighting will be achieved by:

Trails and street:

By using decorative type lighting poles and decorative lanterns.

The asphalt-coated trails are served by utilising 5-meter decorative poles of either aluminium or powder coated stove enamelled steel poles headed by 2 or 3 number of oriental lanterns of 70 watt high- pressure sodium lamps and 100 watt tungsten lamps.

The proposed distance between poles is 25 meters. The trails are treated separately depending on whether one or more control panel serves each. Feeder cable from the electrical authority should be considered and fused cut outs for each pole is provided.

Paved Stairs and Lookouts:

By lighting poles and oriental decorative lanterns. The tourist lookouts are served by utilising 5-meter poles each loaded by 4 no, lanterns as those for asphalt trails. It is proposed 1 pole/ 20 m<sup>2</sup>. One control panel is considered for each. One feeding cable from authority is considered, and cables and related civil works are considered. Fuse cut out boxes for poles are provided.

The stone paved areas are served by either:

- Wall mounted bracket lanterns.
- 3 meter poles with one lantern at the top.
- 1-meter Poles.
- Ground lights where found necessary.

The proposed distance between poles and/or lanterns varies between 10-20 meter intervals. One control panel or more serves each trail. Feeder cables to the control panels are taken into consideration, and cables and related civil works are considered. Fuse cut out boxes for poles are considered.

2) Technical Standard:

Design will be mainly based on the following standards and shall be carried out accordingly:

The local Jordanian codes and standards.

- The British Standards and Codes of Practices.
- The National Electrical Code (NEC).
- The International Electrical and Electronics Engineers Association regulations (IEEE).
- The National Fire Protection code (NFPA).
- The local requirements of Jordan civil defence department.

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- The local Jordan telecommunication corporation requirements.

Any other standards and/or regulations and/or codes of practice and norms issued by institutes and or authorities of other countries such as Japan and Europe. provided they are found applicable and acceptable to perform the job.

(5) Street Planting

Because the name of Salt originates from “greenery”, the basic concept of this sub-project should also focus onto the introduction of planting materials to revive the city with greenery. In order to preserve the aesthetic character of Salt, the landscape objectives are as follows:

- To complement a historic structure
- To arrest the decline of the character of the environment
- To emphasise continuity of past and present
- To save trees, shrubs, and other plant materials which have been established in the location
- To reduce maintenance
- To facilitate environmental education

(6) Safety measures

Some of the steps along the Tourist Trails are too steep, narrow and have no handrails to protect pedestrians falling from the trail. These areas should be re-graded and handrails should be installed. The detailed location will be specified.

**3.4.3. Public Spaces (*Sahat*)**

The project identified four major plazas that act as turning points of pedestrian flow and link the Tourist Trails together. These four public spaces are nominated in conjunction with the Model Tourist Trails, where urgent solutions are required to ease congested car parking problems and improve public spaces for pedestrians; they are:

- Al Ain Plaza
- Al Baladyia Plaza
- Al Hammam Plaza
- Al Maydan Plaza

The design will address common issues and will give an idea of the approach to be applied on the rest of the Plazas.

The different plazas in the historic city core are important spatial resources and should be considered as significant as the historic houses such as Abu Jaber. They serve to link the different streets together and provide gathering spaces that house events with various levels of enclosure. Currently, the plazas face several problems summarised by the unplanned influence of vehicles and the negative effects of governmental planning and zoning policies of the 1960s and '70s, when many Jordanian historic city cores were destroyed or altered to accommodate wide roads, and modern buildings.

In general, the objective of this work-component is to revive the historic spirit of each of the four plazas. This modern intervention will accommodate pedestrians and vehicles at the same time at various levels depending on the context of the place. In addition, design

treatments will harmonise to provide unity for the city overall.

(1) Layout plan

1) Al Ain Plaza:

Publicly known as *al saha*, it demarcates the centre of the historic city core. It is the point of connection of many significant streets (e.g., Hammam, Khader, Baladyia upper and lower streets). In addition, it represents the meeting point of several steps (e.g., Haddadin, Jada' East and West). Many significant buildings surround the Plaza (e.g. Abu Jaber Building, The Salt Great Mosque, Ministry of Education, and the Police Department, the Dawoud House, and many other significant features.

The plaza used to be the centre of business, government, and social activities. Currently, it suffers from several problems summarised by the unplanned influence of vehicles and the negative effects of governmental planning and zoning policies of the 1960s and '70s, when many Jordanian historic city cores were destroyed or altered to accommodate wide roads, and modern buildings.

Urban design solutions would try to accommodate both vehicles and pedestrians; part of the saha would be paved in a terraced manner to reflect the natural slope. Also, vehicle access would run between the front façade of Abu Jaber building and the south edge of the Plaza. The design could accommodate demarcated vehicle route originating in Khader Street and ending with the vehicle access. This route would be paved and would be considered part of the Plaza used by pedestrians and vehicles at the same time. This solution was accepted by the Municipality specially that future plans would create new vehicle routes to ease the pressure from the Saha.

The heritage conservation policy attempts to retain the main historic features of the Saha which include; the central tree, the old water resource (al Ain), and the fact that elderly use the central place in the Plaza for seating and social interaction. This notion of reviving the memory and the role of the place is at the centre of the conservation philosophy

The design will attempt to enhance the relationship between the Saha and Hammam Street. The design incorporates to face al Hammam Street but at the same time be directed to Abu. Seating exists in both directions but the longer arm of the seating place faces al Hammam street because it is felt that the lively, festive, and colourful atmosphere of Hammam street is extremely significant to the nature of the place. In addition, the commanding position and huge scale of the front elevation for the Abu Jaber building forces its presence regardless of orientation of seating. Children will be accommodated in the design in terms of play areas, and this will increase the desired interaction between the tourist and the local community.

2) Al Baladyia Plaza:

The Plaza is located at a T intersection between Baladyia Street and Hammam Street. Currently it suffers from several problems; it is used as a parking lot by Municipality employees creating a neglected area of urban space. Spatially, the plaza retains significant spatial values; the sense of enclosure provided by the different building facades and the connection with Hammam Street.

The design solution would transform the plaza into a pedestrian node, taking into consideration that the Municipality building would relocate into a new building, but at the same time accommodate its contemporary, yet historic role of loading and unloading of goods for the shops surrounding the plaza. The realisation of the design would take the form of a pedestrian stepped plaza in the direction of the entry of Hammam Street.

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The design would attempt to link the Plaza with the existing traditional market (*souq shabee*) nearby. In addition, some treatment of building facades might be accommodated to enhance the visual experience of the visitor (tourist or local people).

The design would not attempt to cause shop owners any unpleasant changes, on the contrary, the design would provide opportunities for interaction with locals and tourists.

(2) Pavement , Outdoor Furniture and Planting

1) Al Ain Plaza:

The difference in levels in the Saha is used positively to accommodate a stepped plaza with stepped pavement accommodating seating. The design accommodated dense planting at the Southern edge of the Plaza to create a visual barrier between the Plaza and the street. The portion that fronts the Abu Jaber building is not planted with such dense planting to provide visual connections with this great building.

The design emphasises the rehabilitation of the old water source (*Sabeel*) to become one of the focal points of the Plaza. Another *Saha* feature to be retained and celebrated is the historic old tree in the centre. In other words, the urban furniture starts with *Saha* historic features and ends with new seating and modern interventions.

2) Al Baladyia Plaza:

Since the Plaza would retain resident-shop owners' relationship, urban furniture would not attempt to alter this relationship. The Plaza would accommodate stepped pavement in the direction of Hammam Street, retain shop fronts, and solve water drainage problems in winter seasons.

(3) Signage

In terms of signage for Al Ain Plaza, interpretative signs drawings, and explanations would address; information on historic context of the Saha (how it was the centre of civic, political, and social life in Salt), information on main historic features (e.g., al Ain water source, the central tree, Dawoud House, Hammam Street), and the common direction signage.

In terms of signage for Al Baladyia Plaza, interpretative signs drawings, and explanations would address; information on historic context of the Plaza, information on main historic features (e.g., al Latin Complex, Hammam Street), and the common direction signage.

(4) Outdoor Lighting

Lighting features inspired by traditional models (e.g., adaptation of existing traditional lanterns) should be adopted.

#### 3.4.4. Panorama Lookouts

The project identified four panorama lookouts, two of which are situated at a short walking distance from the core (Al Ain Plaza); and two others are situated in higher locations: one near the Salt High School and the other in Kamal al Shaer Garden. The Panorama Lookouts include:

- Al Jad'a Panorama Lookout
- Kamal al Shaer Garden Panorama Lookout
- Qal'a Panorama Lookout
- Salt High School Panorama Lookout

In general, the selection of the Panorama Lookouts was influenced by major criteria; accuracy of ownership and boundary, and physical proximity and relationship with the Tourist Trails. Other criteria include the appropriateness and comprehensiveness of city panoramic views from a specific selected panorama lookout.

In general, the design should provide a relaxing atmosphere for the participator (tourist or local) while enjoying the most significant event; the city of Salt. This could be achieved through a series of stepped terraces provided by the natural slope existing at each Panorama Lookout.

(1) Layout Plan

1) Jad'a Panorama Lookout

The Panorama Lookout is located between two heritage houses from Salt; one of which, Sukkar House, is a selected house by JST for future adaptation and conservation. The design was based on respecting the natural slope of the site through the creation of a series of terraces at different levels linking the Tourist Trail of Said al Bahra with the second floor of the Sukkar House through this Panorama Lookout.

The idea was based on a contemporary realisation of the typical Salt historic approach of dealing with space.

2) Kamal al Shaer Panorama Lookout

The land for the existing Garden was donated by Mr. Kamal al Shaer. The view from this lookout is dramatic because it illustrates two of the Salt Mountains in perspective (a view different than other lookouts).

The design is based on a natural stepped garden where seating takes place naturally while enjoying this outstanding view. This provides an informal relaxed natural atmosphere.

Natural stepping-stones connect the natural planted terraces where grass will be used as well. A clear connection with the existing garden demarcates the beginning of the lookout, which blends with the Garden and provides a natural extension for the children's movement pattern from their playground above. The Isometric plan and sections are provided in Figure 3.14 and 3.15.

(2) Hard and Soft Landscaping

1) Jad'a Panorama Lookout

The atmosphere is quiet with provisions of seating areas while enjoying the main event; the view of Salt City. Retaining walls might incorporate seating embedded inside. In addition, shaded areas are provided through soft landscaping or pergolas to provide an even more relaxed ambience for the tourist.

Some existing trees should be trimmed in order to attain better views from the lookout.

2) Kamal al Shaer Panorama Lookout

The design is based on a natural stepped garden where seating takes place naturally while enjoying this outstanding view. This provides an informal relaxed natural atmosphere. Soft landscaping will depend on natural grass and occasional trees so as not to block the view.

