The parkway should be designed to accommodate buses and cars, despite the technical difficulties posed by the topographical and geological conditions. It should be emphasized that these unique natural conditions will require careful design work to avoid soil erosion and land slides.

(3) Related Projects

The Jordan Valley Authority has conducted a study titled "Tourism Development Project of East Coast of the Dead Sea". The master plan of the project covers approximately 290 sq. km stretching about 58 km along north-south direction and 5 km on average along east-west direction. The first phase of action area plans have been prepared for the Suwayma Priority Area and the Zara Priority Area. Currently, an engineering study is being carried out for the Suwayma Area and application of investors is being carried out. Land use plans outside the priority areas have not been elaborated since the master plan was prepared. Also, no road plan has been elaborated except the local streets inside the priority areas. Instead, it has been assumed that two new roads would access the master plan area. One is along the alignment of the existing dirt road connecting the upper ridge near Ma'in Spa and Zara Area to the north of the Zara Priority Area. The other is along the alignment of the existing dirt track connecting Mukawir and Zara Area to the south of the Priority Area. The road plan presented in this study should be regarded as a substitute of one of these assumed roads. This model Parkway plan and the JVA's tourism development plan are therefore complementary.

4.5.2 Preliminary Plan

Three routes were compared before one was selected. Once a route was selected, four alignments were compared and prioritized. This two step process is explained below.

(1) Potential Routes Compared (Figure 4.5.1)

a. Main - Dead Sea Route

- A temporarily paved road already exists on a hilly area at the edge of the escarpment. The sections on the steep slope are too steep for ordinary cars to use. The horizontal alignment consists of successive hair pin curves.
- This route should be upgraded either on the same alignment or another alignment.
- Ma'in's tourist attraction is stronger than that of Mukawir.
- A panoramic complex is proposed by this study to be sited along the already paved section of this road.

- A cable car is planned by Jordan Investment Corporation to connect Main Spa and Zara along Wadi Zarqa Main.
- Firstly, the feasibility of the road must be studied considering its extreme topographic and geological conditions.

b. Ma'in - Mukawir Route

- A paved road is already completed except for the connection of 1 km at Wadi Zarqa Main;
- The vertical and horizontal alignments are rather tough for ordinary vehicles;
- Both upgrading of the road and a bridge at the Wadi are required for Main Spa-Mukawir Tourist circuit. This road with the Ma'in - Zara Road would conveniently connect Mukawir, Main and Dead Sea;
- Space at Main Spa is very limited. The road will decrease the limited space presently used as the caravan site;
- The low traffic demand to Mukawir at present does not justify the immediate implementation of this road; and
- Concern has been exposed that villagers from Mukawir entering Main along this road may negatively impact tourists by increased traffic, etc.

c. Mukawir - Dead Sea Route

- Mukawir attracts less tourists than Main.
- There is a dirt road for only 4 wheel drive cars.
- Some sections are difficult and dangerous even for 4 wheel drive cars.
- No construction work has been done by MPWH in recent years.
- If Ma'in - Dead Sea Route is found to be difficult to develop, this route together with the Ma'in Mukawir route may be an alternate link to connect the Ma'in Area and the Dead Sea, through the total of these two routes is around 20 km.
- But otherwise immediate implementation of the road is not justified.
- There is a historic site on a hill at Mukawir. Part of the road is at the foot of this hill so upgrading of the road has to take into consideration the aesthetic and environmental impacts upon the site of antiquities (a roman temple).

Therefore, the Main - Dead Sea Route should be developed first. The potential for development of the other two routes should be studied separately.

(2) Demand Estimation

The estimated numbers of vehicles along the route on an average day and a peak day in the years 2000 and 2010 are shown in Table 4.5.1. These estimates show

that the road should be designed with two lanes.

Table 4.5.1 Traffic Demand Estimation

unit : vehicles/day

Year	2000		2010	
	Average day	Peak day	Average day	Peak day
Visiting tourists	82	800	1,265	2,530
Passing tourists	8	80	75	150
Non- tourists	1,600	1,600	2,000	2,000
Total traffic	1,690	2,480	3.340	4,680

Source: JICA Study Team

Assumptions:

In 2000

i. Average number of passengers per vehicle = 5
ii. Annual number of visiting tourists = 150,000
iii. No. on a peak day = Traffic count data on Ma'in Spa Road on Friday in August 1995
iv. No. of passing tourists = 10% of visiting tourists
v. No. of non-tourist vehicles = No. of vehicles on Karak-Ghor Road in 1993 excluding trucks

In 2010

i. No. of tourist vehicles is based on JICA Study Team's assumptions for "Transport Sector Requirement"
ii. No. of non-tourist vehicles = (No. of vehicles on Karak-Ghor Road in 1993 excluding trucks) * 130%

The proposed cable car development between Main Spa and Zara area is regarded as a tourist attraction rather than as a means of transport. It partly shares the total traffic demand with the road but at the same time it generates its own additional demand. Considering that tourists visit the areas by vehicle, the plan is not expected to cause a major change to the road traffic demand.

An optimistic assumption of a load factor of 80% for the cable car for the entire peak month would provide an annual ridership of 630,000. This figure corresponds to 345 vehicles on an average day. Even if 50 % of this volume were to reduce the road traffic demand, the reduction will not be over 10 % of the estimated demand on an average day. Therefore, the impact of the cable car on the road traffic demand has been excluded from the estimates.

(3) Preliminary Design

The road is a two lane secondary road. But being a tourist road, the road standard should include special facilities (Figure 4.5.2).

Alternative plans were prepared for the top priority Main-Dead Sea Route based on 1:25,000 topographic maps, to provide guidelines for further study. Figures 4.5.3 to 4.5.6 show natural ground profiles

A Comparison of 4 alternative routes for Main-Dead Sea Road is as follows. The first three alternatives can have short access to the planned Dead Sea Panoramic Complex. Table 4.5.2 compares the parameters of each alignment.

a. Alternative 1: "Improvement of the existing Main Spa-Zara Road"

The existing road can be improved by resurfacing, protection from land slides and falling rocks, guard rails and bays for emergency, etc., without substantially changing the existing alignment. (Realignment necessitates disproportionate amount of construction work.)

Even after the improvement, however, the road can not handle large vehicles due to the steep slopes and sharp curves.

b. Alternative 2: "Branch route from the existing Main Spa-Zara Road"

A new alignment is needed on the ridge and on the steep slope. This alternative requires a new alignment with less difficult topographical conditions close to the existing one. The grade is gentler than the first alternative. The final evaluation should be based on the more detailed survey. But it is thought that though large vehicles can operate on the road, they need a special care.

c. Alternative 3: "North of Wadi Abu el Asal Route"

This alternative makes use of better topographical conditions to the north of Wadi Abu el Asal. It includes improvement of dirt road sections wherever appropriate from the Main Spa Road to the Wadi Abu el Asal Area, and new road construction down to the Zara Area. The grade is gentler than the previous alternatives. It is thought that this route will be able to accommodate large vehicles.

d. Alternative 4: "Wadi Ain Hammad-Ain Ad Theb-Suwayma Route"

This alternative uses a route utilizing existing paved and dirt roads on less steep topography. The road between Wadi Ain Hamma and Suwayma is improved with construction of a bridge, etc. at the bottom of the Wadi area. This route can be of high enough standard to accept large vehicles. However, it is far from the Main Spa area and close to the Mt. Nebo - Kafrain Road. Therefore it will not provide significant additional circulation for tourists and its priority is low.

Table 4.5.2 Alternative Routes for Ma'in-Dead Sea Road

	Length (m)	Altitudes (m)	Difference (m)	Average gradient (%)	Maximum gradient (%)
Alt 1					
Total(*)	5,500	-390 to 340	730	13.3	
Steep section	3,500	-390 to 130	520	14.9	17.0
Less steep section	2,000	130 to 340	210	10.5	
Alt 2					
Total(*)	8,500	-390 to 340	730	8.6	
Steep section	5,600	-390 to 110	500	8.9	10.0
Less steep section	2,900	110 to 340	230	7.9	
Alt 3					
Total(*)	13,000	-360 to 340	700	5.4	
Steep section	6,500	-360 to 150	510	7.8	10.0
Less steep section	6,500	150 to 340	190	2.9	
Alt 4					
Total(*)	19,000	-370 to 800	1,170	6.2	

(*) Total length to be newly constructed and improved
Source: JICA study Team

Based on the above comparison, alternative 3 "North of Wadi Abu el Asal Route" is recommended.

It is advisable to take necessary safety measures before opening the already existing road along the first alternative route. Usage must be strictly limited to only certain types of vehicles, for example, 4 wheel drive vehicles. The road may be suitable only as a service and emergency route.

