

**THIRD TOURISM DEVELOPMENT PROJECT
SECONDARY CITIES REVITALIZATION STUDY**

Salt

Environmental assessment

Annex 4

JOINT VENTURE OF COTECNO WITH ABT ALCHEMIA CDG MGA

Prepared by: **IH**
Checked by: **RK**

Rev: **A**
Date: **24/05/05**

Table of contents

1.	EXECUTIVE SUMMARY	3
2.	INTRODUCTION.....	4
2.1	Objectives of the Study	4
2.2	Delineation of the Project Area	5
3.	REGULATORY FRAMEWORK AND GUIDELINES.....	6
4.	EIA METHODOLOGY	7
4.1	Purpose and Objectives.....	7
4.2	Study Process and Methods.....	7
4.2.1	Study Area Reconnaissance	7
4.2.2	Literature Review.....	7
4.2.3	Site Visits	8
4.2.4	Community consultation	8
5.	DESCRIPTION OF SITE AND SURROUNDING AREAS.....	9
5.1	Background to the project area.....	9
5.2	Salt's historical development	9
5.3	Environmental and physical Components	10
5.3.1	Roads	10
5.3.2	Domestic Water Supply	10
5.3.3	Sewage system	10
5.3.4	Electricity and Power	10
5.3.5	Climate.....	10
5.3.6	Agricultural Activities	10
5.3.7	Industrial Activities.....	10
5.3.8	Health	11
5.3.9	Education.....	11
5.3.10	Tourism and archeology	11
6.	ENVIRONMENTAL ASSESSMENT OF THE CITY REVITALISATION PROGRAM	12
6.1	Abstract of the Proposed Projects	12
6.1.1	S.01 – Upgrading of the street network.....	12
6.1.2	S.02 – Realization of a new urban complex	13
6.2	Environmental elements identification	13
6.3	Phases of the EA study.....	14
6.3.2	Activities in Relation to Phases	14
6.4	Impacts identifications.....	15
6.5	Valued Environmental Components	16
6.6	Potential Impacts of Projects' Activities on Valued Environmental Components	17
6.6.1	Public Health.....	17
6.6.2	Occupational Health and Safety	18
6.6.3	Physical components.....	18
6.6.4	Biodiversity	18
6.6.5	Socio-Economic Conditions.....	19
6.6.6	Archeology.....	19
6.7	Conclusions and recommendations.....	19

1. Executive Summary

The objectives of the EA study are to assess the environmental issues of the target area and to validate the CRP as a whole from an environmental point of view, by examining the project's potential negative and positive environmental impacts.

A number of site visits by the different members of the technical team were organized during the course of the study. The visits were carried out during the months of October and December 2004. Site visits covered most of the districts of Salt old city, proposed location for the projects, neighbourhood residential areas and other infrastructure facilities within the project areas.

The technical team undertook intensive consultations with the officials, technicians and public at the Municipality of Salt City, Ministry of Environment, Ministry of Tourism and the local communities. Consultations were carried out through official meetings, site visits, scoping sessions and public consultations.

The average temperature ranges from 2° C in January up to 17° C in August. This indicates that the **weather is moderate** and form a good environment for residents, flora and fauna at the project area. The area has a moderately wet weather, with average rainfall higher than the national average

Old Salt is developed around the spring in the Akrad valley, on three hills: Al Qala, where there are still the remains of the mediaeval castle, Al Jada'a and As Salalam, and it is separated by the flood plains of Wadi Akrad and wadi Es Salt. The dense urban form of the city centre, with the enclosure of hills surrounding it, the close knit pedestrian scale of the city, and the sitting of the yellow stone buildings on such steep slopes is unique, synchronizing the townscape, people's life and the traditional culture of the city; forming an "**Eco-Museum**".

Salt is served by the **water** supply network for the domestic uses from 39 groundwater wells and five potential springs with total delivery of 3050 m³ / hr . The deficit in water delivery reaches around 800 m³ / hr which make the Governorate in big need for more quantities of fresh water. The city is served by the wastewater collection system and treatment plant located at the beginning of wadi Shuaeb in the way down to Jordan Valley. The total number of connections is 3211 serving 98% of the citizens. The total collected wastewater from the city to the treatment plant is around 4000 m³ /day. The reclaimed water is used in the downstream for restricted irrigation practices.

Due to the sensitive location of the Governorate in terms of natural resources connecting region between the uplands and Jordan Valley, the area was populated since thousands of years, which make it an attractive place for internal and external tourism. During summer the uplands has a moderate weather, and during winter the valley enjoys such moderate weather too. Where during the spring and autumn the highlands are the attractive areas for visitors and residents.

In terms of **archaeology**, al Salt City is considered as one of the natural museums in the whole region and not in Jordan only. It still maintain a total number of 657 old and heritage houses from the Ummauia period. In addition there are around 15 other archaeological sites all over the Governorate, like Al Salt Castle, Rmamein, Safot, Jalad, Tal Deir Alla, Zara and Wadi El Kharar, Tal marlias and Rama.

After examination of the current conditions of the target area; the technical, financial and social aspects of the proposed actions; and the anticipated environmental impacts on the physical, ecological and socio-economical aspects of the environment, it can be concluded that the proposed projects will have a **net positive socio-economic impacts on the residents and environment** of Salt City. The positive impacts in the short, medium and long term exceeded the anticipated negative impacts during the construction and operation phases.