The existing trees obstructing the views to the City should be relocated to the upper part of the area to create a little forest for children.

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(3) Signage

In terms of signage for Jad'a Panorama Lookout, interpretative signs drawings, and explanations would address mainly information and panoramic drawings on the views with explanations about significant houses and features. In addition, the common direction signage will be included.

In terms of signage for Kamal al Shaer Panorama Lookout, interpretative signs drawings, and explanations would address mainly information and panoramic drawings on the views with explanations about significant houses and features. In addition, the common direction signage will be included.

(4) Mechanical System

1) Technical Standards

The design of the mechanical work shall generally be in accordance with the following standards, codes, and regulations where applicable:

- BSS: British Standards Specifications.
- BSI: British Standards Institute.
- CP: Code of Practice.
- ASHRAE: American Society of Heating, Refrigeration and Air Conditioning Engineers.
- LPC: Loss Prevention Council.
- CIBSE: The Chartered Institution of Building Services Engineers-U.K
- General and specific requirements of the local water and drainage authority, local public health officer, and the regulations of the local civil defence department.

2) Water Supply services

Design standard should be in accordance with the Local Jordanian Codes.

Potable Water

Water supply should be taken from the nearest city network point and all work items have separate water meter.

Pipe work

All pipe work will be galvanised steel or cross-linked polyethylene pipes with copper fitting

3) Drainage Services

The drainage services shall comprise of storm rainwater drainage in addition to connecting the drains of the water coolers to the nearest public manhole. The pipe work used for all drainage services will be UPVC drainage pipes.

Inspection manholes will be provided where necessary for maintenance purposes. The rainwater of the public spaces shall be connected to the nearest public storm water network.

### 3.5. Design Drawings

- (1) Tourist Trail
  - 1) Master Plan for Salt-Proposed (1-750)
  - 2) Rummanat Stairway-1 Plan-Part 1(VAR.)
  - 3) Haddaden Stairway-3/B Plan (VAR.)
  - 4) Haddaden Stairway-2 Plan (VAR.)
  - 5) Hammam Street Plan-Part 2 (1-100)
  
- (2) Public Spaces
  - 1) Ain Plaza General Plan (1-150)
  - 2) Baladieh Plaza General Plan (1-100)
  - 3) Hammam Plaza General Plan (1-100)
  - 4) Maidan Plaza General Plan & Sections (1-100)
  
- (3) Lookouts
  - 1) Madrasah Lookout Plan, Section & Elev. (VAR.)
  - 2) Qalaa Lookout Plan, Section & Elev. (1-100)
  - 3) Kamal Al Shaer Lookout Plan, Section & Elev. (1-100)
  - 4) Jadaa Lookout Plan, Section & Elev. (1-100)

## **Chapter 4 Construction Planning**

### **4.1. Project Site**

The project sites of this sub-project are dispersed throughout the Old Salt area and are currently used by local people everyday. Therefore, prior to the commencement of the construction, a notification to the local residents is mandatory. The project site should be handed over to the contractor for the construction period, during which the contractor shall have all responsibility of the site. However, the accessibility of the trails, stairs and street should be maintained for local use.

### **4.2. Temporary Work**

All temporary works are the responsibility of the contractor. Program and plan of all temporary work should be submitted to and approved by MPWH and/or relevant agencies prior to the commencement of actual implementation of the temporary works on site.

#### **4.2.1. Temporary Facilities**

(1) Construction access road:

Abu Jaber Building is facing Upper Baladiah Street, which could be the construction access.

The roads themselves, which are planned as the model tourist trails, will be the construction access for the trails, public spaces and panorama lookouts.

(2) Contractor's office, workshop, material storage, parking, etc.

The Salt Municipality will not provide sites for the temporary facilities other than the construction site, therefore, the contractor should find the site under his own responsibility.

(3) Utility Services for the construction works

1) Water supply

It is confirmed by Salt Municipality that the contractor can obtain water supply from the existing main pipe which runs along the nearest road to the site, but subject to permission from the Salt Water Authority

2) Electrical supply

It is also confirmed by Salt Municipality that the contractor can obtain electrical supply from the existing transmission line running along the nearest road to the construction site, under coordination with the Jordan Electrical Power Company.

3) Telecommunications

As for the telephone line, it may be practical to utilize mobile telephones. However, cable lines are required for the facsimile line and also internet/e-mail lines. It is confirmed that the lines can be obtained from the main telephone line along the nearest road to the site, under the coordination with the Jordan Telecommunication Company (JTC).

4) Sewerage

There is no sewerage facility available to the contractor except for the Abu Jaber Building. If the contractor wants to provide toilets near the site, the contractor should provide a new septic tank(s) to purify soiled water to meet the Jordanian standards and

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regulations. The discharge point of the treated water should be coordinated with relevant agencies. The total sewerage system should be approved by the Salt Water Authority prior to the construction on site.

5) Normal solid waste disposal from the contractor's office

Salt Municipality will collect the normal solid waste and dispose of it according to their own system. If not, the contractor should apply an appropriate system and measures under his own responsibility.

6) Disposal of excess soil and debris

The excess soil and debris should be disposed to an area(s) which should be designated under coordination with the Salt Municipality. The necessary measures to mitigate environmental impacts should be taken by the contractor.

The final solutions of the utility services accepted by the relevant agencies should be submitted to MPWH in written form prior to the construction on site.

#### **4.2.2. Traffic Control Measures**

In general, the contractor should not hinder the existing traffic flows, both vehicles and pedestrians, by the construction activities without introducing any alternative flow lines. Plans of alternative traffic flow lines should be submitted to and coordinated with the Traffic Department of Salt Municipality.

(1) Abu Jaber Building

For the Abu Jaber Building, the street in front of the building is congested with traffic, therefore the contractor should take this into consideration regarding the loading and unloading measures for construction materials.

(2) Tourist Trails

For the model tourist trails, the contractor shall take measures under co-ordination with the municipality maintaining traffic directly related to the daily life of the residents and shops along the street.

(3) Public Space

The public spaces are located at the corner of the roads, which have heavy traffic, therefore the contractor should take measures not to disturb the traffic flow.

(4) Panorama Lockouts

The Panorama Lookouts are located along the roads, which have no heavy traffic, therefore strict traffic control may not be required. However, Al Qal'ah and Al Jadda panorama lookouts may need controlling of traffic on the street underneath the site during the construction.

#### **4.2.3. Safety and Security Measures**

In general, the contractor should be responsible for safety of the people living in the adjacent areas and of passing vehicles and pedestrians surrounding the site throughout the construction period.

(1) Safety measures at an access point(s)

The contractor should determine an access point(s) for the construction vehicles to the

construction site and submit to MPWH for their acceptance. At the access point, the contractor should provide safety measures for the vehicles and pedestrians passing the existing road(s) on which the access point will be located.

(2) Security measures

Provision of a temporary fence or similar surrounding the construction site is recommended in order to avoid unnecessary entry of people and vehicles as well as to protect construction materials and equipment from theft

**4.2.4. Environmental Consideration**

The work components of this sub-project consist of 1) renovation of Abu-Jaber Building, 2) improvement of tourist trails and 3) construction of panorama lookouts. The project sites are located in the centre of Salt City, surrounded by houses, commercial and governmental facilities where the natural environment cannot be seen.

According to the environmental examination based upon on-site survey, negative impacts on the natural environment are not expected by the project implementation. The possible impacts are considered to be restricted to the human environment, such as human health and socio-economic activities.

The table below summarises the key adverse impacts and the proposed mitigation measures at the both stages of construction and operation. The proposed mitigation measures are different according to their nature, the identified information is classified into those which should be described in the tender documents and others. The detail is described in the Supporting Report (Volume S7-3).

**Table 4.1 Potential Impacts and Proposed Mitigation Measures**

	<b>Actions</b>	<b>Impacts</b>	<b>Mitigation measures</b>
mitigation measures which are clarified in the tender document	<b>[construction stage]</b> - construction work and transportation	<b>Air Pollution:</b> - cause nuisance to the neighbouring residents by dust - disturb economic activities	- provide sheets for dust control - watering for dust control
	<b>[construction stage]</b> - renovation works of the building and tourist trails	<b>Noise &amp; Vibration Pollution:</b> - cause nuisance of the neighbouring residents	- provide noise protection sheets - restrict working hours - shorten construction period
	<b>[construction stage]</b> - renovation works of the building and tourist trails	<b>Existing Infrastructure:</b> - affect the existing signage, sewage and electric lines etc.	- alleviate effects on the existing infrastructures by clarifying the existing conditions and scope of works
	<b>[construction stage]</b> - renovation works of the building and tourist trails	<b>Traffic &amp; Safety:</b> - cause conflict between pedestrian and vehicles - increase of traffic jam and accidents	- conduct traffic control - secure detour (if necessary) - avoid rush hours
	<b>[construction stage]</b> - construction work	<b>Waste Pollution:</b> - construction debris clog drain pipe - generate a large volume of construction wastes	- secure transport and disposal sites - enhance recycling of the wastes

	<b>Actions</b>	<b>Impacts</b>	<b>Mitigation measures</b>
others	<b>[operational stage]</b> - increase of tourists	<b>Waste Pollution:</b> - generate a large volume of construction wastes	- place litter box for increasing general wastes - improve the existing waste collection system by establishment of laws and regulation
	<b>[operational stage]</b> - increase of tourists and cars	<b>Traffic &amp; Safety:</b> - increase conflict between vehicles and visitors	- raise awareness by environmental education - improve the functions of the existing parking areas - plan/ implement drastic traffic system to reduce the number of cars in the city centre and to secure good traffic circulation with long-term perspectives
	<b>[construction stage]</b> - construction work of the panorama lookouts	<b>Landscape:</b> - deteriorate landscape	- careful attention to be paid to height, colour, and feature of construction to alleviate drastic landscape changes
	<b>[construction stage]</b> - renovation of the building	<b>Relocation:</b> - construction work will cause relocation of the residents and shops in Abu Jaber building	- secure necessary measures for relocation of the residents - make the tenant fee stable to ensure temporarily relocated shops return

Source: JICA Study Team

### 4.3. Construction Method and Construction Schedule

The contractor should plan the most appropriate construction method and construction schedule. They should be submitted to MPWH for its approval prior to the commencement of the work on site.

#### 4.3.1. Construction Method

The construction method should include utilization plan of construction machines as well as labor force.

The following are the items to be taken into consideration in the construction method:

(1) Abu Jaber Building

All construction activities should be limited within the building except the external works especially on the south side of the building..

(2) Tourist trails

No specific consideration is required, but measures maintaining the daily traffic of the residents, shops as well as customers shall be taken.