Figure 4.5.1 Roads to Connect Madaba and the Dead Sea

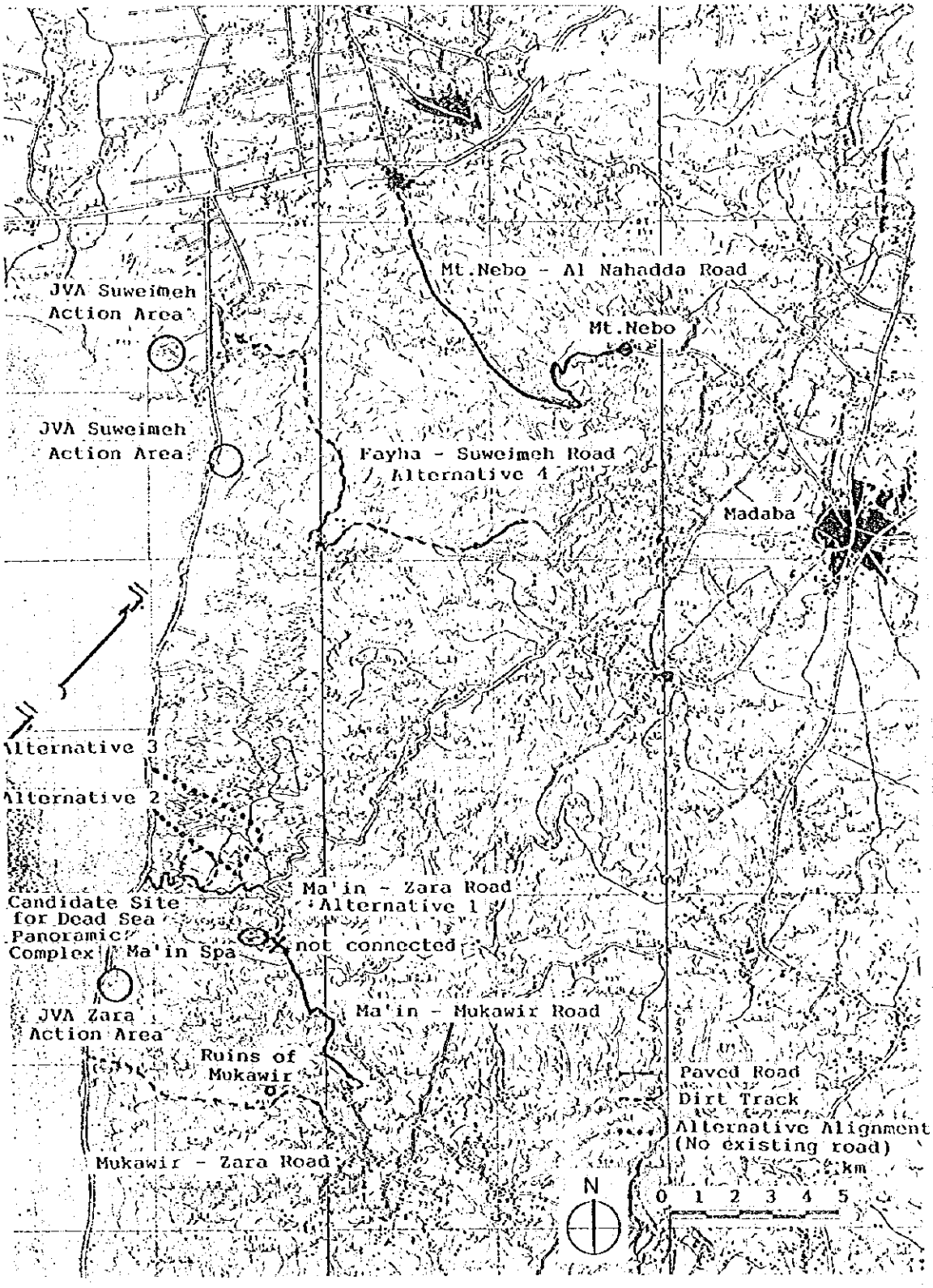
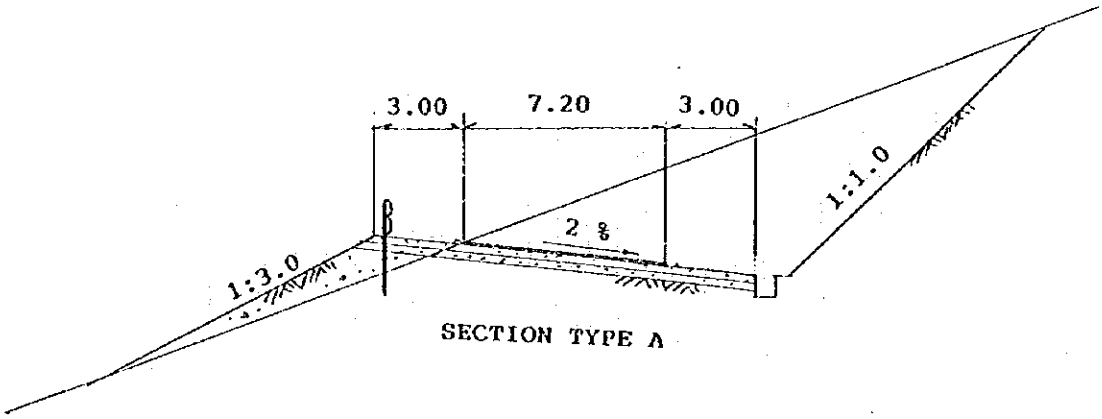
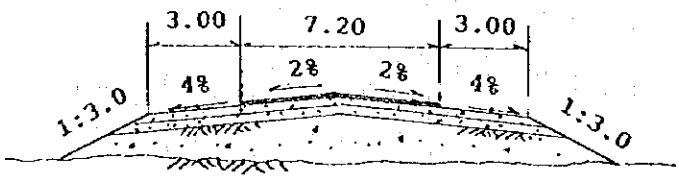


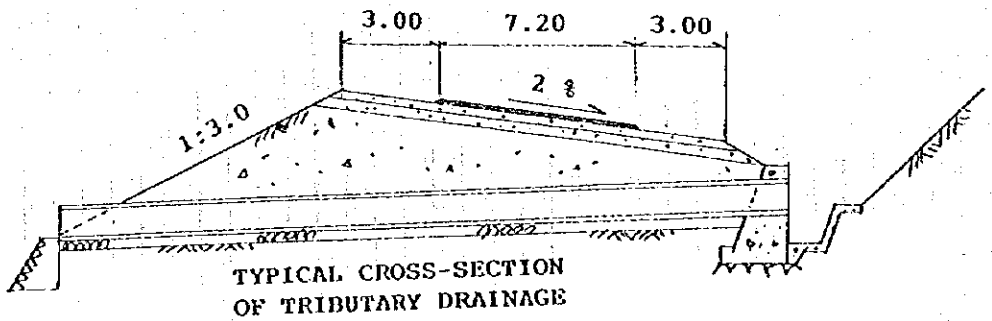
Figure 4.5.2 Typical Cross-Section



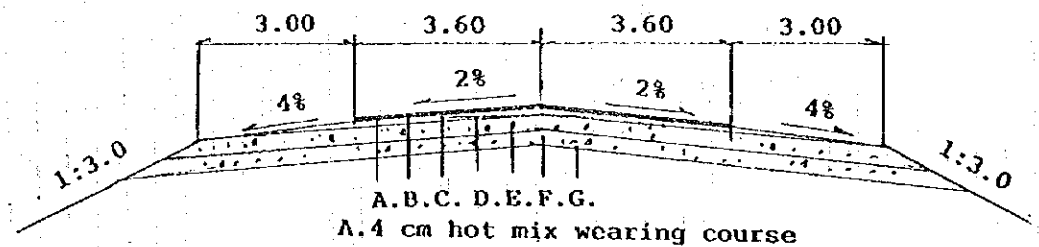
SECTION TYPE A



SECTION TYPE B



TYPICAL CROSS-SECTION
OF TRIBUTARY DRAINAGE



A.B.C. D.E.F.G.

Typical Section

A.4 cm hot mix wearing course
B.Tack coat R.C.250
C.6 cm hot mix binder course
D.Prime coat MC-70
E.20 cm base course compacted thickness
F.20 cm sub base compacted thickness
G.Compacted subgrade