2. Introduction

According to the Terms of Reference (ToR), the scope of the whole study is to contribute to the ten-year strategy for tourism whose aim is to “*develop the potential of regional centres such as Karak, Jerash, Madaba and Salt cities in order to increase their contribution to the value added by the national tourism sector and benefit the population of these cities and their respective regions*”. An explicit link is proposed between the need for an urban regeneration of the city centre and the improvement of tourism facilities in order to achieve the following goals:

- Spread the impact of increased numbers of tourists having longer stays;
- Provide the opportunities for local business growth and employment;
- Benefit the local population by job creation.

Tourism is to be considered as an engine for an overall socio-economic development of the regional centres and urban regeneration is a crucial issue for such a tourism development: it is essential in order to promote the identity of each regional centre, to improve the quality of the urban fabric in the old cities, and to enrich the experience of visitors. At the same time, an enhanced urban environment and a better livelihood for both residents and visitors, are conditions to maximize the effects of public investments and favour private initiatives.

The ToR stress that “the objectives of tourism promotion should not overshadow the general analysis of the need for sustainable urban regeneration for the benefit of the local population in the living commercial and administrative centre”, and the goals of the Study are defined as follows:

- To develop a medium term development strategy for the city of Salt, with the emphasis on the potential links between the two terms of the tourism promotion and the urban regeneration.
- To identify priority urban regeneration and tourism-related projects and cultural heritage conservation activities for the city of Salt and its immediate attraction zone.

2.1 OBJECTIVES OF THE STUDY

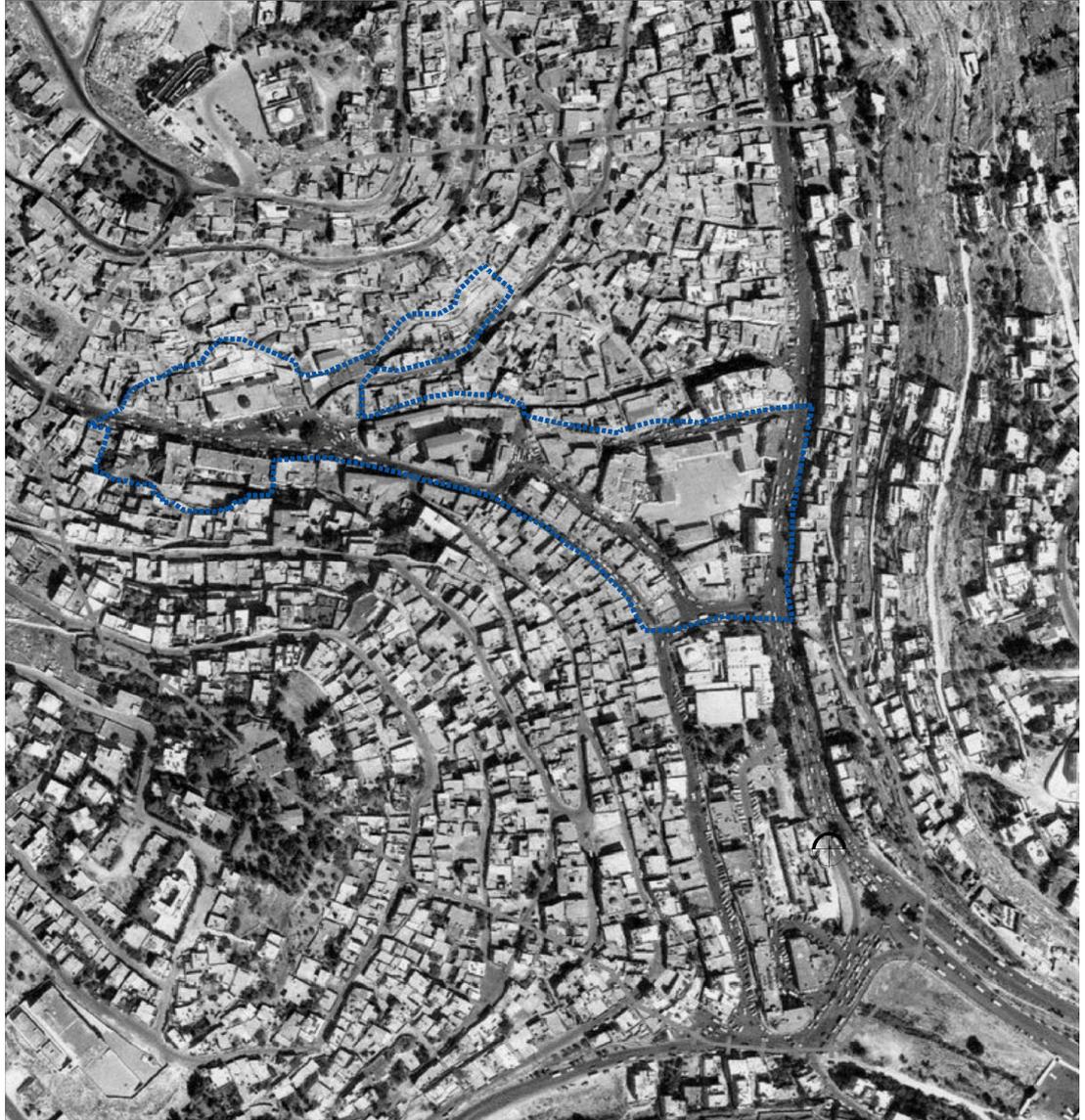
The objective of this study is to reflect environmental resources of value, concern, and/or sensitivity, including sites having/needing official recognition and protection, urban practices to be changed, if any. Propose overall environmental mitigation and management activities that need to be undertaken for achieving sustainable urban regeneration and protection of natural sites. In more specific the main assignments will consist of:

- 1) **Assessment environmental issues** of the study area including sites that are/should be listed/protected, management practices to be changed, etc...
- 2) **Validation of the city revitalisation program** as a whole from an environmental point of view, by examining the project's potential negative and positive environmental impacts.