(3) Public spaces

No specific consideration is required, but the activities of the construction should be limited

within the public space site.

(4) Panorama Lookouts

Al Qal'ah and Al Jad'a panorama lookouts are located at the top of retaining walls, therefore, the construction method for each should be considered carefully. A fence or protection measures at the bottom of the site to stop the material falling outside the site shall be provided.

**4.3.2. Construction Schedule**

A construction schedule including the major work items, recommended by the Study Team, is shown in Figure 4.1. The total construction period is estimated as 18 months (1.5 years) with the defect liability (guarantee) period of one-year.

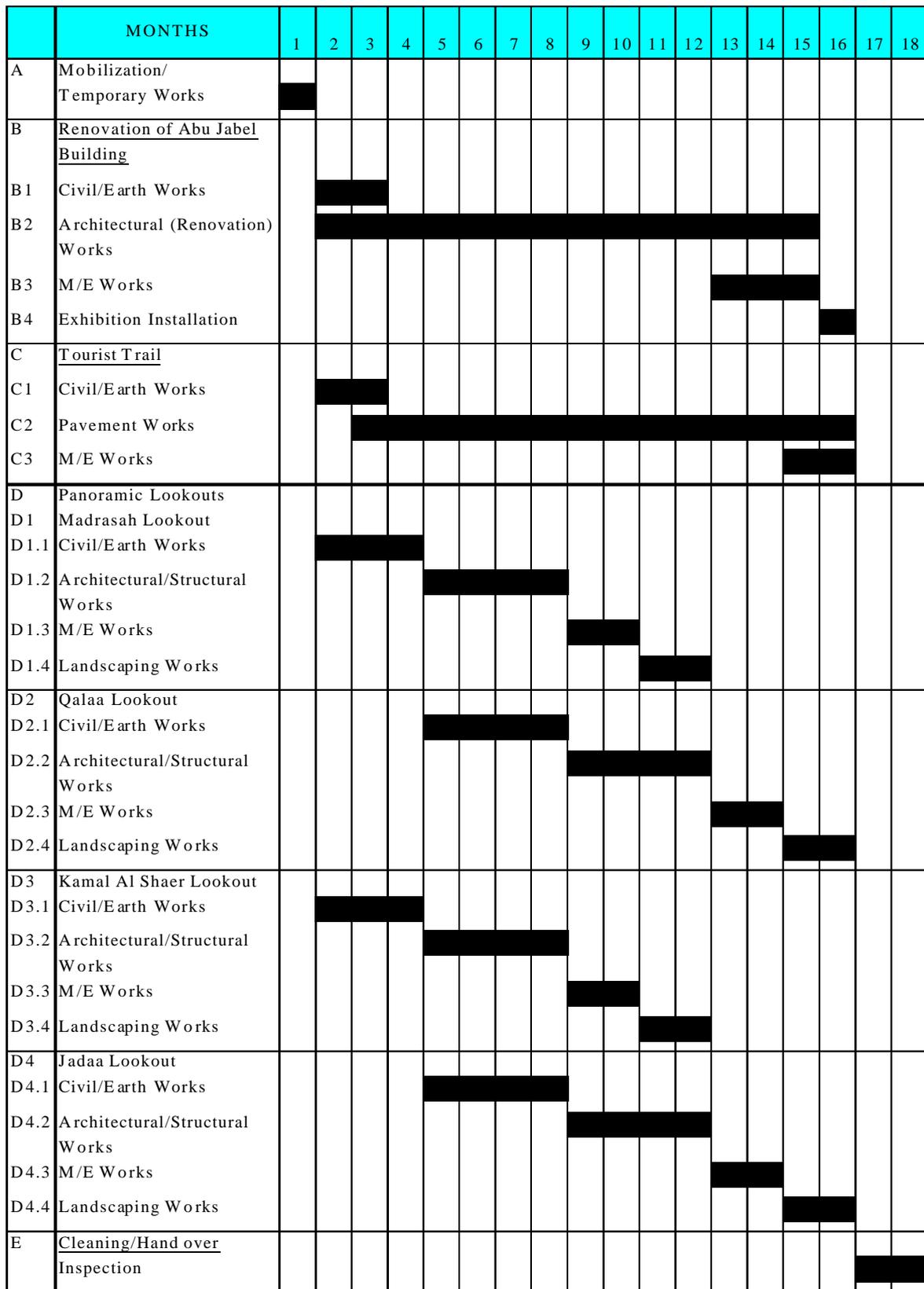
The actual construction schedule should be prepared in CPM by the contractor taking into consideration their work program including: temporary works and construction methods as well as other conditions of the site, material and labour supply plan, etc. The construction schedule should be submitted to MPWH for its approval prior to the commencement of the work.

The rainy season (from December to February) should be taken into consideration for the preparation of the construction schedule.

**4.3.3. Remarks on Construction Plan**

The design of foundations of retaining walls for the panorama lookouts and behind the Abu Jaber Building may be modified according to results of confirmation excavations conducted by the contractor prior to the construction of retaining walls. The costs of retaining walls and removing of soil should be calculated on a re-measurement basis.

Figure 4.1 Construction Schedule of Historic Old Salt Development



Source: JICA Study Team

## **Chapter 5 Tender and Contract Documents**

### **5.1. Tender Package**

This tender is conducted in one package including the following components:

- 1) Renovation of Abu Jaber Building into a new museum and visitor centre
- 2) Improvement of Tourist Trails and Public Spaces
- 3) Development of Panorama Lookouts

### **5.2. Tender Administration**

In order to manage the tender process, the following aspects are considered.

#### **5.2.1. Procurement Method**

According to the Procurement Guidelines of JBIC this sub-project should adopt Local Competitive Bidding (LCB), since the construction cost is estimated at less than 900,000,000 Japanese Yen (approximately 6 million JD) and not less than 400,000,000 Japanese Yen (approximately 1.7 million JD). In the case of LCB, pre-qualification procedure should be applied before the tender procedure.

Regarding the procedures of LCB, specific requirements are as follows:

- 1) When pre-qualified firms have been selected, review and concurrence by JBIC on the “Result of Pre-qualification” with the selection procedures, reasons for the choice made, attaching relevant documents are required.
- 2) After the tendering, before sending a notice of award to the successful tenderer, review and concurrence are required by JBIC on the “Analysis of the Tenders and Proposal for Award” with other documents related to the award, tender documents, etc. as requested by JBIC.
- 3) After executing a contract, review and concurrence are required by JBIC on the “Contract” with a duly certified copy of the contract.

#### **5.2.2. Agency Responsible for this Tender**

This LCB for the Historic Old Salt Development will be conducted under the responsibility of the Ministry of Public Works and Housing (MPWH). The Government Tenders Directorate in MPWH will organise a Tender Committee composed of staff of the Directorate, staff of MPWH, etc. The various works related to the tender will be assisted by a Project Management Consultant (PMC) assigned for the implementation of the sub-project.

The signer (the Employer) of the contract with the Contractor will be the Minister of MPWH.

### **5.3. Tender Documents**

The tender documents are prepared by the JICA Study Team under the contract with JICA as a technical assistance scheme of the Japanese Government. The documents will be granted to the Jordanian Government after the completion of appraisal by JICA, and the Jordanian Government should legalize and formalize the documents for use in the implementation of the Project.

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### 5.3.1. Composition of the Documents

The tender documents are composed of the following volumes and parts:

- (1) Invitation to Tenderers
- (2) Volume -I: Instructions to Tenderers

#### Form of Tender

##### 1) Appendices

Appendix A:	Schedule of Time, Rates and Conditions
Appendix B:	Form of Agreement
Appendix C:	Form of Tender Security
Appendix D:	Form of Performance Security
Appendix E:	Form of Advance Payment Security
Appendix F:	Drawing List
Appendix G:	General Construction Schedule
Appendix H:	Temporary Site Location
Appendix I:	Query Form
Appendix J:	Tender Acknowledgement
Appendix K:	List of Eligible Countries

##### 2) Enclosures

Enclosure No.1:	Power of Attorney
Enclosure No.2:	Certification of Submission of Tender Guarantee
Enclosure No.3:	Joint Operation Agreement
Enclosure No.4:	Letter of Association
Enclosure No.5:	Affidavit of Site Inspection
Enclosure No.6:	Basic Program of the Work
Enclosure No.7:	Contractor's Organisation Chart
Enclosure No.8:	Outline Construction Plan and Proposed Layout Plan for Temporary Works
Enclosure No.9:	List of Contractor's Equipment to be used on the Works
Enclosure No.10:	List of Major Materials and Plant for the Works
Enclosure No.11:	List of Sub-Contractors/ Suppliers
Enclosure No.12:	List of Intended Import Materials and Plant
Enclosure No.13:	Detailed Monthly Cash Flow of Anticipated Contract Payments
Enclosure No.14:	Breakdown of Major Rates

- (3) Volume -II: Specifications  
PART-1: General Requirements  
PART-2: Technical Specifications
- (4) Volume -III: Bill of Quantities
- (5) Volume -IV: Drawings
- (6) Volume -V: Conditions of Contract  
PART-1: General Conditions of Contract  
PART-2: Special Conditions of Contract

### 5.3.2. Order of Contract Documents

The priority among the documents is as follows:

- 1) Contract Agreement
- 2) Letter of Acceptance
- 3) Tender and Notice to Tenderer/Appendix
- 4) Conditions of Contract Part (II)-Special Conditions
- 5) Conditions of Contract Part (I)-General Conditions
- 6) Specifications
- 7) Drawings
- 8) Priced Bill of Quantities

#### **5.4. Type of Tendering**

In principle, a type of “Unit Price Base Contract” tender shall be adopted for the contract of this sub-project with the arrangement of a provisional sum for limited work items.

(1) Provisional sum

The Provisional Sum means a sum included in the Contract and so designated in the Bill of Quantities for the execution of any part of the construction works or for the supply of goods, materials, plant or services, or for contingencies which sum may be used, in whole or in part, or not at all on the instructions of the Engineer represented by the implementing agency of this sub-project.

The Contractor shall be entitled to only such amounts in respect of the work, supply or contingencies to which such Provisional Sums relate as the Engineer shall determine in accordance with the contract.

## Chapter 6 Cost Estimates and Implementation Plan

### 6.1. Conditions of Cost Estimates

(1) Estimation Time

The unit prices for the construction works are adopted for the sub-project at the time of the cost estimation in March 2000.

(2) Base Cost for Estimation

The prices for construction materials, rental fees for construction equipment and labour unit rates obtained from the Ministry of Public Works and Housing (Issued in 1998) are adopted as the base cost for the sub-project.

(3) Jordanian Dinar (JD) is used for the cost estimation currency, since the basis of the construction budget for the Project has been referred from the SAPROF Report, prepared in March 1997 by OECF (currently called JBIC).