Figure 4.5.3 Alternative Alignments for Ma'in - Dead Sea Road

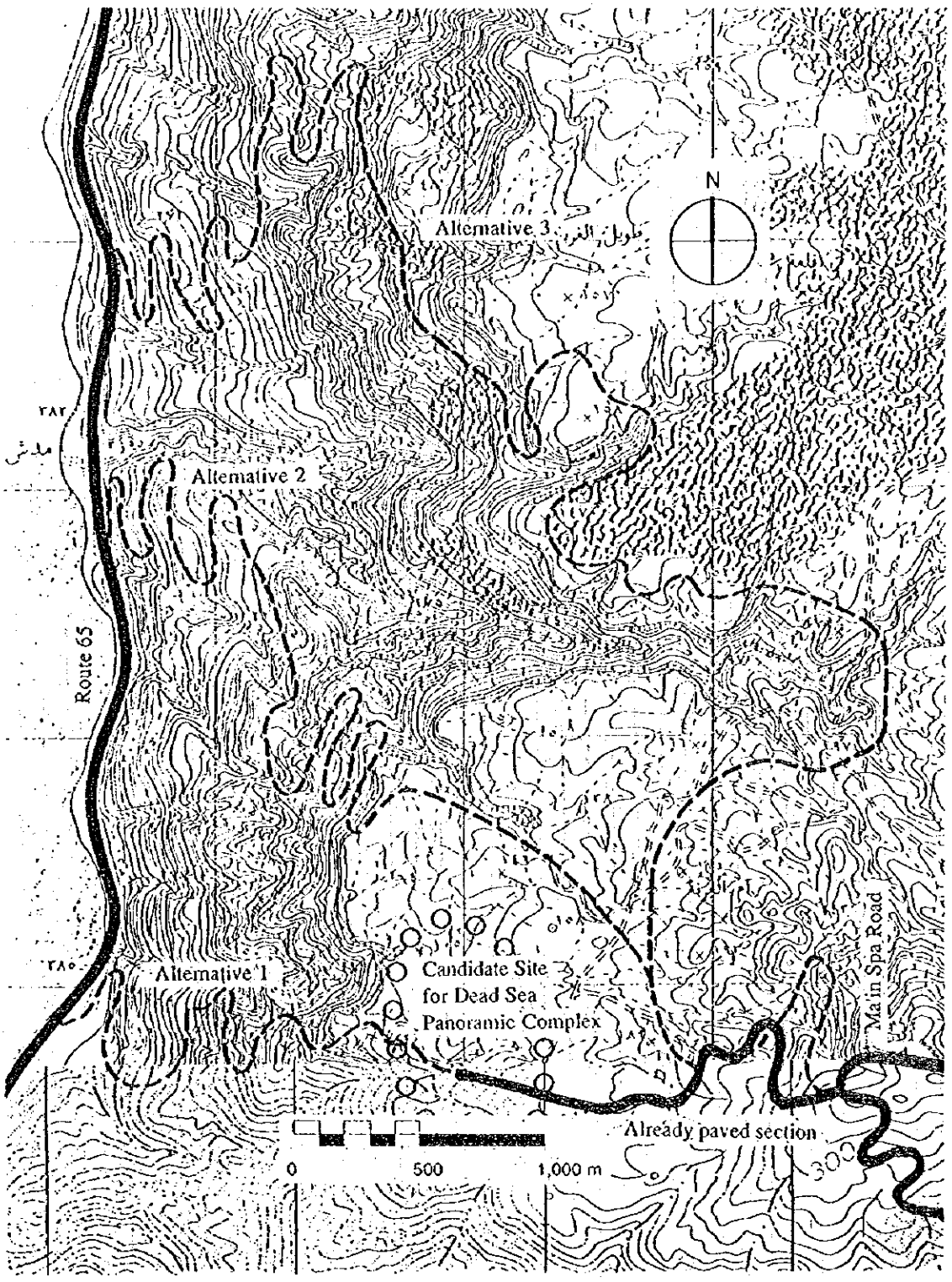
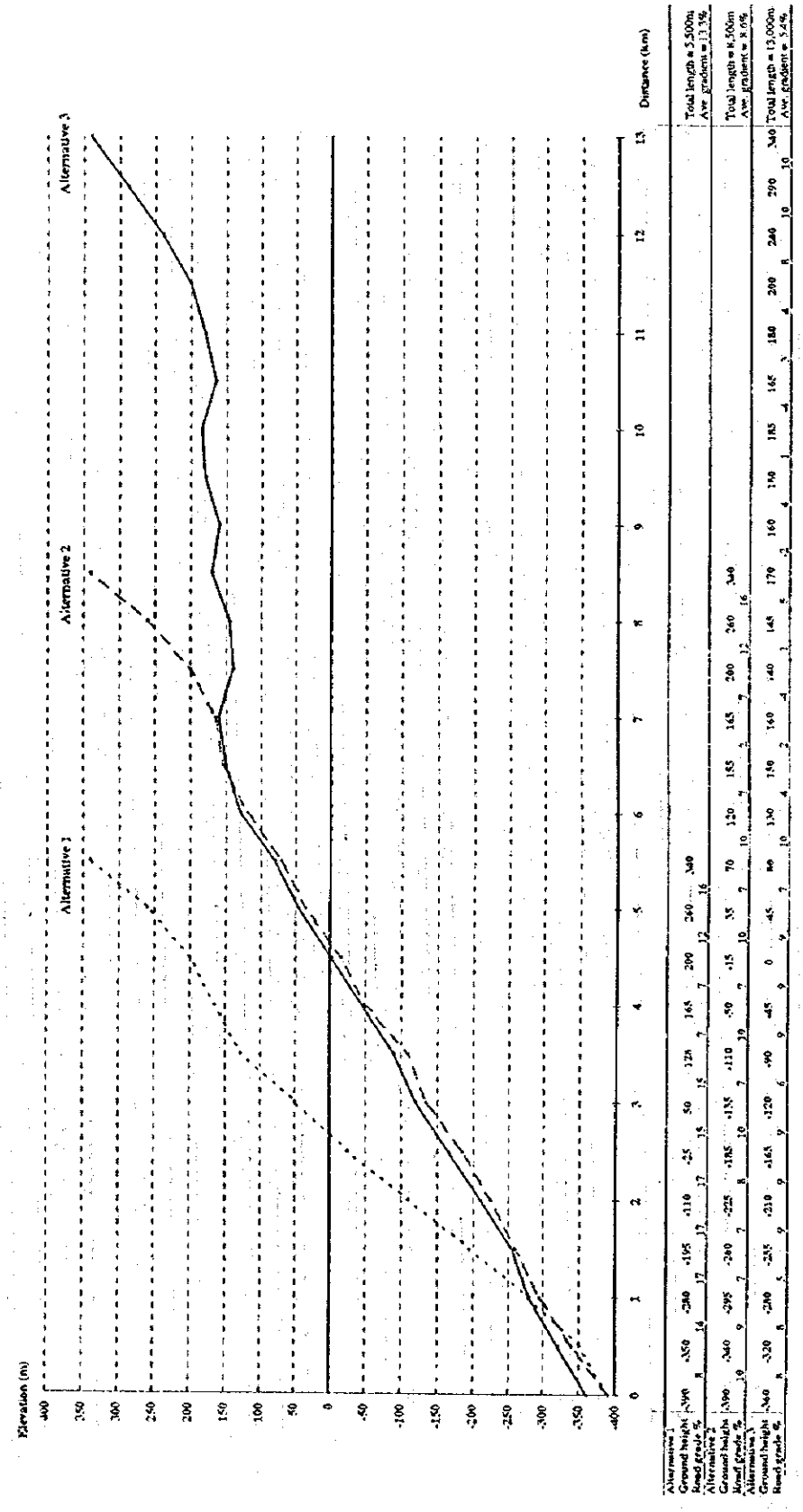


Figure 4.5.4 Profile of Alternatives



Source : JICA Study Team

(4) Cost Estimates

a. Construction Cost

Preliminary estimates for Alternative 3 road construction are shown below for the purpose of indicating the size of the project.

Component	Cost US$ million
a. Planning, Design and Administration	0.9
b. Road Construction	6.0
c. Landscape, Supporting Facilities	0.6
Total	7.5

b. Maintenance Cost

For maintenance of the national roads, the Ministry of Public Works and Housing spends approximately US$ 10 million annually, which accounts for less than 1 % of the estimated total investment of US$ 1.7 to 2.1 billion of the national roads. However, according to the ministry officials, for proper maintenance of road, 3 to 5 % of the construction cost is required for annual maintenance. Accordingly, annual maintenance cost is estimated at US$ 375 thousand.

(5) Implementation Structure

Design, construction, finance and maintenance should be done by Ministry of Public Works and Housing in co-ordination with Jordan Valley Authority.

The " Build-Operate-Transfer" scheme is not recommended for this road because it is not only a tourist road but also a national secondary road for public use; there is no other road parallel to this, that can substitute the functions of the road.

(6) Implementation Program

Madaba - Dead Sea Parkway	96	97	98	99	2000	US$ million
a. Planning and Design						0.9
b. Road Construction						6.0
c. Landscape and Supporting Facilities						0.6
Cost in US$ million	0.2	0.2	0.2	4.2	2.7	7.5

B/D D/D Implementation

4.5.3 Institutional Measures

(1) Heritage Conservation

The road should be developed as a low speed, scenic parkway with one or more panorama points having parking lots enabling tourist traffic to safely pull off the right-of-way to park and admire the view, by day or by night. A particular attraction is that the lights of the city of Jerusalem to the west may be visible from some points. At each lookout, an interpretative panel explaining the panorama could be installed. Measures must be taken to preserve the integrity of the panorama, and to protect it from any unplanned or unsightly roadside development such as spontaneous picnic areas, refreshment stalls, souvenir stands or restaurants. If the road passes through reserve or park land, the responsible agency must control development in this vicinity.

(2) Community Considerations

Because the selected alignment crosses an unpopulated area, there is no local community to be affected by the project. The village of Ma'in will see some development of retail establishments (souvenirs, restaurants) as traffic along the Hammamat Ma'in road and along the proposed road increases after this project is completed.

4.5.4 Infrastructure and Environment

Relating infrastructure and environment were studied. Details are found in the Appendix 4.5.

Waste Management
A litter collection and disposal team is recommended.

Environmental Management
IEE has been carried out, showing no major effect on the environment.

4.5.5 Economic Evaluation

(1) Project Components

The proposed project consists of the following components .

(i) Planning and design
(ii) Road construction

(iii) Landscape and supporting facilities

(2) Project Justification

a. Benefit

Madaba - Dead Sea Parkway will create extra attraction to Jordan in addition to providing direct access between the two areas. It will contribute to not only domestic tourists but also foreign tourists. It is, therefore, considered that the project will help increase the number of tourists and the period of stay. In other words, it will help generate additional tourist-nights.

In this analysis, the foreign currency earnings from the additional tourist-nights attributed to the project are considered to be the benefit for the national economy.

Quantitative estimation is made based on the assumed share attributable to the project in the increment of the tourist-nights in the Madaba Tourism Area.

b. Cost:

After the completion of the project in the year 2000, the annual maintenance cost is assumed to be 5% of the total construction cost.