This shall be done by means of an evaluation matrix project actions/environmental impacts. The matrix shall take into account (a) the natural environment (air, water, and land); (b) human health and safety; and (c) social aspects (involuntary resettlement, and cultural property).

2.2 DELINEATION OF THE PROJECT AREA

This Report will discuss the case of Salt City, located at around 25 km to the west of Amman City, and accessed through the Amman – Middle Ghor Highway that connects Amman with Jordan Valley regions. These proposed actions were selected based on their potentiality in terms of revitalizing the city through promoting the archaeological and historical sites.



AERIAL PHOTO OF SALT WITH THE CRP AREA

The proposed Projects (Actions) that will be under assessment in this report are summarized in Table 1. A description of each of these actions is available at the different chapters of this Report.

NO	ACTION
1	Upgrading of the street network
2	Realization of a new urban complex

TABLE 1 - LIST OF PROPOSED ACTIONS

3. Regulatory framework and guidelines

The requirement for an environment assessment of the project has been triggered by compliance of the project with the World Bank's OP 4.01 (1999) revised on August 2004 on **Environmental Assessment**. Other policy notes were considered such as OP 4.11 (Under preparation) – Management of cultural property and OP.4.12 – operational policy on involuntary resettlement (Revised April 2004). With reference to the OP 4.01, the project is likely to be classified as a **category B project**. The impacts are site-specific; few if any of them are irreversible; and in most cases mitigation measures can be readily designed. Because the project is implemented in Jordan, it is necessary also to consider the Jordanian Environmental Laws in implementing the EA study.

The World Bank Operation Policy (OP 4.01—1999) revised on August 2004 specifies that large scale Tourism projects "Which May Have Diverse and Significant Environmental Impacts" normally require an Environmental Assessment. Because of this specification and the archaeological delicateness of the project area it is important that a comprehensive assessment is done.

According to the Operational Policies, the most important issues to cover in an Environmental Assessment which are relevant to this project are Social impacts, Biological Diversity, Cultural Properties, Natural Hazards, and Occupational Health and Safety. All of these issues and others will be considered in this report.

OP 4.11 – Management of cultural property (under preparation) states that the Bank will assist in the protection and enhancement of cultural properties encountered in Bank-financed projects, rather than leaving that protection to chance. In some cases, the project is best relocated in order that sites and structures can be preserved, studied, and restored intact in situ. In other cases, structures can be relocated, preserved, studied, and restored on alternate sites. Often, scientific study, selective salvage, and museum preservation before destruction is all that is necessary. Most such projects should include the training and strengthening of institutions entrusted with safeguarding a nation's cultural patrimony. Such activities should be directly included in the scope of the project, rather than being postponed for some possible future action, and the costs are to be internalized in computing overall project costs.

OP 4.12 – Policy on involuntary resettlement applies to all components of the project that result in involuntary resettlement, regardless of the source of financing. It also applies to other activities resulting in involuntary resettlement, that in the judgment of the Bank, are (a) directly and significantly related to the Bank-assisted project, (b) necessary to achieve its objectives as set forth in the project documents; and (c) carried out, or planned to be carried out, contemporaneously with the project.

4. EIA Methodology

4.1 PURPOSE AND OBJECTIVES

An Environmental Assessment and environmental validation of the proposed actions in the city of Salt was requested by the Client, in parallel with the final design of the project and prior to the implementation. The EA will consider the potential locations used by the project.

This EA Study, commissioned on October 2004, has as its target the preparation of Environmental Impact Assessment Study Report of the third tourism development project.

In this study, there will be a focus on the following aspects:

- Research into the current environmental situation at the proposed sites for further actions and its surroundings.
- Description of the current site operation and the site conditions.
- Evaluation with regard to compatibility with minimum environment requirements.
- Assessment of the sensitivity of the surroundings of the action site (nature, human welfare, land use, surface / groundwater situation).

4.2 STUDY PROCESS AND METHODS

This section covers all methods used for completing this study. Before the project was officially launched, a base line research was carried out for the proposed sites. This was followed by the site visits to the project areas. Following this, information was gathered from different ministries and other sources that would be important to the study. Next a scoping meeting was held with various stakeholders, officials and community representatives in Salt Governorate in order to discern their opinion of the project and the potential impacts it could have. At that stage the communities were involved formally with their opinions regarding the possible effects the project that could raise on the environment.

Finally combining all this information, community consultation and field visits feedback enable the consultant to define the major environmental impacts, assessed, evaluated and mitigation measures were recommended in the form of environmental management plan.