(4) Exchange Rate

The exchange rate between Jordanian Dinar and US dollar is 0.708 JD, and the exchange rate between Japanese yen and US dollar is 106.08 at the time of March 2000. The following exchange rates are applied:

- US\$1 = 0.708 JD
- 1 JD = ¥150

(5) Price Increase

According to the information on construction costs from the Ministry of Public Works and Housing, the Government of Jordan, the unit prices for construction costs in Jordan have not changed for the last three years, since the construction sector is not active and new construction projects are decreasing, thus competitiveness of contractors is increasing. Therefore, the price increase for the Project is not considered for this cost estimation.

(6) Cost items to be excluded

Land acquisition costs and relocation costs for existing residents and shop owners are not included in accordance with the SAPROF budget. Contingency costs are also not added to the estimation in this study.

(7) Tax Condition

Custom duties and service tax are excluded for some specific materials and equipment, which are to be imported. Custom duties and service tax are included in the unit price for construction materials and equipment.

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(8) Measurement System

The Bills of Quantities are prepared in accordance with the standard prepared by the American Institute of Architects (AIA), which is commonly used in Jordan.

The construction work items are divided into the following divisions:

Divisions	Work Items
Division -1	General Requirement
Division -2	Site Work
Division -3	Concrete Work
Division -4	Masonry Work
Division -5	Metal Work
Division -6	Wood and Plastic
Division -7	Thermal and Moisture Protection
Division -8	Doors, Windows and Glazing
Division -9	Finishes
Division -10	Specialities
Division -11	Equipment
Division -12	Furnishing
Division -13	Special Construction
Division -14	Convey System
Division -15	Mechanical
Division -16	Electrical

## 6.2. Project Cost

### 6.2.1. Direct Cost

An official standard for quantity surveying for buildings is not available in Jordan. At the time of estimation, JST prepared compound costs for main construction works with reference to the information obtained from the Ministry of Public Works and Housing, other large projects currently being executed and the standard rates of Japan.

(1) Compound Cost

1) Working Hours

The working hours of people in the construction field is assumed from 8 o'clock in the morning to 6 o'clock in the afternoon including 2 hours for lunchtime. Therefore, for the calculation of the compound cost, 8 hours is adopted as the working hours for the sub-project.

2) Efficiency of Local Labour

The work efficiency, for the project as a coefficient, has been computed by utilising the information collected in Jordan with the comparison of the standard efficiency of Japan.

3) Machine Rental Price

The rental prices for construction machines obtained from the Ministry of Public Works and Housing is adopted for the calculation.

### **6.2.2. Indirect Cost**

Rate of indirect costs (Preliminaries and Profit) are analysed and referenced based on the actual sample of prime projects currently being executed in Jordan.

(1) Preliminaries

Temporary and Preparation Works

Temporary and Preparation Works include temporary access roads, working yard, temporary buildings, working facilities, safety expenses, power and water, cleaning, laboratory testing, transportation, etc.

For the calculation of the cost of Preliminaries for each Sub-Project, the ratio of 2.5% of the direct cost is adopted.

Site Administration

The site administration cost includes direct personnel cost, site expenses, insurance, etc. Based on the analysis of the actual prime projects currently executed in Jordan with the comparison of rates applied in Japan, the rate of the site administration is assumed to be 11.5% of the direct cost.

For the sub-project, appropriate a sum of 14.0% of the direct construction cost as the Preliminaries include the cost of Temporary and Preparation Works as well as Site Administration.

(2) Profit

Based on the analysis of the actual prime projects currently executed in Jordan with the comparison of rates applied in Japan, the rate of the profit is assumed to be 10.0% of the direct cost.

For the sub-project, appropriate a sum of 10.0% of the direct construction cost as the profit.

### **6.2.3. Construction Costs**

The construction cost of this sub-project is not specified in this report primarily due to the public availability of this report and the confidentiality of the construction cost prior to the tender. The detailed information on the construction cost, however, has been described in a separate edition, which has been supplied only to the Agencies and Ministries concerned.

## **6.3. Project Implementation Plan**

### **6.3.1. Execution of the Sub-project**

Items to be fulfilled for the overall implementation period of this sub-project, which is categorized as a LCB type of procurement method, are as shown below:

(1) Completion of the JICA Study

JICA plans to complete the Final Report and Tender Documents by the end of August and they may be transferred to the Jordanian Government as soon as possible after finalizing the internal procedures of the Government of Japan.

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(2) Procurement of Project Management Consultant (PMC)

A Project Management Consultant (PMC) should be procured before the tender documents are transferred to the Jordanian side by JBIC in order to maintain a smooth transition to the implementation stage under the JBIC Loan from the JICA D/D Stage.

(3) Review and confirmation of the tender documents

The tender documents should be reviewed and updated if any changes are made by the Jordanian side to the tender packaging, scope of works, employer address and so on.

(4) Tender period

This is categorized in the sub-projects for which the procurement method is LCB. The procurement procedures for LCB sub-projects are stipulated in the JBIC Guideline as follows, but applying the skipping of pre-qualification procedure:

- 1) Issuance of the Invitation to Tender to the pre-qualified tenderers
- 2) Pre-tendering conference
- 3) Preparation of tenders by the tenderers
- 4) Tender opening
- 5) Evaluation of Tenders
- 6) After the tendering, before sending a notice of award to the successful tenderer, review and concurrence are required by JBIC on the "Analysis of the Tenders and Proposal for Award" with other documents related to the award, tender documents, etc. as requested by JBIC.
- 7) Sending the notice of award to the successful tenderer
- 8) Negotiation
- 9) Signing the contract
- 10) After executing a contract, review and concurrence are required by JBIC on the "Contract" with a duly certified copy of the contract.

For the above procedure 4.5 months are scheduled for the tender period.

(5) Construction and As-built drawings

As shown in Figure 6.1, the construction period for this sub-project is estimated at 18 months. The contractor should prepare and submit a set of as-built drawings to MPWH within one month after the completion of the construction works (issuance of the completion certificate).

(6) Defect liability (Guarantee) period

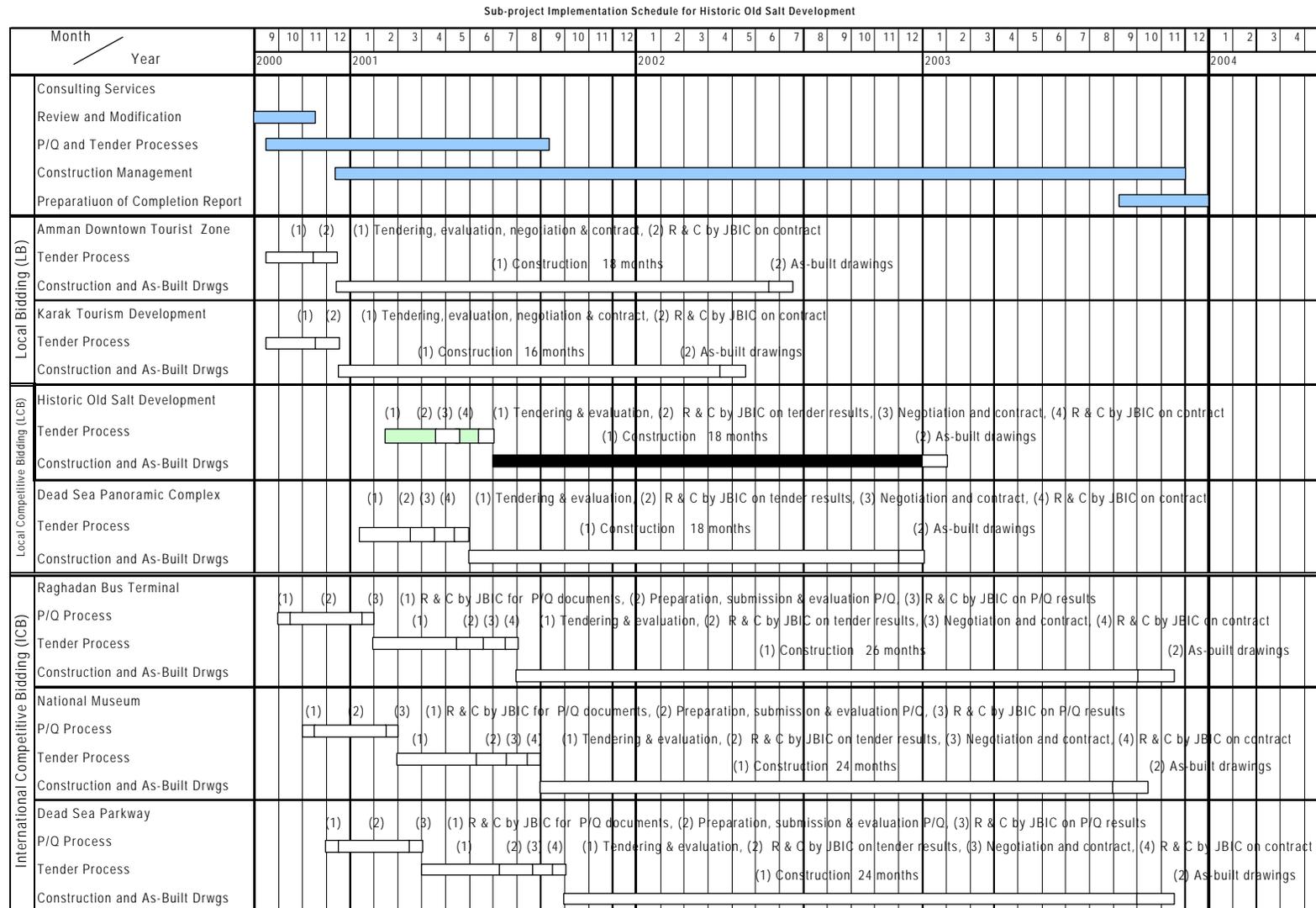
The period for defect liability is 365 days (one year).

(7) Completion Report

Within 3 months after the completion of the construction works a completion report should be prepared and submitted by the Consultant to MPWH.

An overall project implementation schedule prepared by JST is shown in Figure 6.1

Figure 6.1 Overall Project Implementation Plan



Source: JICA Study Team

## **Chapter 7 Operation and Maintenance Plan**

### **7.1. General**

The goal of the sub-project is to achieve the objectives to formulate an “Eco-museum of Historic Old Salt” as described below:

- 1) To establish tourist circulation network in Salt City with:
  - Improving the existing roads as tourist trails
  - Providing public spaces at the nodes of circulation
  - Providing lookouts along the trails
- 2) To establish a museum as the core of the eco-museum through renovating old Abu Jaber Building
- 3) To provide a visitor centre in the Abu Jaber Building

The maintenance and operation system of all components included in the Historic Old Salt Development Sub-project are responsibility of the Salt Municipality, therefore, the system should be established as a whole.