(3) Economic Analysis

It is assumed that on average an amount equivalent to 5% of the increment of the tourist-nights of the Madaba Tourism Area be attributable to the project including the benefit generated by day trippers from Amman and each additional tourist-night generate additional US$ 100 for accommodation and other extra expenses to the national economy net of any external payments.

The number of tourist-nights of the Madaba Tourism Area is estimated at 103,960 in 1995 and expected to be 348,000 in 2000 and 972,000 in 2010. The assumption implies that economic benefit derived from some 40 international tourists per day is attributable to the project in the year 2001.

Based on the above simplified assumptions, the economic internal rate of return (EIIR) of the project is calculated to be 23 %. Therefore, it is preliminarily concluded that the project is economically feasible.

Table 4.5.3 Cost and Benefit Stream of Madaba - Dead Sea Parkway

Year	Cost			Benefit				Ben.- Cost
	Construc-tion	Mainte-nance	Total	Additional tourist-nights	Attributable share (%)	Net Expenditure per person (US$)	Total benefit	
1996	0.2		0.2	28,416	0	0	0	-0.2
1997	0.2		0.2	64,599	0	0	0	-0.2
1998	0.2		0.2	110,672	0	0	0	-0.2
1999	4.2		4.2	169,338	0	0	0	-4.200
2000	2.7		2.7	244,040	0	0	0	-2.700
2001		0.375	0.375	281,685	5	100	1.408	1.033
2002		0.375	0.375	323,403	5	100	1.617	1.242
2003		0.375	0.375	369,633	5	100	1.848	1.473
2004		0.375	0.375	420,864	5	100	2.104	1.729
2005		0.375	0.375	477,638	5	100	2.388	2.013
2006		0.375	0.375	540,553	5	100	2.702	2.327
2007		0.375	0.375	610,273	5	100	3.051	2.676
2008		0.375	0.375	687,536	5	100	3.437	3.062
2009		0.375	0.375	773,157	5	100	3.865	3.490
2010		0.375	0.375	868,040	5	100	4.340	3.965
2011		0.375	0.375	868,040	5	100	4.340	3.965
2012		0.375	0.375	868,040	5	100	4.340	3.965
2013		0.375	0.375	868,040	5	100	4.340	3.965
2014		0.375	0.375	868,040	5	100	4.340	3.965
2015		0.375	0.375	868,040	5	100	4.340	3.965
2016		0.375	0.375	868,040	5	100	4.340	3.965
2017		0.375	0.375	868,040	5	100	4.340	3.965
2018		0.375	0.375	868,040	5	100	4.340	3.965
2019		0.375	0.375	868,040	5	100	4.340	3.965
2020		0.375	0.375	868,040	5	100	4.340	3.965

EIRR = 23%

Note: Currency unit is US$ million unless specified.

Source: JICA Study Team

Appendix 4.5

A. Waste Management

a. Existing and Projected Situation

Although some of the four road options already exist they are ill used and the waste generated is minimal. However, once improved the waste will increase with the volume of traffic. The greatest volumes will be at official viewpoints and unofficial picnic sites; lesser volumes will be discarded along the unmade roads as visitor are encouraged into the area. The volume generated is expected to be small and would be disposed of to the incinerator operated by the Panorama Complex or to a neighboring dump. However, it is unlikely that any of the many organizations currently responsible for rural road maintenance would be able to provide a standard of cleanliness acceptable to the tourist.

b. Recommendations

- View points and picnic sites should be equipped with covered waste bins made of suitable local, low maintenance materials.
- These should be regularly emptied by :
  - mobile maintenance teams to be responsible for litter collection and disposal along the length of the road or;
  - Bedouin contracted on a performance basis for specific sites; or
  - the operator of commercial service along these roads as a condition of their permission to operate.
- the introduction of an additional fee on all returnable, non biodegradable containers sold within the JVA non development area, which would be redeemable at any point of sale within the area; and
- the replacement of plastic with paper bags for sales within the JVA non development area. The additional cost of the bags could be recouped from advertising printed on the bags.

c. Human Resources

Training is not considered necessary for its components.

d. Operational Arrangements

The roads are within the Non Development Area proposed as part of the Dead Sea Tourism Development Study and are within the jurisdiction of the Jordan Valley Authority which should implement these measures.

B. Initial Environmental Examination (IEE)

a. Study Area

The study extends from the Dead Sea shore on west to the upper plateau on east (Figure 4.5.5). The area is centered on the main and secondary ravines of Wadi Himara. The project site, and specifically the project alternative 3, is at the limit of the Ma'in range reserve (Figure 4.5.6). The site is classified as a grazing land by the Ministry of Agriculture, but the grazing potential seems negligible.

The following road project alternatives are considered:

- Alternative 1, consists in improvement of an already existing road, which has a low priority as a Parkway Project. As a consequence, this alternative is not considered.
- Alternative 2, which is on the southern side of the wadi and takes advantage of the interfluve zone.
- Alternative 3, which is on the northern and eastern side of the wadi. In this case, the road crosses the upstream part of the wadi.

b. Conditions of the Initial Site

Physical Conditions

- Climate: Yearly rainfall is less than 50 mm at the sea level, and remains under 200 mm on the plateau, within the study area. Temperature is more than 30°C and increases to 40°C from May to August. Humidity is low (20 to 40%), and atmospheric pressure is high.

- Geomorphology: The area is composed of sediment strata, Pleistocene basaltic intrusions, and tectonic elements (faults, rift). The lithology is of successive layers of limestone, marl, sandstone, and fluviatile deposits. Extremely unstable sediments of quaternary period are within the wadi and on the Dead Sea shore (slopes, deltaic formations).
- Drainage: Wadi Himara has no permanent surface water, but superficial aquifers provide favorable conditions for wildlife at isolated springs. The hydrological pattern is sub-Mediterranean, with floods in winter.

Environmental Quality

- Air quality: The only source of air nuisance is traffic along the Dead Sea shore.
- Soil quality: Vegetative cover is very scarce, and soil has been almost eroded probably because of overgrazing together with climatic conditions. There is

isolated soil cover on the plateau around Wadi Himara. These soils are not thick (80 cm), poor in organic matter, low in water retention capacity, and subject to erosion. There is no soil cover along the projected roads.

- Landslide occurrence: Unconsolidated slopes, climatic conditions, and seismic conditions are serious factors of landslides, specially in the wadi sector. Surface as well as gully erosion is also strong in this area.

- Habitats and wildlife: A wadi is important for maintaining wildlife as drinking water, refuge, and specialist habitat (for porcupines for example). The importance of Wadi Himara for wildlife is uncertain. However, it might be important specially in winter season, when species like ibex are moving from high to low areas. There are isolated trees and vegetation cover in water leakage or water pockets sites.

- Landscape: There are panoramic views of the Dead Sea from the plateau. The road is obscured from view from the Panoramic Complex by the intervening topography.

Social Environment

The landscape is an arid land without permanent or temporary settlements, excepted on the north east side of the project road-alternative 3 (grazing land temporary used by Bedouins). The land is unused and there is no water: the Dead Sea shore is occupied by the new highway road. There is no known historical remains within the limits of the study area.

c. Main Sources and Receptors of Impacts

Potential Sources of Impacts

The construction phase is a source of air nuisances, noise, and landscape degradation; the operational phase is a potential source of contamination of air and soil, and generation of noise. However, the most important impact is the introduction of visitors as a result of the easier access. This aspect has been included in the IEE study of the panorama layout project.

Main Receptors of Impacts

The main receptors of the negative impacts are wildlife, landscape, and the tourist population.

d. Potential Negative Impacts

- Degradation of air quality

- Degradation of the neighbor landscape by release of litter
- Degradation of the scenery
- Contamination of soil and water due to traffic
- Risk of traffic accident
- Disturbance of the spring pattern
- Destruction of micro-habitats
- Degradation of wildlife conditions
- Generation of gully erosion
- Exposure to landslide

However, most of these impacts are negligible or moderate. Important issues are reviewed below according to each project alternative.

Alternative 2

Alternative 2 of the road project has a negligible effect on the environment; the Wadi habitat and its wildlife are not affected. The alignment of the road is acceptable for the following reasons:

- The road is invisible from the panorama layout project
- If the width of the route side verge is minimized in order to enhance the view then the risk of settlements in this area is diminished.
- Maintenance of a minimum distance of 500m between the panorama sites along the escarpment and the road itself on the plateau will ensure that noise will not affect the amenity of the site.

This alignment benefits the cable car project in the IEE of the panorama layout project. This IEE concluded that the "plateau alternative" for the cable car was the most safe and environmentally suitable. The site of this alternative project is the same as for alternative 2 of the parkway project. Both projects could share the cost landslide control.

The most relevant effects of alternative 2 are the following:

- Disturbance of springs and micro-habitats
- Generation of gully erosion
- Moderate landslide risk

Alternative 3

Alternative 3 has the same types of potential effects as alternative 2, but is more subject to induce negative impacts on wildlife. The road is located between the plateau and the wadi, which makes it a potential obstacle against the seasonal movement of species like ibex (traffic, noise). However, according to RSCN sources, this effect should be considered as negligible.