4.2.1 STUDY AREA RECONNAISSANCE

A number of site visits by the different members of the technical team were organized during the course of the study. The visits were carried out during the months of October and December 2004. Site visits covered most of the districts of Salt old city, proposed location for the projects, neighbourhood residential areas and other infrastructure facilities within the project areas.

The technical team undertook intensive consultations with the officials, technicians and public at the Municipality of Salt City, Ministry of Environment, Ministry of Tourism and the local communities. Consultations were carried out through official meetings, site visits, scoping sessions and public consultations.

Officials at the MOTA and the Municipality were very cooperative and helpful to the technical team. All the meetings in Salt were arranged with consultation of the project manager.

4.2.2 LITERATURE REVIEW

During the visits of the technical team to the concerned agencies, most of the relevant data and information were collected and reviewed. The collected data were in the form of reports,

maps, recent studies by the local agencies, public consultations, suggestions and comments of the communities and officials.

These data include but are not limited to the following:

INFORMATION GATHERED	SOURCE
Aerial photo scale 1:10 000	Royal Geographic Centre
Tourist Map scale 1: 5 000	Royal Geographic Centre
Topographic Map scale 1: 10 000	Royal Geographic Centre
Information on the History of Salt	Department of Antiquities
Temperature, Rain and Humidity information	Meteorological Department
Information of Numbers and Nationalities of visitors to Salt	Ministry of Tourism and Antiquities
More information regarding the proposed future actions	Study of the second tourism development project

TABLE 2 - INFORMATION GATHERED AND SOURCE

4.2.3 SITE VISITS

Site visits were conducted during the months of November and December 2004 to the proposed locations for the new actions in Salt City in order to gain more information about the project sites. The team visited the targeted locations and surroundings, and the market nearby. The visit was very useful in clarifying the details of the project. From these visits, more information was gathered and it also became clear that the following information was needed.

- Information concerning the residential areas close to the sites,
- Information concerning the material to be used for construction,
- What facilities will be provided for visitors,
- What safety measures will be adopted,
- Parking and traffic information,
- Method of solid waste collection and disposal, and

The missing information were gathered from the different parties, MOTA, the municipality and other related organizations.

4.2.4 COMMUNITY CONSULTATION

In order to involve the communities within the targeted areas, a city consultation workshop was held at the City Hall attended by the Mayor, government officials and key representatives from the community. The workshop was held on Monday 6/12/2004. The aim of the workshop is to present a preliminary project outline and introduce the concept of the City Revitalization Pact and obtain comments and feedback. The workshop began with a presentation of the preliminary project outline and the communication was completely held in Arabic. The presentation was followed by a series of questions, discussions and feedback on the proposed actions. Another aim of the workshop was to collect information and discuss the institutional capacity of the Municipality, on the basis of the preliminary findings and results of the desk review and the desk research.

A lot of suggestions and proposals were raised concerning possible project actions, both from the public and private sectors. A specific points that were raised during the meeting and related to environmental aspects can be summarized as follows:

- Infrastructure is quite well organized however there is a need to raise awareness about traffic, parking and solid waste. Families do not want garbage containers in front of their houses. The staff who are doing the collections are not doing a good job.

5. Description of site and surrounding areas

5.1 BACKGROUND TO THE PROJECT AREA

The city of Salt has gained considerable concern by the Government of Jordan in general and the Ministry of Tourism and Antiquities in particular to enhance the urban development in order to increase Salt's potential as a tourist destination. This concern has appeared because it has major historical, religious and cultural values.

Planning for sustainable development of a community or a region generally aims at improving living conditions and quality of life for the people concerned. Social and political frameworks, within which economic development is to take place, are major determinants of the results to be expected.

From the administrative point of view, Salt City is the centre of Al Balqa Governorate which is administrated by the Governor, the highest authority at the Governorate. The Governor is connected directly with the Ministry of Interior Affairs and is responsible for ensuring the security and enforcing the laws. The services are carried out through the different governmental agencies and so the Municipality of Salt. Other non governmental organizations are involved in the social and economical activities in the Governorate. The City resided a homogenous mixture of Muslims and Christians originated from different regions and different backgrounds, living peacefully for hundreds of years.

5.2 SALT'S HISTORICAL DEVELOPMENT

Old Salt is developed around the spring in the Akrad valley, on three hills: Al Qala, where there are still the remains of the mediaeval castle, Al Jada'a and As Salalam, and it is separated by the flood plains of Wadi Akrad and wadi Es Salt. During the late nineteenth century and the early twentieth century, Salt played an important role in the political, economic, and social life in the area. The city is full of tradition, not merely architectural but rather in all aspects of life. Since Salt is located within the one-day tourism zone from Amman, and as it possesses the base for attracting tourists, the promotion and encouragement of tourism in Salt are therefore worthwhile and will consequently affect Amman tourism to a large extent.

The dense urban form of the city centre, with the enclosure of hills surrounding it, the close knit pedestrian scale of the city, and the siting of the yellow stone buildings on such steep slopes is unique, synchronising the townscape, people's life and the traditional culture of the city; forming an "Eco-Museum".

The concept of the city as an exhibit would adhere to the theme of the Eco-Museum whereby conservation of spatial modules addresses not only the conservation of isolated monuments, but also whole areas and neighbourhoods as well such as historic streets, districts, and historic city cores.