### **7.2. Tourist Trails, Public Spaces and Lookouts**

These three components are applied for a system of the maintenance by the Salt Municipality.

#### **7.2.1. Proposed maintenance system**

It is proposed that the current system should be basically applied for the tourist trails and public plazas and panorama lookouts. However, considering the objectives of the Project to promote the tourism in Salt, Amman as well as Jordan, the maintenance of these components should be taken with more care and frequency as shown below.

##### **(1) Inspection System**

Inspections are performed so that repairs can be made and pavements maintained and no hindrance to pedestrians will occur.

Pavements inspections are one of the most important maintenance activities in this sub-project to determine the convenience of the tourists as well as local people' swalking conditions.

The types of inspections to be conducted are divided into three categories as routine inspection, periodic inspection and special inspection.

- 1) Routine Inspection and Cleaning: inspecting any deteriorations and damages while cleaning streets, trails, stairs and facilities according to the criteria for the current program of GAM.
- 2) Periodic Inspection: the investigation of structures such as stone and concrete tile pavements, drainages, vegetations and slopes.
- 3) Special Inspection: the supplementary inspection conducted in addition to the routine and periodic inspection described above when necessary due to possible damages caused by storms, heavy rain, earthquake, or other unusual conditions.

The frequencies of cleaning and inspection mentioned above are as follows:

- Routine cleaning           Once a week/Once a month
- Periodic Inspection       Once a year
- Special Inspection        As necessary

The proposed contents of inspections are shown in Table 7.1.

Table 7.1    Contents of Inspection

Functional Category	Classification of Structure
Pavement Surface	Pavement (Lime stone, Basalt, Concrete tile)
	Curb
	Mortar Joint
Slope Protection	Vegetation
	Masonry
	Retaining Wall
Plants	Trees
	Shrubs
	Grass/flowers
Drainage Facilities	Surface drainage system
	Ditches, culverts and pipes
	Manholes
Building Structure (Arch, Pergola, View Terraces)	Concrete Structure
	Concrete Sub-structure
	Steel Fastening
	Painting
	Wooden Structure
Traffic Safety Facilities	Traffic Barrier (Hand Rail, Boland)
Traffic Control Facilities	Signs (Direction sign, traffic sign)
	Markings
	Delineators (Guard Posts)

Source: JICA Study Team

(2) Pavement Cleaning

Pavement cleaning involves removing dirt and trash from the tourist trails, public spaces, lookouts and adjacent facilities to eliminate walking obstructions.

(3) Plant Management

Vegetation management consists of planting new growth, pruning and maintaining established vegetation, and removing old vegetation, so that grass, plants and trees can grow without any obstruction to provide a pleasing respite for pedestrians, help to conserve, and enhance the environment.

(4) Repairs

Repairs include repairing the pavement surface, slope repair, and repainting traffic control facilities, stairs, structures, etc.

- Basalt pavement

Basalt pavement repairs are required because of loosening cracking and rutting caused by heavy traffic, sudden stopping and tire chains. An evaluation method shall be established for the repairs required, based on a survey and analysis of the existing

pavement roughness, cracking ratio and depth of rutting.

- Minor Repair
  - Replacement of broken pavement, crack sealing and patching of local damage and adjustment of un-even pavement surface
  - Traffic control equipment, guard-rails, signs and road markings
  - Slopes, embankment control, drainage and removal of fallen rock and debris
  - Minor repair and leakage of water pipes
- Maintenance of Street Furniture, Fittings and Equipment

This item includes the routine inspection, maintenance and repair of water devices, lighting fixtures as well as electrical facilities, and street furniture such as benches, etc.

(5) Restoration of Traffic Accident Damage

Typical damages caused by traffic accidents are the damage to signages, curbs, trees, lighting poles, pavement, and building walls, etc.

(6) Restoration Work for Damage Caused by Unforeseen Natural Disasters

Slope failures and retaining wall damage are caused by heavy rainfall and/or earthquakes. Slope failures are normally related to heavy rainfall and providing inadequate drainage of surface and seepage water.

### 7.3. Historic Old Salt Museum in Abu Jaber Building

The theme of the Historic Old Salt Museum concentrates on the local context. The Historic Old Salt Museum is historic house museum and the core of Salt City Eco-Museum, the concept of the city as an exhibit.

The operation exhibition theme of the Historic Old Salt Museum should be clearly demarcated from the existing Salt Archeological Museum, which is managed by the Ministry of Tourism and Antiquities under the Antiquity Law.

The Historic Old Salt Museum is not managed under the Antiquity Law, therefore its operation and maintenance are the responsibility of the Salt Municipality. The museum will be dedicated to exhibit the history, culture and life of the citizens. Therefore, the Salt Municipality directly conducts the Historic Old Salt Museum operation in collaboration with citizens. However, a new organization should be established for the management of this museum, since the municipality has no experience of such management.

The museum activities will be formulated by curators with active citizens, and applied onto the exhibition and educational programs in the museum. Because the aim of the museum is to satisfy various target groups through exhibition, education and visitor services activities, the operation of the museum, as the core of Eco-museum, is vital for sustaining the project over a long period.

The content of operation for the museum is diverse in technically depends upon aspects of activities and aims of the museum to achieve. The operation of the museum is basically divided to 2 major departments, namely, Administration Department and Research and Education Department, which will be further classified into the following sections, which are closely related to the operation organization.

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### 7.3.1. Management Structure Plan

#### (1) Administration and Maintenance of Materials and Data

It is important to maintain the storage environment to suit the type, quality, and size of stored exhibition materials and data in the museum, while conserving and maintaining the historical building from deterioration.

A register and administration data base system for the exhibition materials and data should be established in order to ease accessibility and enhance efficiency and effectiveness of education and research for visitors and curators.

In order to facilitate and disclose information and resources stored in the museum to the public, a reference system linked with the register and administration database should be established, and a reference corner should be allocated in the museum.

#### (2) Study and Research

Scientific and engineering studies for conservation and restoration methods and techniques for historical buildings should be developed within the operation organisation of the museum in order to enhance conservation and adaptation of historical buildings in Salt.

Interdisciplinary research activities in history, religion, ethnography, anthropology, urban studies, and so on should be enhanced as a regional centre for the Eco-museum, which will promote the tourism industry as well as activate the educational activities in Salt.

#### (3) Exhibition

##### 1) Permanent Exhibition

The proposed museum will exhibit the historical and cultural aspects of Salt, in a way attracting and enhancing the visitors' interests. In particular for children, the exhibition will not only to display materials, but the museum will provide some corners for visitors to participate craft works or experiencing cultural activities and demonstrations. For this reason, instructors and demonstrators for demonstrative exhibitions should be allocated within the organisation of the museum.

##### 2) Planning Exhibition

Topical exhibitions for focussing onto specific issues or themes relevant to Salt in local contexts will be planned from time to time. In some occasions, exhibitions should be planned with other institutions or overseas organisations in order to enhance interaction and collaboration mechanisms for sustaining the museum operation.

#### (4) Educational Activities

Organising symposium, seminars and conferences on conservation architecture, ethnography and so on, which are relevant to the planning exhibitions, to promote Salt City.

Excursions will be arranged with these seminars for participants to visit prominent historical buildings, panorama lookouts and archaeological sites via tourist trails in order to experience the Historical Old Salt Eco-museum.

Various forms of resources necessary such as books, photographs, maps, audio-visual resources on the Historical Old Salt Eco-museum with interpretation and guidance for visitors will be provided, and those resources will be collected from time to time and classified in a way that can be accessible to anyone.

Publications for those resources and educational media, newsletter for the exhibition activities, and guidebooks for the Historic Old Salt Eco-museum should be available to the public.

(5) Visitor Services

1) Visitor Centre

The Visitor Centre will provide orientation and information on Historic Old Salt Eco-museum, and attract tourists to walk the tourist trails and visit prominent historical buildings and archaeological sites. Gallery talks will be provided by curators especially for children and overseas tourists.

In order to avoid disorder and confusion of the flow of people in the building, operational solutions should be systematically programmed. For instance, package tourists visiting the museum as a group will be given guidance in the Visitor Centre prior to their visits to the exhibition area.

Foreign language interpretation will be facilitated by provision of written materials and interpreter services with the help from volunteers.

The operation of the visitor centre will be managed by the Balqua Tourist Office, MOTA, however, close collaboration with the operation organisation of the museum is indispensable.

2) Museum Shop

Sales of publications, maps, photographs, post cards and architectural drawings on the Historic Old Salt Eco-museum as well as art, crafts and artefacts exhibited in the museum. The operation of the museum shop will be managed directly by the museum.

3) Refreshment Services

A restored old style coffee shop with entertainment of storytellers (Hakawati) will be opened as a place where visitors can experience a unique atmosphere only in this Historic Old salt Museum. The coffee shop will be rented out to a private tenant, and the entertainment will be done by volunteers.

(6) Promotion Activities

In order to enhance and sustain the tourism activities for the Eco-museum, including the Historic Old Salt Museum, promotional activities are vital. Through the utilisation of publications, guidebooks, and maps as well as through various media, the activities and the concept of the Eco-museum will be encouraged.

Collaboration with some tour agents to promote package tours and group excursions of academic conferences and seminars relevant to the Historic Old Salt Eco-museum should be established.

**7.3.2. Operation Hour**

General operation hours will be from 9:00 AM to 17:00 PM. Opening hours for special events and museum shop will be determined depending upon demand.

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### 7.3.3. Organization for Operation

#### (1) Organization Structure

##### Core staff

The number of core staff working in history or site museums in Japan was compared in conjunction with their floor areas (see Table 7.2).

Referring to the relationship between size and staff number of History or Site Museums in Japan, expected number of core staff for the proposed Historic Old Salt Museum is projected to be 4 to 5.

Table 7.2 shows the comparative table for core staff numbers and floor areas of relevant museums in Japan.

Table 7.2 Floor Size and Staff Number of History or Site Museums in Japan

Name of Museum	Floor Area (m <sup>2</sup> )	Administration Staff	Curatorial Staff	Total	Staff per 1,000 m <sup>2</sup>
Oyama City Museum	1,907	2	5	7	3.7
Kimitsu Castle Museum	702	2	1	3	4.3
Shizuoka Site Museum	1,851	2	4	6	3.2
Yachio City Museum of History and Folklore	1,193	2	3	5	4.2
Uwajima Castle Museum	1,428	3	2	5	3.5
Average	1,416	2.2	3	5.2	3.8

Source: JICA Study Team (based on Museums in Japan)

##### Service staff

In accordance with the present condition of the Archaeological Museum operation and the services provided by staff members, the required number of service staff is calculated as follows: However, there is still room to discuss among the museum staff on the utilization of volunteers in the future.