Figure 4.5.5 Morphological Units

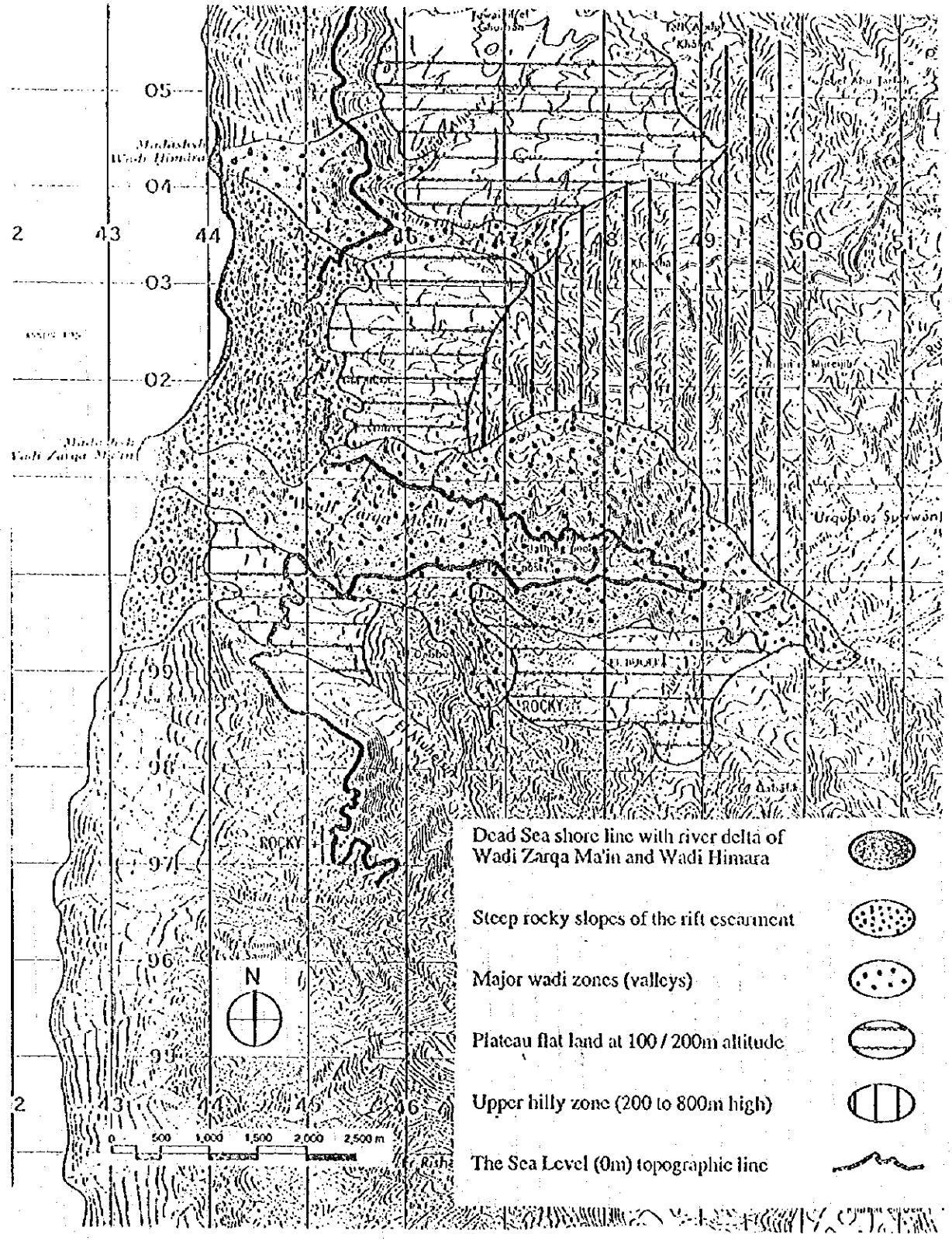
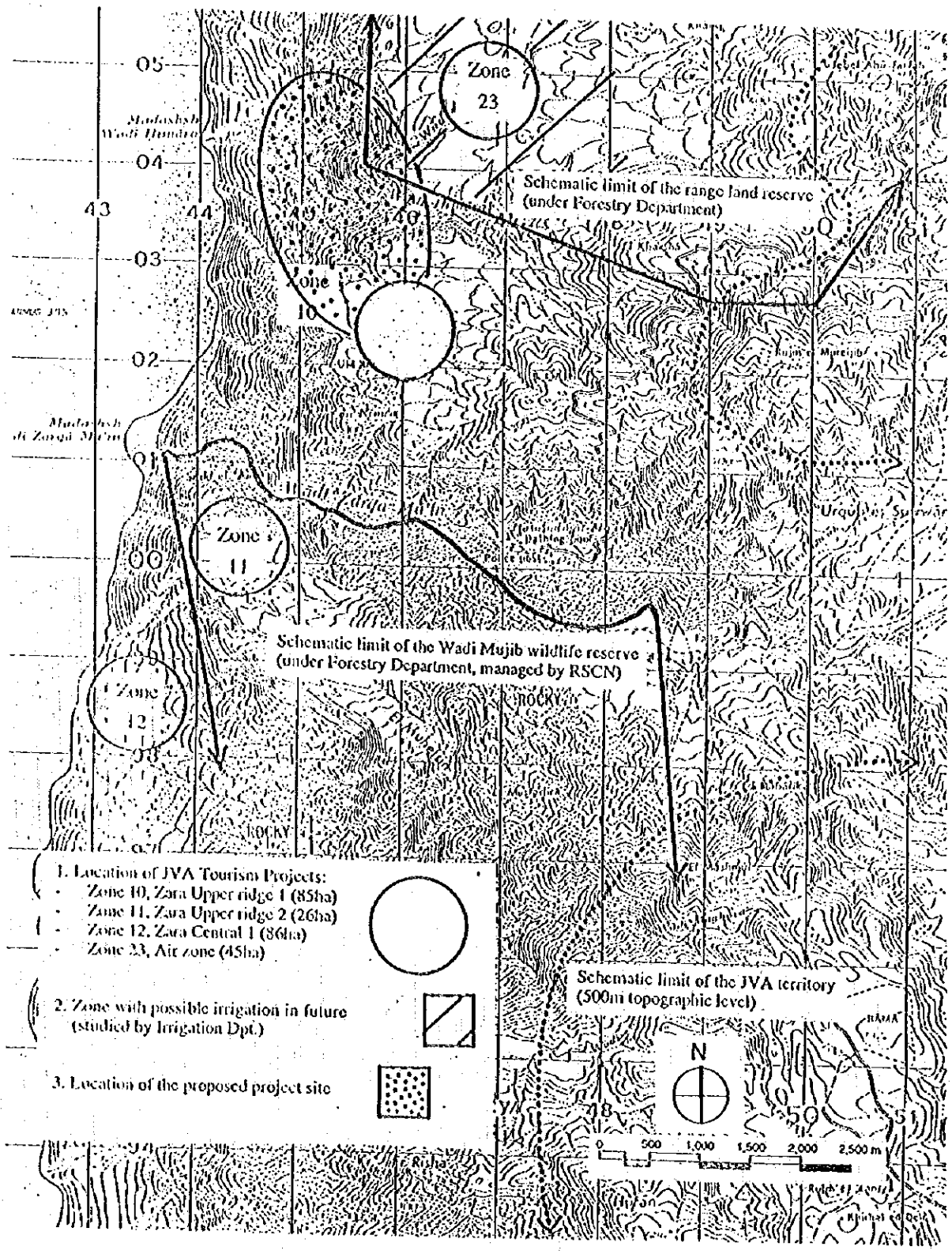


Figure 4.5.6 Project Sites according to the Dead Sea Master Plan



C. Environmental Management

a. Main Objectives

- Control of the landslide and erosion risk
- Conservation of the scenery value
- Protection of wildlife

b. Recommended Measures

- Siting: From the environmental point of view, both alternatives are equally acceptable.
- Control of erosion: The exact sitting and design of the road must take into account the runoff pattern, the slope and alignment of the road, and the geological character.
- Protection of water leakage and micro-habitats: The alignment of the road should avoid micro-habitats. The road could act as a dam or modify the existing flow patterns if no provision is made for drainage. Such modification could be acceptable if it does not affect negatively micro-habitats or runoff.
- Landslide: Landslide risk seems limited but needs assessment and control.

4.6 Karak Tourism Development

4.6.1 Concept and Rationale

To upgrade the level of tourist attractiveness of the Karak Castle and the Karak City by providing tourist friendly facilities such as tourist pathways, interpretative information sign boards, tourist street, visitor center, and castle observation points, all utilizing state of art techniques of presentation.

(1) Objectives

- To demonstrate how a tourism resource should be presented in modern tourism as a model case.
- To broaden and diversify the product line of Jordanian tourism from archaeology based to the culture and nature based tourism.
- To introduce a new perspective in the tourism product development in Jordan.
- Eventually to enhance the appeal and attractiveness of Jordan as a tourist destination in the world market.

(2) Rationale

At present Karak is presented to tourists simply as "another ruin", and no more. Such a passive approach to international tourism is no longer sustainable in the fiercely competitive international tourism market place. A well-conceived combination of the Castle with the surrounding setting of Karak City and natural scenery could make the area much more attractive and therefore much higher in revenue earning potential. The strengthened Amman as the tourist core will call for a string of strong tourist attractions within the selected central tourism areas and improved Karak could act as the model case for tourist presentation.

(3) Related Projects

The work to be done by the UK Government and USAID and the CERM projects will become an internal part of the Karak Tourism Development Project.