In the case of Salt, the historic core would be transformed into an eco-museum with its streets, steps, old historic buildings, plazas, and activities. It will be a type of museum dedicated not only for tourists, but also for the locals to explore their own community, tradition, history, and culture.

Balqa Governorate represents around 1.2% of the total area of the country. This Governorate entails 9 municipalities, ranging in area and population. The population of the Governorate represents around 6.6% of the total country's population with resident capacity of 316 people/sq.km. (higher than the country's average of 58 people/sq.km).

5.3 ENVIRONMENTAL AND PHYSICAL COMPONENTS

5.3.1 ROADS

The Governorate of Balqa and mainly Salt City has been served internally and externally with a network of highways, main roads and service roads. The total length of paved roads is around 1031 km. With 165 km as highways and 167 as main roads. The rest are service and agricultural roads. Salt is connected with other municipalities with main roads, from Amman down to the Jordan Valley heading Deir Alla City in the middle or the Dead Sea in the southern part. Internally the city is served by paved and service roads and the rural areas are served by service and agricultural roads.

5.3.2 DOMESTIC WATER SUPPLY

Salt is served by the water supply network for the domestic uses from 39 groundwater wells and five potential springs with total delivery of 3050 m³ / hr . The Governorate of Balqa has three main water treatment plants, the largest is Salt wastewater treatment plant. Also the Governorate has Zai treatment plant that supply Amman with drinking water. The average unaccounted for water is around 47%. The deficit in water delivery reaches around 800 m³ / hr which make the Governorate in big need for more quantities of fresh water.

5.3.3 SEWAGE SYSTEM

As mentioned before, the city is served by the wastewater collection system and treatment plant which is located at the beginning of wadi Shuaeb in the way down to Jordan Valley. The total number of connections is 3211 serving 98% of the citizens. The total collected wastewater from the city to the treatment plant (activated sludge) is around 4000 cu.m/day. The reclaimed water is used in the downstream for restricted irrigation practices.

5.3.4 ELECTRICITY AND POWER

The Governorate is served by electricity through the national electric network with around 99.9%.

5.3.5 CLIMATE

The average temperature ranges from 2° C in January up to 17° C in August. This indicates that the weather is moderate and form a good environment for residents, flora and fauna at the project area. The average evaporation Pan in mm ranges from 2.3 in January up to 10.3 in July. Rainfall analysis were collected from more than one station to be more representative, the long term average of the yearly rainfall was calculated at 266.8 mm.

Looking into the average rainfall and evaporation and temperate, it can be concluded that the area has a moderately wet weather, with average rainfall higher than the average f the country (150mm/year). That will lead to the conclusion that this area has certain potential for growing and flourishing certain elements of the environment.

5.3.6 AGRICULTURAL ACTIVITIES

The Governorate is considered as one of the active agricultural areas in the country, due to the location and relatively high rainfall and good soil. Ministry of Agriculture classified the soil of the lands of the Governorate as totally irrigable, which is around 1.1 million dunums. At present around 603,000 dunums is already cultivated. In addition to 130,000 dunums as Range lands and 54,000 dunums as grazing areas. In addition to the livestock activities (129,000 cheeps, 3500 cows and 154 chicken farms).

5.3.7 INDUSTRIAL ACTIVITIES

The Governorate has around 1060 industrial workshop represents around 14.5% of the total

industrial workshops in the country. The main industrial activities are stone cutting and mining in Fuheis and Maheis. Close to Salt city there is the Salt pharmacological industry.

5.3.8 HEALTH

Ministry of Health is responsible for the health activities in the Governorate through operating four hospitals with 500 beds and more than 34 medical clinics distributing all over the Governorate.

5.3.9 EDUCATION

The Governorate is served by two universities, Al Balqa public university which is located at Salt City and Amman Private university which is located in the highway of Amman-Salt. The total number of students at both universities are 6000. Other two community colleges are available. The total number of secondary and elementary schools are 281, around 80% are public schools with a total number of 99,000 students.