#### 1) Administration

##### a) General Affairs

- Driver (1 personnel)
- Tea Serving Staff (1 personnel)

##### b) Accounting

- Reception and ticket sale (2 personnel)
- Museum shop (1 personnel)
- Coffee shop (1 personnel)

##### c) Facilities

- Guard at entrance (1 personnel)
- Janitor (2 posts/1,000m<sup>2</sup> x 2 shifts = 4 personnel)
- Facility maintenance (1 personnel)

## 2) Research and Education

a) Information

- Data collection and management (1 personnel)

b) Education

- Assistants for educational program (1 personnel)
- Guides for Eco-museum (2 personnel)

c) Exhibition and Publication

- Assistant for exhibition (1 personnel)
- Assistant for editing (1 personnel)

In consideration of the operation plan, expected services and workloads of the Historic Old Salt Eco-museum, a breakdown of staff numbers is shown in Table 7.3 with Divisions and Tasks.

Table 7.3 Proposed Organization for the Historic Old Salt Eco-museum

Position	Managerial staff	General staff	Service staff	Total	Tasks
Director	1			1	
Administration Department	1			1	
General affairs & accounting Sect.			6	6	
• Public relations and sales					Publicity, sales, Attracting groups, public relations, etc.
• Museum shop management					Stocking, products development, consignment, etc.
Facilities section	1			1	
• Maintenance		1	6	7	Maintenance, cleaning management, etc.
Sub-total	2	1	12	15	
Research & Education Department	1			1	
History & heritage section					
• Research & collection					Research on history, heritage, collection
• Conservation					Conservation, technology development
Culture & ethnology section		1		1	
• Research					Research on culture, ethnology, collection
• Information system			1	1	Maintenance of information system, data manag'nt
• Education programs			3	3	Planning of education programs
• Exhibition & publication			2	2	Exhibition planning, editing newsletter, publishing, etc.
Sub-total	1	1	6	8	
Total	4	2	18	24	

Note: The Service Staff includes the site-work operations: Interpreter, Maintenance, Cleaning, Guard, Receptionist, Ticket sales, Driver, etc.

Source: JICA Study Team

## (2) Number of Staff

In the case of public museums in Japan, due to the limitation of staff numbers as public workers and enforcement of privatisation, the number of staff is minimised. Therefore, maintenance services such as cleaning, facility maintenance and security services are sub-contracted to private companies. Receptionists, workers for office administration and inspectors for exhibition rooms are dispatched from sub-contracted companies.

The organisation of the existing Archaeological Museum in Salt consists of a Director and 20

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museum staff, and those staff is working in 2 shifts, morning and afternoon. The number of service staff is much bigger in Jordan, in terms of facility scale and number of curators when comparing to the case of Japan, due to the current employment policy and availability of human resources in specific fields in Jordan.

Because the establishment of the Eco-museum is based on a unique concept, which is quite different to the establishment of a conventional museum, the organisation structure and allocation of staff of the Eco-museum should be formulated to satisfy the operation plan, characteristic of facilities and role of the core museum.

Firstly, the number of necessary core staff for curatorial and administrative works employed in the Eco-museum should, therefore, be determined based on the case of relevant museums in Japan. Then, the number of service staff should be determined based on necessary tasks and services, which the Eco-museum operation requires and offers to visitor, in consideration of adopting 2 shifts.

#### **7.3.4 Responsibility of Actions at Pre-operation Stage**

The actions required at the pre-opening stage should be taken by various agencies or persons concerned. Every agency or person should fulfil his responsibility properly and in time, otherwise the opening of the Museum will not be in success. The demarcation of responsibility for each action is shown in Table 7.4.

Table 7.4 Demarcation of Responsibility at Pre-opening Stage

Activities	Responsible body							
	Salt Municipality	Preparatory Committee (PC)	PC Task force Executive Staff	General Staff	PMU Consultants	Contractor	Tenant	Others
A. Operational activities								
A-1 Establishment of preparatory committee	o							
A-2 Employment of executive staff and curators		o						
A-3 Preparation museum operation plan			o		o			
A-4 Preparation of training program					o			
A-5 Overseas staff training								o
A-6 Preparation of home training program			o					
A-7 Home training			o					
A-8 Plan, design, text writing, editing, printing literature			o	o				
A-9 Employment of service staff		o						
A-10 Preparation of operation manual and simulation			o	o				
A-11 Establishment of computer system, data input and test			o	o				
A-12 Preparation of opening ceremony			o	o				
A-13 Promotion and advertisement			o	o				
A-14 Invitation of tenants, contract		o	o					
A-15 Development of products/menu, Tenant works							o	
B. Study and design activities								
B-1 Procurement of Contractor (P/Q, Tender, Contract)					o			
B-2 Collection of data and information for panels and models			o					
B-3 Writing text for panels and explanation boards			o					
B-4 Final design of panels, models, etc.					o			
C. Construction activities								
C-1 Construction of building, outdoor works, etc.						o		
C-2 Production of exhibition materials (panels, models, etc.)						o		
C-3 Seasoning of the building (drying out concrete)						o		
C-4 Installation of exhibition equipment						o		
C-5 Processing existing film/slides, etc. for AV presentation					o	o		
C-6 Transport and shipping in of the authentic artefacts			o					

Source: JICA Study Team

#### 7.4. Training for Eco-Museum Staff

An important aspect along with managerial aspects such as the business income of an Eco-museum is the problem of staff, who support Eco-museum undertakings and its activities. If each and every Eco-museum staff has the consciousness and readiness to operate the Eco-museum towards a more desirable direction, his/her daily routine should prove to be readily productive. It is a matter, which cannot be realised merely from the consequences of one's work or endeavours. For the Eco-museum to be better managed and operated, all concerned, from the engineers, curators and those engaged in engineering and art down to service staff, are required to be in joint possession of a fundamental philosophy regarding Eco-museum administration, such as its social role, etc. It is essential to realise such a goal, training Eco-museum staff to improve on their temperament by having them acquire knowledge and experience as well as an opportunity to get to know better their occupation.

Particularly important aspect along with development is the sustainability and self-development of the Eco-museum. Prior to the commencement of construction works for the

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sub-project, the engineering staff of the Salt Municipality should possess specific knowledge on the renovation of historical buildings, in order to properly supervise the construction works.

#### **7.4.1. General Programme for Training**

As a precondition for studying and establishing a staff training program, setting up a general program from establishment of a managerial body, staff recruitment, preparation of a commemorative opening ceremony up to the opening function are required.

#### **7.4.2. Training Programme Arrangements**

The following procedures should be taken to arrange the training programme.

- 1) Confirming job details of principal posts.
- 2) Examining required backgrounds, qualifications, etc. of candidates for principal posts.
- 3) Recruiting for principal posts by special committee including representatives of the preparatory committee.
- 4) Preparing staff overseas training program including principal posts.

##### **(1) Overseas Training**

Recruit staff responsible for the branches of administration, research and education or principal post managing staff of subordinate class and have them undergo training at advanced eco-museums in their respective fields. For the purpose of having managing staff who have studied at overseas eco-museums and completed training undertake training of other staff through experience and knowledge which they have acquired, a home training program is to be prepared. Through such a process, an eco-museum administrative concept will be cultivated and lead to the formation of something, which will be worthy in practice. It is during this period that administrative policies such as the role of the museum's various departments and cooperation between them become concrete.

##### **(2) Home Training**

When management staff are being trained overseas, engineering and art department staff who are engaged in museum opening preparatory functions acquire know-how concerning eco-museum activities, such as heritage conservation, data and material control, exhibit planning, educational program, etc., for utilisation in subsequent preparatory activities.

Training staff who are engaged in eco-museum opening undertakings, public relations and solicitation of visitors, engineers who computerise data and materials along with service staff for the purpose of having them all become jointly aware of the eco-museum's administrative policy is essential.

Furthermore, lectures for home training are to be given by management staff who have undergone overseas training, but dependent on the contents of the relevant program it may be necessary to request an overseas eco-museum specialist to be dispatched for the purpose. As joint awareness concerning eco-museum administration is created in the entire organisation, managing staff and other staff will be able to prepare a more specific eco-museum administration manual.

#### **7.4.3. Administrative Simulation just before Opening**

Based on the manual so prepared, actual training relative to reception, guidance, exhibit explanation, computerised information, dealing with the handicapped, parking lot guidance,

personal service for customers at shops and restaurants, disaster drills, coping with emergencies, inspecting facilities and equipment, etc. are to be performed. During such simulation training, inadequacies of the manual, if any, will be rectified and preparations made for eco-museum opening.

## 7.5. Environmental consideration

The project components are consisted of 1) renovation of Abu-Jaber Building, 2) improvement of tourist trails, 3) construction of lookouts and 4) construction of public spaces. The project sites are located in the centre of Salt City, surrounded by houses, commercial and governmental facilities where the natural environment cannot be seen.

According to the environmental examination based upon on-site survey, negative impacts on the natural environmental are not expected by the project implementation. The possible impacts are considered to be restricted to the human environment, such as human health and socio-economic activities.

Table 7.5 summarises the key adverse impacts and the proposed mitigation measures at operation stage.

Table 7.5 Potential Impacts and Proposed Mitigation Measures

Impacts	Actions cause impacts	Mitigation measures
Waste Pollution: - generate huge volume of construction waste	- increase of tourists	- place litter boxes for collecting general waste - improve the existing waste collection system by establishment of laws and regulations
Traffic & Safety: - increase conflict between vehicles and visitors	- increase of tourists and cars	- raise awareness by environmental education - improve the functions of the existing parking areas - plan/ implement new traffic system to reduce the number of cars in the city centre and to secure good traffic circulation with long-term perspectives
Landscape: - deteriorate landscape	- construction work of the view terrace	- careful attention to be paid to height, colour, and feature of construction to alleviate drastic landscape changes
Relocation: - construction work will cause relocation of the residents and shops in Abu Jaber building	- renovation of the building	- secure necessary measures for relocation of the residents - make the tenant fee stable to ensure temporary relocated shops return

Source: JICA Study Team

## 7.6. Facility Operation and Maintenance Plan for Abu Jaber Building

The component is to renovate the existing old building, but it was in consent that the main structure elements such as foundation, wall masonry and floor could not be renovated within the JICA work frame. The facility operation and maintenance should be limited out of such the main structure elements, but inspection should be done carefully on them also.