This project has been designed to avoid duplication of effort with existing and planned programs at this same location.

A UK Government will provide access road signs, interpretative and directional signs and explanation boards in the castle, town and surrounding area with a total approximate cost of 11,000 JD. The implementation is expected in 1996. An architectural survey is also being proposed by UK Government. The approximate

cost will be 50,000 JD.
Pavement of the skirting wall of the castle is being implemented by co-operation of Saudi Arabia and Denmark since 1989 with total amount of 530,000 JD. It will be completed in 1996.

The USAID CERM project plans to carry out renovation work of old municipality building as a Visitor Center in 1995 (21,000 JD) and maintenance work on the outer wall of the castle and the outer wall of the city a cost of 200,000 JD in 1996.

4.6.2 Preliminary Plan

(1) Project Components

a. Improvement of Tourist Facilities in Karak Castle

- Providing improved tourist pathways in coordination with the explanation boards and sign-posting project to be implemented by UK Government;
- Providing safety measures (lighting, hand railing, steps, etc.);
- Presentation of "Crusaders in Arab History" utilizing panels and models at the appropriate space in the Castle;
- Providing amenities (cafe terrace, souvenir shop, WC, etc.); and
- Excavation of the lower court (approximately 5,000 cubic meter).

b. Creation of Tourist Street

The area of street improvement is shown in the attached drawing.

- Improving pavement, drainage, sewerage, lighting and planting;
- Providing attractive street furniture (benches, rubbish bins, flower pots), signs (coordination with UK project) and art works;
- Cleaning and beautification of the facade; and
- Establishing guidelines for the townscape and street: suitable building facade (material, color, design) and activities.

c. Creation of Visitor Center

Through restoration of the old municipality building, a modern visitor center will be created.

- Full restoration of old municipality building;
- Providing Karak Visitor Center with handicraft center and restaurant.

d. Castle Observation Points

Two castle observation points from which to view the entire castle are identified through field survey.

- Providing castle observation points with necessary facilities (explanation board, benches, shelter, rubbish bins, parking lots, signs and prior signs).

e. Training of Manager and Workers

The above facilities should operated at international standards. Training of managers and workers will therefore form an important of the project. Areas of Training will include:

- urban facility planning;
- museum management;
- tourist service management;
- tourist marketing; and
- tourist service practices.

Active cooperation should be sought with Jordanian universities having courses in tourism. Training in a donor country should be a part of the assistance program provided by the country for this project.

Figure 4.6.1 Karak Tourism Development Project Components

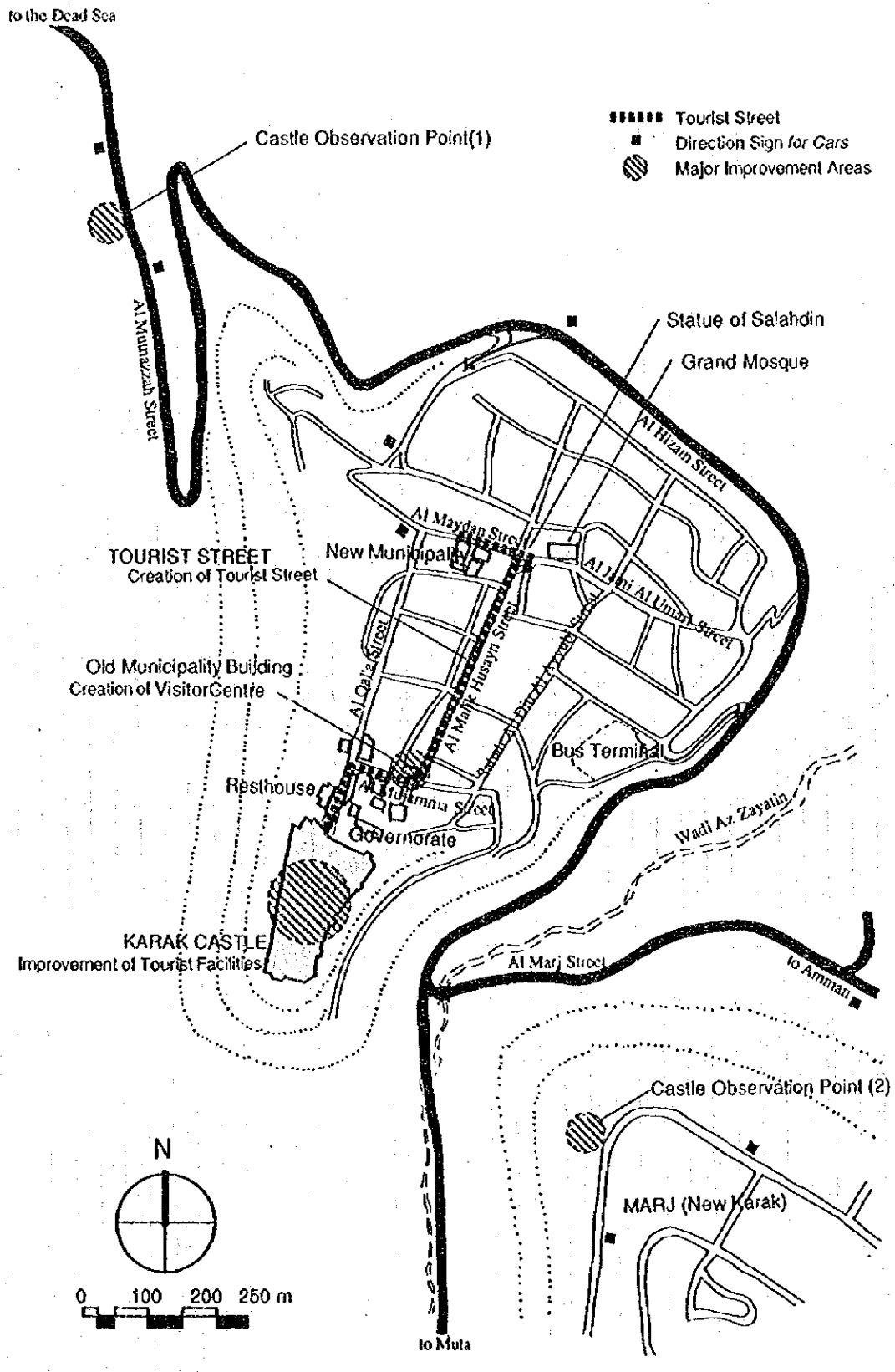
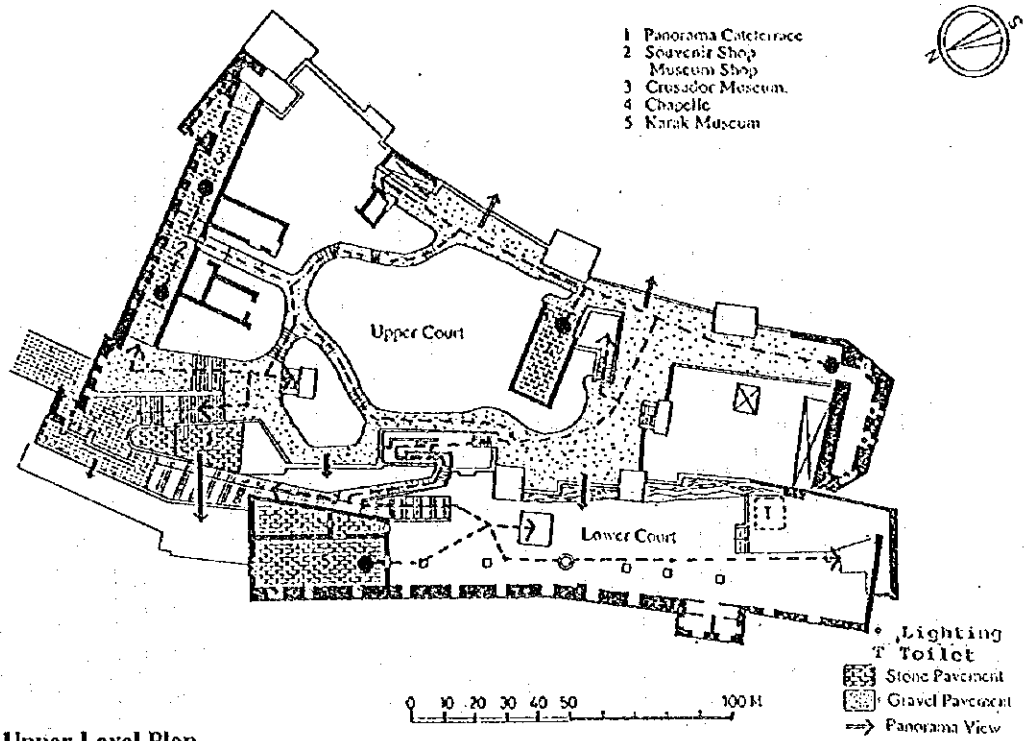
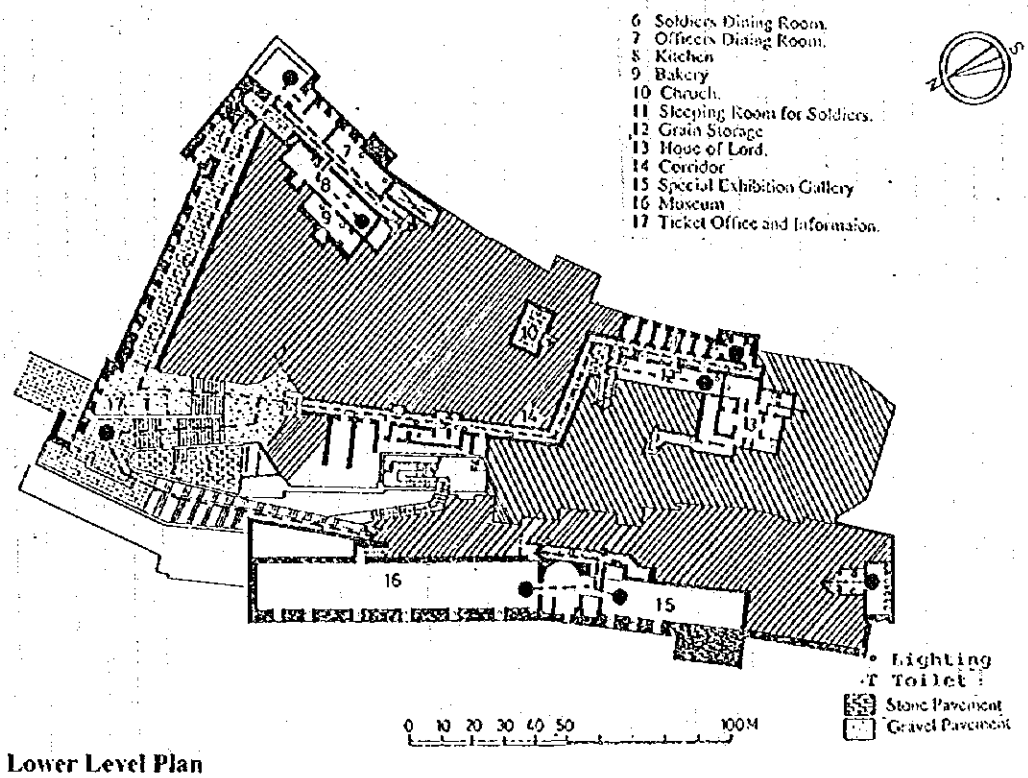