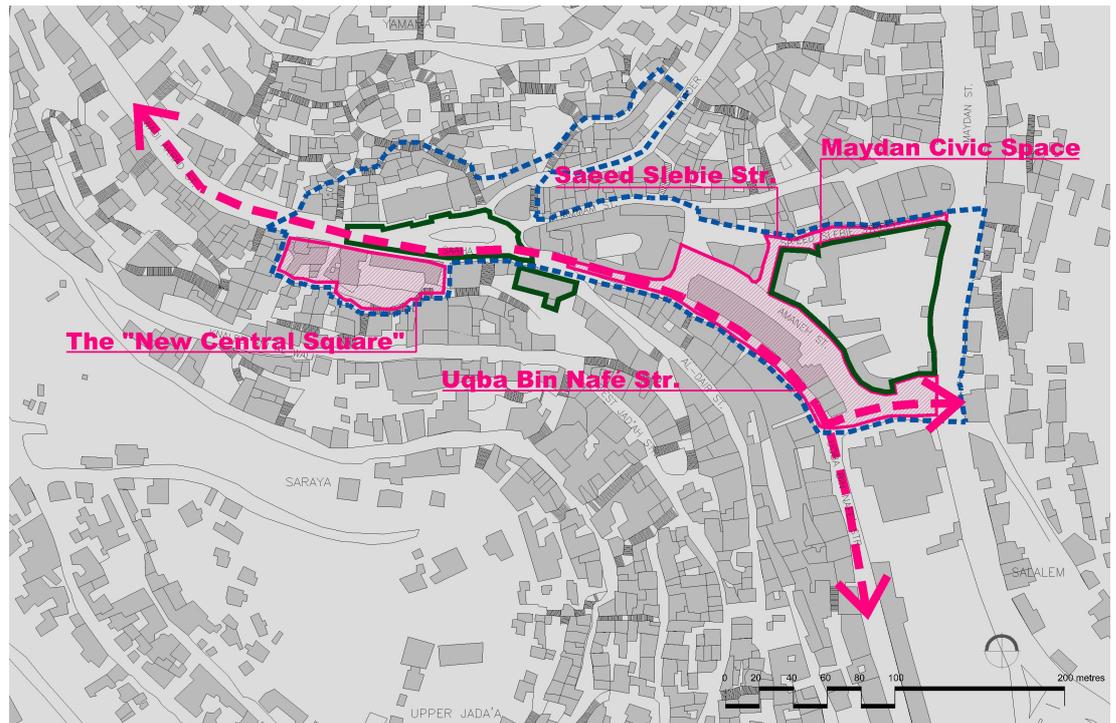
5.3.10 TOURISM AND ARCHEOLOGY

Due to the sensitive location of the Governorate in terms of natural resources connecting region between the uplands and Jordan Valley, the area was populated since thousands of years, which make it an attractive place for internal and external tourism. During summer the uplands has a moderate weather, and during winter the valley enjoys such moderate weather too. Where during the spring and autumn the highlands are the attractive areas for visitors and residents.

In terms of archaeology, al Salt City is considered as one of the natural museums in the whole region and not in Jordan only. It still maintain a total number of 657 old and heritage houses from the Ummauia period. In addition there are around 15 other archaeological sites all over the Governorate, like Al Salt Castle, Rmamein, Safot, Jalad, Tal Deir Alla, Zara and Wadi El Kharar, Tal marlias and Rama.

6. Environmental assessment of the city revitalisation program

All the proposed actions will be assessed from the environmental point of view as one package, but description of each of these actions is necessary to pin point the particularities of each of these projects.



OVERALL STRUCTURE OF THE PROPOSED CITY REVITALISATION PROGRAM

6.1 ABSTRACT OF THE PROPOSED PROJECTS

In the following sub sections an abstracts of each of the proposed actions:

6.1.1 S.01 – UPGRADING OF THE STREET NETWORK

The project's objective is that of improving the functionality and décor of part of the existing street network in strict coordination with the on going JICA infrastructural interventions. The streets involved in the upgrading process are:

- Al – Dair Street,
- Oqba ben Nafe street
- Sa'eed stable street.

The system of the three streets extends from the Saaha area to Maidan street and contributes to the urban integration of the eastern portion of the sloped urban fabric with the city centre and the refurbished suq.

The three streets are part of a package of infrastructural interventions which are presently being submitted to JICA for additional funding, therefore WB's availability to intervene has to

be preventively arranged with the Salt municipality.

The streets to be provided with wider sidewalks and with private and commercial street side parking facilities for visitors, residents and shop keepers.

6.1.2 S.02 – REALIZATION OF A NEW URBAN COMPLEX

The project's objective is that of creating an enclave dedicated to social encounter, leisure and entertainment adjacent to the existing Saaha compound. The project proposes the demolition of three modern governmental buildings and the transformation of the resulting void into a mixed use open air facility space where the local population can meet and socialize. The backdrop to the new leisure facility is a continuous architectural system, positioned roughly 12 meters above the topographical level of the Saaha, formed by the following Ottoman buildings:

- The Sukkar complex.
- The Khatib complex.
- The Sakit complex.

All of the buildings are in a severe state of the decay and in urgent need of extensive rehabilitation works. Acknowledging the fact that historic Salt's appeal is based principally on the continuity of its articulated Ottoman urban fabric, the project proposes to allocate funds for the rehabilitation of the above mentioned privately owned heritage buildings.

The new leisure complex aims at providing the city with an outstanding architectural statement which will improve the environmental quality of the overall cityscape by enhancing the symbolic role of the Saaha as the Umbilicus of the Salt's morphological structure.

6.2 ENVIRONMENTAL ELEMENTS IDENTIFICATION

To fulfil the World Bank requirement for project appraising, the (operational manual, Bank Procedures, BP 4.01- Annex B, January 1999) will be considered for the analysis.

The following table shows the key environmental issues, which should be studied to establish their baseline and to be assessed in the EA study:

ENVIRONMENTAL ISSUES	PROJECT PHASES	
	Construction	Operation
Physical and ecological conditions		
Water and Wastewater	X	X
Solid Waste	X	X
Air	X	X
Biodiversity		
Species (flora, fauna)	X	
Socio – Economic Conditions		
Public Health		
Dust	X	X
Noise	X	X
Solid waste	X	X
Social aspects		
Employment	X	X
Land value		X
Landscape	X	X
New business	X	X
Life quality		X

Infrastructure	X	X
Land acquisition	X	
Occupational health and safety	X	X
Cultural features		X

TABLE 3 - ENVIRONMENTAL ELEMENTS UNDER ASSESSMENT

6.3 PHASES OF THE EA STUDY

The EA study included the (construction and operation) phases throughout its stages.