### 7.6.1. Renovation System applied

The component is to renovate the existing old building, but it was in consent that investigation (except measuring) and designing to renovate the main structure elements such as foundation, wall masonry, floor slab and stair structure could not be applied within the JICA work frame. For the finishing of the building the followings are applied:

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Floor:	Clean the existing stone tiles
Internal wall:	Re-painting on the cleaned existing plaster
Ceiling:	Painting on the structural vault after cleaning, on the top floor suspension ceiling is applied
Roof:	Restore with wooden frame and clay roof tiles according to the original design
Opening:	Use the existing doors and windows with cleaning and repairing, except some doors for the façade at the grand floor
External wall:	Re-painting directly on the structural wall
Crack on the wall:	Filled with elastic sealant

The facility operation and maintenance should be limited out of such the main structure elements, but inspection should be done carefully on them.

### 7.6.2 Facility Operation and Maintenance System

It is advisable to establish a system for efficient maintenance of the facilities taking into consideration following.

- 1) Technical staff responsible for operation and maintenance of facilities in each field would be arranged by the Municipality in the current system.
- 2) Building Contractor shall give on-the-job training for the operation, maintenance and inspection of facilities to the above technical staff and at the same time provide instruction manuals on maintenance and operation, if any.
- 3) Weekly reports on maintenance and inspection of facilities shall be prepared by the technical staff to make it easy to have a clear grasp of the status of the facilities

### 7.6.3. Operation and Maintenance Plan

The activities for operating and maintaining the facilities are as shown below.

O& M	{	Daily O& M	- cleaning, operation, daily inspection
		Periodical O& M	- periodical inspection/adjustment, minor repair
		Emergency O& M	- emergency inspection, repair, renovation

To establish an overall plan for operation and maintenance, especially for the periodical inspection/adjustment among the above activities, is essential to keep facilities operated in order as planned and to prolong the facilities life.

The inspection and maintenance system of the facility are shown in Section 7.6.4 below. In addition to them, special emphasis shall be placed on the following issues.

- 1) Roof
  - The roof is planned to restore according to the original design, periodical inspections, therefore, are necessary to avoid water leaks..
  - Gutters and drainpipes, especially, shall be cleared twice a year since they are likely to be filled with dust.

2) Finishing Materials

- When exterior materials have rusted, rust shall be removed and the metal shall be painted to prevent it's spread.
- Rooms shall be kept well ventilated and the finished surfaces of rooms shall be kept clean to prevent them from getting rusty and dirty.
- Since floors finished with stone or terrazzo tiles are difficult to repair once scratched, particular care shall be taken when moving heavy objects on such a floor.
- Ceiling finish materials shall be handled very carefully since they are affected by shocks,

3) Building Machines

- Building machines shall be operated and inspected by engineers with professional knowledge of electricity or machinery in accordance with the instructions listed in instruction manuals.
- When troubles are found in a piece of machine, operation of it shall immediately be stopped to find out the cause and remedial measures shall be taken to prevent the trouble form affecting other pieces of machines.

**7.6.4. Inspection and Maintenance system**

The main points of facility inspection and maintenance to be inspected and adjusted, and their suitable periods are shown in Table 7.6 for the building and Table 7.7 for the electrical and mechanical. The application of the maintenance system in the tables should be made taking into considerations the renovation system actually applied as shown in Section 7.6.1.

**Table 7.6 Building Inspection and Maintenance System**

Part of Building		Inspection Points	Inspection Period
Structure	Footing	<ol style="list-style-type: none"> <li>1. Crack, deform, damage and settlement.</li> <li>2. Settlement and floating of the building from the ground level.</li> </ol>	3 years
	Column, Girder, Wall, Floor, Roof, Balcony, Stair	<ol style="list-style-type: none"> <li>1. Crack, deformation, damage, rust, erosion, deterioration of painting, and loosening of connection.</li> </ol>	
Finish	Floor	<ol style="list-style-type: none"> <li>1. Crack, damage, fragmentation of surface, rust, erosion, abrasion, deterioration of paint, condensation in finishing materials.</li> <li>2. Performance of waterproofing membrane.</li> <li>3. Drainage of water exposed area.</li> </ol>	1 year
	Stairs	<ol style="list-style-type: none"> <li>1. Crack, damage, fragmentation of surface, rust, erosion, condensation, deterioration of paint, and rain leaking in finishing materials.</li> <li>2. Deformation, damage or deterioration, and installation condition of non-slip.</li> </ol>	1 year
	Wall	<ol style="list-style-type: none"> <li>1. Crack, deformation, damage, fragmentation of surface, rust, erosion, condensation, deterioration of paint and rain leaking in finishing materials.</li> <li>2. Crack, damage, and deterioration of sealant.</li> <li>3. Deformation, rust, erosion or deterioration of paint and installation condition of metallic material.</li> </ol>	Interior 3 years Exterior 1 year
	Door & Window	<ol style="list-style-type: none"> <li>1. Deformation, damage, abrasion, rust, erosion or deterioration of paint, and condition of working &amp; installation.</li> <li>2. Crack, deformation, damage, abrasion and deterioration of sealant &amp; airtight material.</li> </ol>	1 year
	Ceiling	<ol style="list-style-type: none"> <li>1. Crack, deformation, damage, fragmentation of surface, rust, erosion, condensation, deterioration of paint, rain leaking and installation condition of finish.</li> <li>2. Deformation, damage, rust, erosion or deterioration of paint and installation condition of curtain box &amp; ceiling maintenance hatch.</li> </ol>	Interior 3 years Exterior 1 year
	Roof	<ol style="list-style-type: none"> <li>1. Crack, damage, deterioration and surface fragmentation of finish &amp; expansion joint</li> <li>2. Crack, damage or fragmentation of surface, rust and installation condition of parapet &amp; top rail.</li> <li>3. Performance of waterproofing membrane.</li> </ol>	3 years

Source: JICA Study Team

Table 7.7 Mechanical and Electrical Inspection and Maintenance System

Mechanical Equipment			
Building utilities	Maintenance Item	Maintenance Period	
Air conditioning and ventilation system	Air conditioning and ventilating devices	1. Check damage, rust, corrosion noise and abnormal vibration and condition of installation 2. Check noise and temp rising, voltage of power unit.	1 year -ditto-
	Fan	1. Check damage, rust, corrosion noise and abnormal vibration. 2. Check bearings and shafts.	1 year -ditto-
	Controller	1. Check operation, damages, rust, temp rising, noise and connection of cables. 2. Check operation of controller and protective devices.	1 year -ditto-
	Pump	1. Check damage, rust, corrosion noise and abnormal vibration. 2. Check level of lubricant of bearings.	1 year -ditto-
	Duct accessories	1. Check damage, rust, corrosion noise and abnormal vibration. 2. Check operation of dumper.	1 year -ditto-
	Pipes, valves and traps	1. Check damage, rust and corrosion. 2. Check operation of valves and traps. 3. Check sludge inside traps.	1 year -ditto- -ditto-
Water supply, drainage system	Water supply and drainage	1. Check damage, rust, corrosion, noise and abnormal vibration. 2. Check lubrication of bearings. 3. Check operation of devices.	1 year -ditto- -ditto-
	Pipes and valves	1. Check damage, rust and corrosion. 2. Check operation of valves.	1 year -ditto-
Electrical Equipment			
Building utilities	Maintenance Item	Maintenance Period	
Lighting and motor control system	Lighting and motor control devices	1. Check damage inside of distribution board, rust, temp rising, noise and connection of cables. 2. Operation test 3. Operation test of protective devices. 4. Check damages, connection of cables, rust, temp rising of outdoor lighting fixtures.	1 year -ditto- -ditto- -ditto-
	Feeder	1. Check damage, rust and temp rising, 2. Check condition of installation and damages or rust on supporting materials.	1 year -ditto-
BMS system	Controller	1. Check damage, rust, temp rising, noise and connection of cables. 2. Check operation of control devices, indicators and meters.	1 year -ditto-
	Central processor	1. Operation test.	1 year
	Terminal and data logger	1. Evaluate the records. 2. Operation of I/O devices.	1 year -ditto-
Lightning arrester	1. Check condition of air terminals, conductor and connection, damages, rust, etc.	1 year	
Wiring system for outdoor	1. Check crack, damage, corrosion, condition and connection of cables. 2. Check damage, corrosion of pipes and supporting materials. 3. Check crack, damage, level of lid of hand hall and man hall. 4. Check deformation, damage and condition of hand hall and man hall. 5. Operation test.	6 months -ditto- 1 year -ditto- -ditto-	

Source: JICA Study Team

## Chapter 8 Financial Analysis

The financial analysis was made only the Historic Old Salt Museum in Abu Jaber Building, since this is required new organization and personnel for the operation and maintenance other than other components, which will be managed by the existing operation system.

### 8.1 Methodology

The purpose of the museum management is both to fully utilise the museum facilities and offer a good service to society. The key to good management is suitable arrangement of museum personnel and maintaining financial stability.

Appraisal of the income and expenditure is based on the budget allotment for the number of personnel, special exhibitions, public relations, restoration of exhibits and research, etc., in representative museums in Japan, and the circumstances in Jordan.

### 8.2 Expenditure and Income

Items to be considered for expenditure and income are assumed as shown in Table 8.1

The basis of the calculation of income and expenditure for operation cost is a financially stable plan, namely it assumes low income and high expenditure.

Accordingly, a trial calculation of the income and expenditure for operating cost is carried out, with reference to museums in Japan and advanced countries, and the circumstances in Jordan.

Table 8.1 Items in expenditure and income

Expenditure		
	Item	Application
Personnel Expenditure		Monthly salary + bonus + allowance for Director, Department Head, Chief of Section, General Staff and Service staff
Operation Expense	Special Exhibitions	Exhibition Expense
	Public Relations	Symposium and Lectures, meeting etc.
		Training programme
		Bulletin
		Guide book
	Poster and advertisement, etc.	
	For Exhibit	Collection of exhibits Restoration of Exhibit
Studies and Research	Academic society fee, Travelling expense Book Purchasing cost, Research report expense	
Sales Costs	Shops	
	Cafeteria	
Administrative Expenses	Light and Fuel Expense	Electricity, Water, Sewage and Fuel cost
	Maintenance Cost	Inspection, Repair expenses
	General Cost	Communication, Supplies and Miscellaneous expenses
Revenue		
	Item	Application
Operation Revenue	Exhibition	Admission fee
	Educational spreading	Lecture and short course attendance fee
	Income by Publication	Sales of publications
Facilities Rent	Rental fee	Special exhibition at visitor centre
Sales Income		Shops
		Cafeteria

Source: JICA Study Team

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## 8.2.1 Expenditure

### (1) Cost for personnel

- 1) It is calculated based on present labour cost of museums in Jordan and the assumed number of personnel and service staff of the new museum.
- 2) Annual labour cost is calculated, referred the estimated monthly salary by SAPROF and estimated allowance (approximately 4 times the monthly salary).
- 3) The estimated monthly salary by SAPROF;  
3,000JD, 1,500JD, 800JD, 400JD (depending on position)
- 4) The annual salary with allowance for museum staff is assumed as:
  - Director 24,000JD
  - Chief of section 12,800JD
  - General staff 8,000JD
  - Service staff 4,800JD

### (2) Operating cost

Calculations have been made by the means quoted in the existing museums in Jordan for required items

- 1) Items which can be estimated by referring to existing museums in Jordan are calculated by the ratio of the planned facilities or number of personnel.
- 2) Items which cannot be estimating by referring to existing museums in Jordan are calculated by the ratio of the operating cost of national museums as shown in Table 8.2.