Figure 4.6.2 Karak Castle Tourist Facilities Improvement

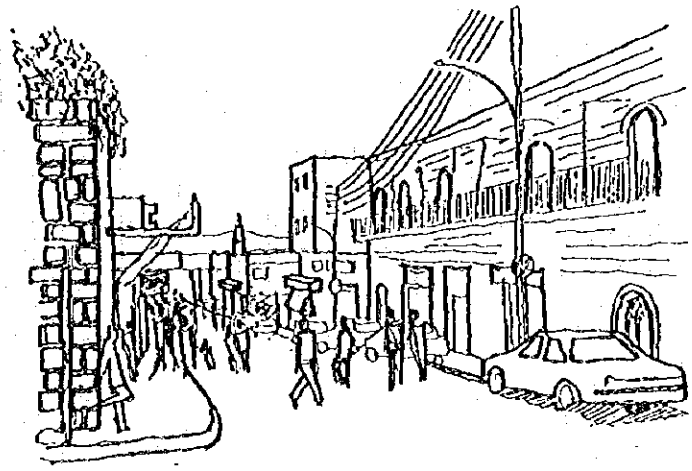


Upper Level Plan

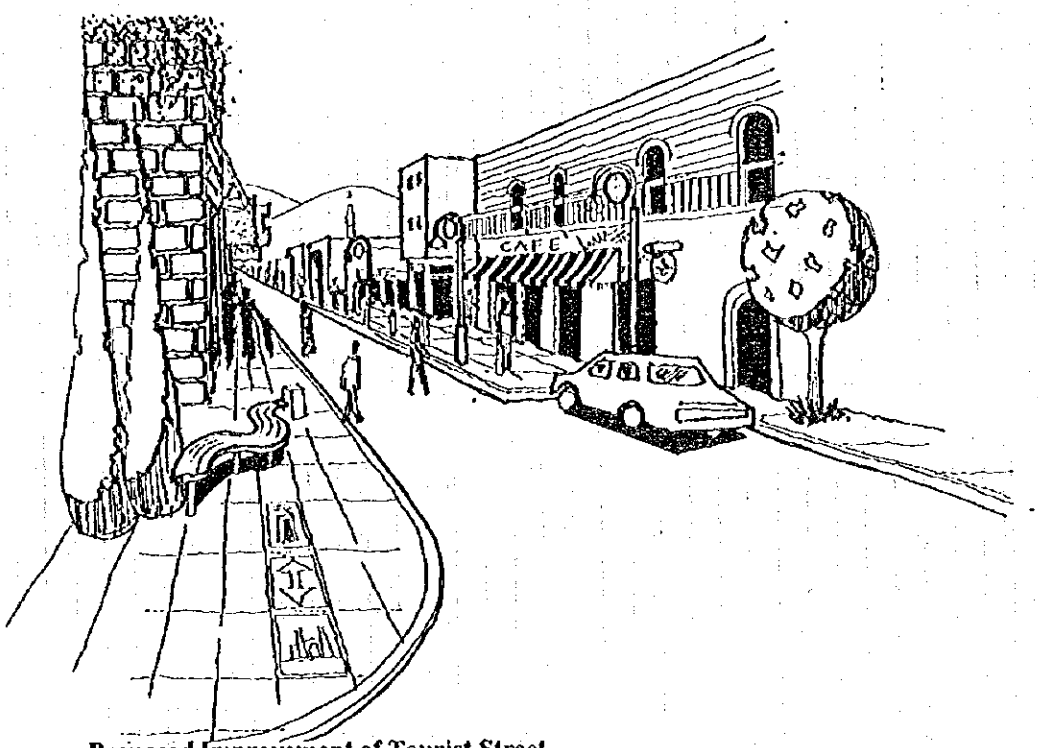


Lower Level Plan

Figure 4.6.3 Karak Tourist Street

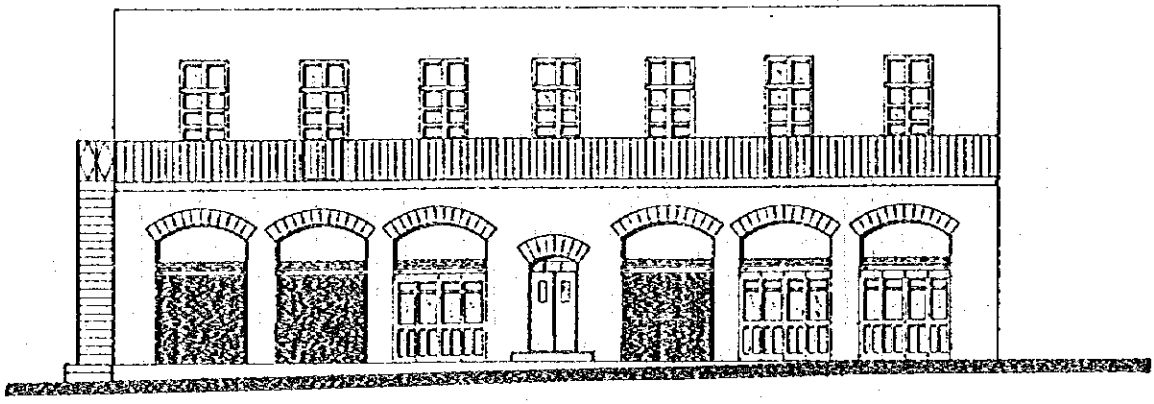


Existing Condition of Al Malik Husayn Street (Tourist Street)