STAGES OF EA STUDY

The assessment included the following stages; scoping, assessing, mitigation, monitoring, reporting, and reviewing.

ANALYSES ENTAILED

- Distinguish between positive, negative, direct, indirect impacts, reversible, irreversible, geographical extent, frequency and duration of impacts.
- Predict significance of impacts.
- Quantify impacts if possible.

6.3.2 ACTIVITIES IN RELATION TO PHASES

CONSTRUCTION PHASE

The general activities that are part of most of the proposed actions entailed, but not limited to:

- Land preparation (excavations and filling, demolitions and removal of all non required elements)
- Construction of Parking area and service roads cover with bituminous asphalts
- Construction of Sidewalks tiled with concrete modular units
- Construction of Curb stones border (concrete), separating the pathways from the parking areas
- Storm water drainage
- Signage (horizontal and vertical)
- Swing bar with access control
- Construction of service buildings for caretakers and toilets
- Planting grills with agricultural soil
- Plantation: trees (ailanthus, acer, platanus, carubs, acacia, oak)
- Soft landscaped area with greenaries, evergreen grass, pebbles
- Pathways tiled with various size modular units of natural stone
- Public lighting
- Garbage cans
- Benches
- Fences with stone wall

OPERATION PHASE

- Maintenance (preventive and corrective maintenance).
- Cleaning the developed areas.
- Utilities (domestic wastewater treatment, domestic solid waste management).
- Recruitment.
- Social issues.
- Accidents due to the increase of vehicles.
- Interference with current traffic directions.
- Generation of solid waste, emissions, noise and dust.

6.4 IMPACTS IDENTIFICATIONS

The following tables 4 and 5 summarize the issues and concerns that are believed relevant to the proposed actions and of environmental importance related to the construction and operation phases respectively.

IMPACT OF

Excavation and construction works on workers working in confined space
Dust on workers and public
Local employment
Removal of present plants and habitats
Noise on workers and public
Land acquisition of private estates
Resettlement of current residents
Visual impact from access debris and piling the construction materials
Domestic solid waste impact on workers
Priority for local sub-contractors.
Interfering with paths to the archaeological sites.
Absence of safety equipments
Road accidents due to traffic interference

TABLE 4 - ISSUES AND CONCERNS IDENTIFIED FOR CONSTRUCTION PHASE ACTIVITIES

IMPACT OF

Walking and crossing of children close to the proposed developed areas, parking areas, new buildings..etc.
Impact of noise on the public and employees
Impact of emissions and dust on public and employees
Generated waste from the newly developed areas
Equal job opportunities
Handling and disposal of generated wastes (liquid, solid, oil from maintenance operations)
Impacts on improving the tourist activities
Life quality
Impacts on delivering more fresh water to the proposed activities and the load on the collection sewer system

TABLE 5 - ISSUES AND CONCERNS IDENTIFIED FOR OPERATION PHASE

6.5 VALUED ENVIRONMENTAL COMPONENTS

All issues and concerns identified in the previous tables were analyzed and studied. Potential interaction of these issues were specified and evaluated with respect to the following valued environmental components (VECs).

- Socio-economic conditions.
- Physical conditions (water, wastewater and air).
- Physical conditions (dust, emissions and noise) and generated solid waste.
- Land acquisition.

The level of significance for every issue was evaluated taking into consideration the relevant VEC and the following criteria:

- The level of impact was ranked as : 1 (low), 2 (moderate) and 3 (high).
- The likelihood and frequency of occurrence was ranked as: a (high), b (moderate) and c (low).
- All interactions ranked 2a, 2b, 3a, 3b, 3c have environmental impact and will be assessed in the EIA study.

Evaluations of issues and concerns identified for construction and operation phases of the proposed actions are shown in Tables 7 and 8 respectively. Table 9 summarizes the potential anticipated interactions during accidental incidents.

IMPACT OF	SIGNIFICANCE	IMPACT	VEC
Excavation and construction works on workers working in confined space in terms of accidental injuries	2b	Yes	Occupational health and safety
Dust on workers and public	3b	Yes	Physical and Occupational health and safety
Local Employment	3a	Yes	Socio-economic
Removal of present plants and habitats	1b	Yes	Biodiversity
Noise on workers	2b	Yes	Occupational health and safety
Visual impact from access debris and storage of aggregates	2b	Yes	Socio-economic
Domestic solid waste impact on workers	2b	Yes	Occupational health and safety
Priority for local sub-contractors	2a	Yes	Socio-economic
Emissions on workers	2b	Yes	Occupational health and safety
Noise on public	1c	No	Public health
Road accidents	2b	Yes	Public health
Land acquisition	2a	Yes	Socio – economic
Resident resettlement	2a	Yes	Socio – economic

TABLE 6 - EVALUATION OF ISSUES AND CONCERNS IDENTIFIED FOR CONSTRUCTION PHASE

IMPACT OF	SIGNIFICANCE	IMPACT	VECS
Crossing the children close to the parking areas	2a	Yes	Public health
Impact of noise on the public	2b	Yes	Physical and Occupational health and safety
Impact of emissions and dust on public	3a	Yes	Physical and Occupational health and safety
Generated waste from the developed areas	1b	Yes	Occupational health and safety
Emissions and dust on employees	2b	Yes	Physical and Occupational health and safety
Noise on employees	2b	Yes	Occupational health and safety
Load on water supply and collection system	2b	Yes	Physical
Equal job opportunities	3a	Yes	Socio-economic
Improving the tourist activities due to improving the infrastructure	3a	Yes	Socio-economic
Life quality	3a	Yes	Socio-economic
Handling and disposal of waste oil from maintenance operations	2b	Yes	Occupational health and safety