Table 8.2 Ratio of operating cost against Total Expenditure (%)

Items		Tokyo National Museum	Kyoto National Museum	Nara National Museum	Total
Operating Cost	Special Exhibition	4.8	13.6	13.9	8.3
	Public Relations	1.1	0.8	0.4	0.9
	Data and Materials Collection	0.3	0.1	0.2	0.3
	Restoration of Data	7.8	3.2	1.6	5.7
	Studies and Research	0.3	0.0	0.0	0.2
	Total	14.2	17.8	16.2	15.3

Source: Museums in Japan

The ratio shows on which items emphasis in museum activities is laid. For museums in Japan, it is clear that holding special exhibitions several times a year, which will generate publicity and attract large numbers of visitors, is the key to successful operation.

### (3) Administrative cost

- 1) Utility costs are estimated by maximum demand of facilities
    - Electricity and fuel 10,300 JD
    - Water and sewage 5,200 JD
    - Total 15,500 JD
- Unit price/m<sup>2</sup> 15,500 JD / 1,088 m<sup>2</sup> = 14.25 JD

- 2) Maintenance cost is 20% of the utility costs
- 3) General expense is 10% of the total expenditure

The expenditure does not include depreciation and taxes because of administration by government or local public body. Accordingly, in case of administration by incorporated foundation or the third sector, depreciation and taxes shall be taken into consideration.

### 8.2.2 Income

#### (1) Operating income

- 1) Admission fee is estimated by anticipated number of visitors and the intended fee.

Anticipated number of visitors under the planned facilities are higher than those of National Museums in Japan. To attract the anticipated number of visitors, special exhibition are held on mentioned in 8.2.1 (2) "Operating Cost". It is impossible to realise it without attractive special exhibitions and various topical events in the news to appeal to groups which do not usually go to museums.

- 2) Education spreading income is 72% of the public relations cost.
- 3) Publication income is 70% of public relations cost.

Table 8.3 Ratio of Operation Revenue against Revenue of Public Relation (%)

ITEM		Tokyo National Museum	Kyoto National Museum	Nara National Museum	Average
Operation Revenue	Education Spreading Income	61.4	68.6	186.9	71.7
	Income by publication	47.0	128.3	144.3	70.4

Source: Museums in Japan

#### (2) Rental Fee

Calculations have been made by the means quoted hereunder for required items.

- 1) Rental fee (shops, restaurants) based on floor space and relevant unit price per square meter.

##### Example of a high-class shopping hall in Amman

- A tenant occupying some 100 square meters would have to pay roughly 10,000 JD per annum plus a service fee of 20%.
- The monthly sum would come to some 10.0 JD/square meter.

On the other hand it is assumed that Salt Museum could charge an amount of 5.0 JD/square meter/month.

- 2) Parking space is available gratis.

#### (3) Other income

Other incomes such as subsidies, contributions, etc. are not assumed.

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### **8.3. Considerations on Financial Status**

#### **8.3.1. Visitors and Admission Fees**

A provisional calculation of expenditure and revenue for the Historic Old Salt Museum was conducted based on the conditions below and the results of the calculation are shown in Table 8.4.

##### Visitors

According to the data of current number of visitors to the Salt City, the total tourists were 61,000 in 1998/99, which was calculated in Section 2.3.1, Chapter 2, and expected local visitors were calculated 18,693 in 1998/99. It is assumed that the share of tourists and local visitors is 8:2. This share will be continued in the future due to convenient location from Amman and the tourism assets and products in the City.

##### Admission Fees

The admission fee is set as 3.0 JD for foreign visitors and 0.15 JD for local ones, also the fees may be determined in political considerations finally. The admission fee of 0.15 JD for the local visitors is keeping the current admission fee of Karak Castle and Jordan Archaeological Museum, while 2.0 JD has been increased for the foreign visitors from the current fee of 1.0 JD of Karak Castle in order to obtain and keep certain level of the financial status.

#### **8.3.2. Considerations on the Calculation Results**

According to the calculation results shown in Table 8.4, the following are the considerations of the financial status of the Museum:

- The balance between the revenue and expenditure becomes 75,776 JD in red ink.
- In order to keep a break-even point between the expenditure and revenue, increasing the amount of admission fee is the only the way, since other revenue is too small and not effective. Increasing the amount of admission fee has two ways; 1) increasing number of visitors and 2) increasing admission fees.
- For the break-even to the operation and maintenance costs, the former way above was taken because the admission fees will be determined with political considerations. As shown in Table 8.5, it is required to pay efforts to increase number of visitors to 120,193 in total (addition of 40,500) for keeping the break-even point. It means that the efforts should be paid to increase more than 1.5 times of the current number of visitors to the City.
- For return of the initial investment; pre-opening activities and construction costs, more efforts should be paid by the all agencies concerned in relation with the total tourism promotion of the Salt City and region.

Table 8.4 Provisional Calculation of Expenditure and Revenue based on Visitors in 1998/99

<b>Expenditure</b>				
Item		Number/Personnel	Expenditure per Annum (JD)	Amount (JD)
Personnel Expenditure	Director	1	24,000	24,000
	Chief of Section	3	12,800	38,400
	General Staff	2	8,000	16,000
	Service Staff	18	4,800	86,400
	Sub Total			164,800
Operation Expenses	Special Exhibitions	Exhibition Expense		33,200
	Public Relations	Lectures, Short courses and Poster Production costs etc.		3,600
	Data and Materials Collection and restoration	Data and Materials Collection		1,200
		Restoration of Exhibit		22,800
	Studies and Research	Academic society fee, Book purchase cost, Report printing expense		800
Sub Total			61,600	
Administrative Expenses	Utility Costs	Electricity, Water, Sewage and Fuel cost		15,500
	Maintenance Cost	Equipment maintenance and inspection, Repair expenses		3,100
	General Cost	Convention, communication, supplies and misc. expenses		24,500
	Sub Total			43,100
Total			269,500	

<b>Revenue</b>				
Item	Admission fee	Number of Visitors	Amount (JD)	
Operation Revenue	Admission Income	Tourist (3JD)	61,000	183,000
		Local Citizen (0.15JD)	18,693	2,804
		Sub Total	79,693	185,804
	Education Spreading Income	Lecture and short course attendance fee		2,600
	Publication income	Sales of Publications		2,520
Sub Total			190,924	
Rental fee	Rental fee	Special Exhibition at visitor centre	50 JD x 20 days	1,000
		Shops	3 JD x 10m2 x 12months	360
		Cafeteria	3 JD x 40m2 x 12months	1,440
	Sub Total			2,800
Total			193,724	
Balance of Revenue and Expenditure			-75,776	

Source: JICA Study Team

Table 8.5 Provisional Calculation for Break-even by adjusting Number of Visitors

<b>Revenue</b>				
Item	Admission fee	Number of Visitors	Amount (JD)	
Operation Revenue	Admission Income	Tourist (3.0 JD)	85,500 (+24,500)	256,500
		Local Citizen (0.15 JD)	34,693 (+16,000)	5,204
		Sub Total	120,193 (+40,500)	261,704
	Education Spreading Income	Lecture and short course attendance fee		2,600
	Income publication	Sales of Publications		2,520
Sub Total			266,824	
Rental fee	Rental fee	Special Exhibition at visitor centre	50 JD x 20 days	1,000
		Shops	3 JD tourist x 20%	360
		Cafeteria	3 JD tourist x 10%	1,440
	Sub Total			2,800
Total			269,624	
Balance of Income and Expenditure (in Table 8.4)			+124	

Source: JICA Study Team

## Chapter 9 Issues to be solved in further stage

There are still many issues to be solved by the Jordanian side to proceed further in the implementation stage.

### 9.1. Particular Issues

(1) Review of Tender Package

The tendering/contract package as well as signing agency of the contract and tender type by the package will be confirmed prior to the commencement of the procurement procedures. The packaging of the tender should be updated according to the actual situations of issues of each work-component.

In particular, availability of new car parking space may determine the procurement schedule of Public Spaces. The construction of public open spaces should be commenced in conjunction with provision of new parking spaces for the cars currently occupying the public open space in order not to over flow the traffic in the town centre.

(2) Establishment of operation body for museum facility

It is essential to establish a preparatory organisation for the operation and management as well as assignment of personnel for the permanent organisation, especially for Historic Old Salt Museum in the earliest time as possible. In order to prepare and train those personnel for the operation of the Historic Old Salt Museum, the preparatory organisation should be established.

(3) Coordination and agreement with tenants/shop owners

The construction of the tourist trails, including restoration of Abu Jaber Building, cannot conduct without co-operation of the residents and shop owners for disturbance of their daily activities such as entry/exits, stopping the operation, etc

Because the sub-project situated in town centre may cause socio-economic impacts to disturb or stop economic activities of the tenants/shop owners and disturb the daily life of residents as well as customer in/along/adjacent to the sub-project sites.

It is essential to provide adequate notice and information on the development, and to obtain their acceptance in order to achieve a smooth implementation of the sub-project.

It is also important to take it in consideration to co-ordinate with their daily activities and conveniences during the construction.

(4) Demarcation of Exhibition Works

The works related to the exhibition of new museums should be defined and clearly demarcated between the contractor and the Jordanian sides. The Jordanian side basically executes to follow up software supply and collection works before the opening of the Museum.

The following table is shown for basic understanding of the works between the Jordanian side and contractors:

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Items	Done by the Jordanian Side	Done by Contractors
Show Cases/Stand	-	Fabrication
Audiovisual	Software Supply (Videos, Slides, and Films)	Installation of Equipment
Exhibition Panels	Software Supply (Maps, Photos, Drawings, and/or Descriptions)	Installation of Frames and Boards with supplied maps/photos/drawings/descriptions
Exhibition Plates and Signs	Software Supply (Interpretation texts, Drawings and/or Logos)	Installation of Plates and Lettering in accordance with supplied texts
Authentic Materials and Artefacts	Collection, Transportation and Installation	-

Software Supply means that necessary to facilitate original text and interpretation of collected artefacts, and to provide basic scenario of AV and explanation drawings by the Jordanian side with the support of a consultant employed under the JBIC scheme.

- (5) The authentic artefacts should be confirmed/negotiated with respective owner for their availability (can be given) for exhibits of the Museum.