TABLE 7 - EVALUATION OF ISSUES AND CONCERNS IDENTIFIED FOR OPERATION PHASE

VALUED ENVIRONMENTAL COMPONENTS (VECS)	ROAD ACCIDENTS	OCCUPATIONAL ACCIDENTS
Public health		
Occupational health and safety		/
Socio-economic conditions	/	/
Physical	/	/
Ambient air quality		/

TABLE 8 - POTENTIAL INTERACTIONS DURING ACCIDENTAL INCIDENTS

6.6 POTENTIAL IMPACTS OF PROJECTS' ACTIVITIES ON VALUED ENVIRONMENTAL COMPONENTS

The following sections summarize the issues having environmental impacts with respect to the valued environmental components. Each of these VECs will be analysed separately to show its particularities.

6.6.1 PUBLIC HEALTH

Public health may be affected through different phases as follows:

CONSTRUCTION PHASE

- Road accidents: Impacts on public in case of accidents due to the use of heavy trucks to transport construction material and workers.
- Dust and emissions: Impacts on public due construction activities, such as excavation and storage of aggregate.

OPERATION PHASE

- Injuries on children: Impacts on public in case of children playing or crossing in front of

the parking areas

6.6.2 OCCUPATIONAL HEALTH AND SAFETY

Occupational health and safety may be affected through different phases as follows:

CONSTRUCTION PHASE

- Accidents on workers: Construction workers might be exposed to high risk during hand excavation.
- Dust and emissions: Workers and public will be exposed to high level of dust during construction activities.
- Domestic solid waste: generated domestic solid waste might affect workers health if not disposed properly.
- Noise: impact of noise on workers and public health due to the use of heavy machinery during construction activities (Heavy bulldozers, Hammers, vibrators and compressors).

OPERATION PHASE

- Domestic solid waste: The public and drivers may be affected due to improper collection and disposal of domestic solid waste.
- Generated wastewater from the facilities: it will be necessary to connect the sanitary facilities to the collection system.
- Dust and emissions: (Drivers) and surrounding neighbourhood will be exposed to high level of dust and emissions during operation activities.

6.6.3 PHYSICAL COMPONENTS

Physical environmental components may be affected as follows:

CONSTRUCTION PHASE

- Air quality will be affected by emissions and dust: construction activities will generate dust, which will raise the levels of dust and emissions in the ambient air.
- More load on the fresh water resources due to the need for the new development areas.
- More load on the existing wastewater collection network due to the load generated from the new development areas.
- Soil may be affected / polluted due to the solid and liquid waste dumps during construction and the possible oil spillage from trucks.

OPERATION PHASE

- Air quality will be affected negatively by the increase of dust and emissions levels during operation phase.
- Loads on the fresh water resources to deliver enough water to the proposed activities.

6.6.4 BIODIVERSITY

Biodiversity may be affected as follows:

CONSTRUCTION PHASE

- Removal of present plants and habitats: Excavations will remove soil cover and destroy flora and habitats present at the sites. This may also affect fauna and migratory birds in particular.

- Dust: construction activities will generate dust, which might affect flora and fauna.

OPERATION PHASE

- Dust on flora and fauna during operation phase.

6.6.5 SOCIO-ECONOMIC CONDITIONS

Key issues and concerns regarding socio-economic conditions are as follows:

CONSTRUCTION PHASE

- Local employment: Locals should be given a fair job opportunities and fair share of jobs during all construction activities.
- Visual impact: people might be affected socially due to disturbing the natural seen as a result of improper disposal of debris.
- Priority for sub-contractors: During executing construction phase, sub-contractors should be given fair opportunity.
- Road accidents: Roads may be affected as result of increasing transportation activities (increasing the possibility of accidents) in order to deliver building materials.
- Land acquisition: the private land owners should be compensated fairly for using their private lands. There should be other alternatives to share them in the business. Otherwise there will be negative impacts on the owners.

OPERATION PHASE

- Equal job opportunities: there would be a negative impact if locals do not have fair job opportunities.
- Improve the life quality due to the creation of new jobs and improving the tourist activities and sight seeing.

6.6.6 ARCHEOLOGY

- During the construction phase, archaeological remains (if any) might be affected by excavation, site preparation and plant construction activities.

6.7 CONCLUSIONS AND RECOMMENDATIONS

After presenting the current conditions of the project area; the technical, financial and social aspects of the proposed actions; and the anticipated environmental impacts on the physical, ecological and socio-economical aspects of the environment, it can be concluded that the proposed projects will have a net positive socio-economic impacts on the residents and environment of Salt City. The positive impacts in the short, medium and long term exceeded the anticipated negative impacts during the construction and operation phases.

It is recommended to proceed with these projects taking into consideration all the mitigation measures and mainly the fair compensation for the current residents that have been suggested in the previous sections. Management plan should be considered as the guide for implementing the proposed mitigation measures.