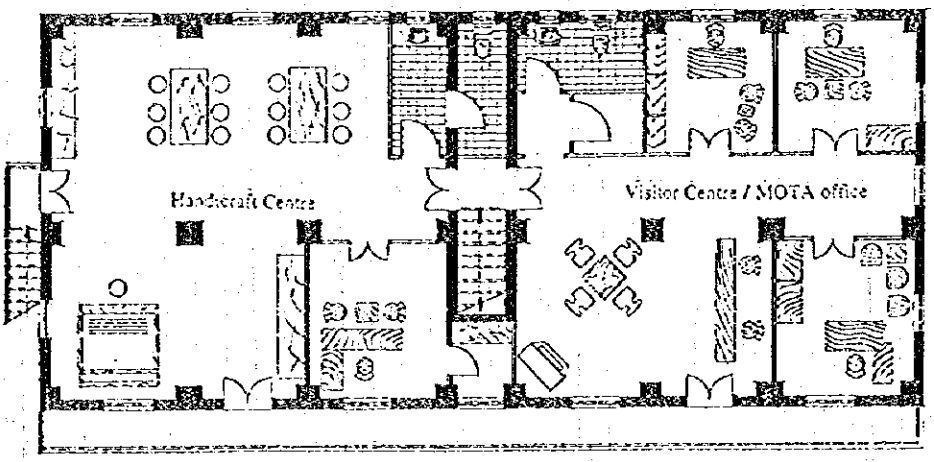


Proposed Improvement of Tourist Street

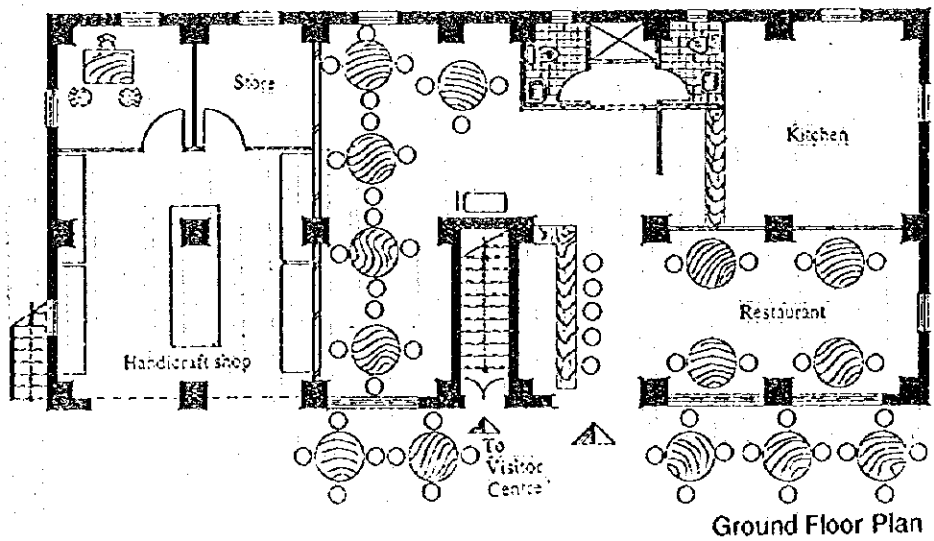
Figure 4.6.4 Karak Visitor Center



Elevation



First Floor Plan



Ground Floor Plan

(2) Cost Estimates

Preliminary estimates are shown below for the purpose of indicating the size of the project only.

Component		Cost US$ million
a. Improvement of Karak Castle	Planning and Design	0.3
	Improvement	1.5
	Exhibition equipment	0.6
b. Tourist street	Planning and Design	0.3
	Improvement	2.1
c. Visitor Center	Planning and Design	0.05
	Restoration and renovation	0.2
	Furniture and equipment	0.1
d. Castle Observation Points	Planning and Design	0.05
(Excluding land acquisition)	Construction	0.4
e. Training	(Overseas Training)	0.2
	(Domestic Training)	0.1
Total		5.9

(3) Implementation Structure

The project requires a clear statement of support from a high level government body such as the Higher Council of Tourism. It should be prepared by the Karak Municipality and MOTA , and should be undertaken in their joint names. The table below identifies the parties responsible for the development. There is strong parallel between this project and the Amman and Salt projects, which are also set in developed urban areas. MOTA and the Municipality jointly share responsibility for the further study on this project, and for seeking foreign backing for it, which may be responsible from a development agency. While no major role for the private sector is foreseen for this project. The one possibility is the private participation to renovate the old municipality building for the visitor center.

Table 4.6.1 Karak Project Implementation

Component	Responsible Body
Authorization	MOTA & Karak Municipality
Castle	DOA
Tourist Street & Castle Observation Points	Karak Municipality
Visitor Center (old municipality building restoration)	MOTA, Karak Municipality (landlord) (private developer alternative for implementation)

Source: JICA Study Team

(4) Implementation Program

Karak Tourism Development	96	97	98	99	2000	US$ million
a. Castle						2.4
b. Tourist Street						2.4
c. Visitor Centre						0.35
d. Observation Points						0.45
e. Training			Overseas	Domestic		0.3
Cost in US$ million	0.3	2.1	3.4	0.1		5.9

B/D D/D Implementation

4.6.3 Institutional Measures

(1) Heritage Conservation

Other than the castle and the town's extraordinary mountain top location, the main attraction of Karak is its modern day role as a bustling regional market town on the edge of the desert, where desert people come to shop alongside city dwellers, creating an unusual and intriguing cultural contrast that will be of interest to many foreign visitors. The shop owners should be made aware of this, and presentations at business circles by project representatives can explain the basic attraction of the Old Town, the need for ready hospitality, for consistent tidiness, and for moderation in sign posting and advertising. There is no historic development corporation at Karak that is communicating this to the local businesses.

There is a clear need to raise the awareness of the local population regarding the focal connection between tourism and not only the castle, but also the environment in Karak town. For this reason, the municipality will need to enlist the help of an architecture department (University of Jordan or similar) strong in architectural conservation, to occasionally review conditions in the town and to make recommendations about future urban improvement projects, including this one. This advisor ideally would be independent from any architect working on this specific project or on any other. Once the Jordan Architectural Heritage Association is operating, it could easily provide an expert to advise the municipality on these matters, and to address the local community.

The town also could provide incentives for building owners to keep, upgrade or build facades reflecting local styles, by having a competition for building excellence awarding or tax exemption. The architectural advisor could assist in developing a suitable scheme. In addition, sources for small business loans or grants for this purpose can also be publicized. A further possibility is the legal designation of a historic district in which special city powers to regulate construction can be exercised. In addition, building owners in this zone would qualify for the incentives

mentioned above. Management of this district could be provided by the municipality through a special district office that would co-ordinate with the building department that issues permits for construction. These recommendations represent measures for architectural conservation that the municipality can take preferably as soon as possible. They are intended to provide a simple framework through which architectural preservation can be achieved.

(2) Community Considerations

The town of Karak has a total population of approximately 170,000 persons, is majority Moslem, and is populated mainly by the Habashneh and Ma'aitah groups. Significant Christian populations live in nearby communities. Jordan's southernmost university is located a few kilometers to the south in the town of Mu'ta. In the old town adjacent to the castle, there are approximately 35,000 inhabitants.

Once the project is approved by the Government of Jordan, it is strongly recommended that town meetings on tourism be held in the Arabic language at least once a year. Possibly a sociologist from Mu'ta University can facilitate the meetings. The purpose of these meetings is :

- to inform the populace about upcoming tourism projects
- to ask for their reactions and comments on the projects including possible improvements to them
- to solicit from the citizenry expectations and apprehensions regarding more tourism
- to communicate the increasing variety of service and retail jobs to be created by increased tourism, for both men and women, and for young and old (guides, cooks, waiters, sales staff, etc.)
- to communicate to these people the need to expect different habits of dress and familiar behavior between men and women.

Similar meetings at the nearby Mu'ta University, and at local high schools can serve the same purposes. Moreover, they can inform the students of possible careers related to tourism in businesses, tour agencies, and at the castle and museum. The study's Social Survey revealed a general acceptance of tourism by the population of Karak.

4.6.4 Infrastructure and Environment

Relating infrastructure and environment were studied. Details are found in the Appendix 4.6.

Transportation
Parking for tourist coaches and cars should be provided.

Water Supply, Sewerage and Drainage
No serious obstacles exists.

Waste Management
Additional equipment and man power are needed.

Initial Environmental Examination (IEE)
IEE has been made. No need for EIA.

4.6.5 Economic Evaluation

(1) Project Components

The proposed Project would consist of the following five items.

(i) Castle
(ii) Tourist Street
(iii) Visitor Center
(iv) Observation Points
(v) Training

(2) Project Justification

a. Benefit

The Karak Tourism Facility Development Project would create additional attractiveness in Karak City. The Project would induce visitors to stay longer (generation of additional tourist-nights) and generate additional tourist-nights in Jordan.

In this analysis, the extra tourist-nights generated by the tourists in the country because of the Project was taken as the benefit.

b. Cost:

The maintenance and operating costs of this Project were assumed at 10 % of the total initial project cost after the completion of this Project in 1998.

(3) Economic Analysis

It was assumed that the amount equivalent to 60 % of additional tourist-nights of Karak-Dead Sea Tourism Area including the benefit generated by day trippers from Amman would be attributable to the Project after the completion of all projects (1998), and that including his admission charge, accommodation and other extra expenditure.

Number of tourist-nights estimated for the Karak-Dead Sea Tourism Area is 77,970 in 1995, 104,000 in 2000, and 184,000 in the year 2010.

The EIRR (Economic Internal Rate of Return) was calculated at 23.46% for this Project. The tabulation for the EIRR is shown below.

Table 4.6.2 Cost and Benefit Stream of Karak Tourism Facility Development

Year	Cost			Benefit				Ben.- Cost
	Construc-tion	Mainte-nance	Total	Additional tourist-nights	Established share (%)	Expenditure per person (US$)	Total	
1996	0.27	0.00	0.20	4,624	0.0	0	0.00	-0.27
1997	2.13	0.00	2.13	9,522	0.0	0	0.00	-2.13
1998	3.40	0.00	3.40	14,711	0.0	0	0.00	-3.40
1999	0.10	0.60	0.70	20,208	60.0	0	0.00	-0.70
2000		0.60	0.60	26,030	60.0	100	1.56	0.96
2001		0.60	0.60	32,136	60.0	100	1.93	1.33
2002		0.60	0.60	38,601	60.0	100	2.32	1.72
2003		0.60	0.60	45,445	60.0	100	2.73	2.13
2004		0.60	0.60	52,691	60.0	100	3.16	2.56
2005		0.60	0.60	60,363	60.0	100	3.62	3.02
2006		0.60	0.60	68,485	60.0	100	4.11	3.51
2007		0.60	0.60	77,084	60.0	100	4.63	4.03
2008		0.60	0.60	86,188	60.0	100	5.17	4.57
2009		0.60	0.60	95,826	60.0	100	5.75	5.15
2010		0.60	0.60	106,030	60.0	100	6.36	5.76

EIRR= 23.46%

Note: Currency unit is US$ million unless specified.

Source: JICA Study Team

Appendix 4.6

A. Transport

a. Existing Situation of Transport in the Old Karak (Figure 4.6.5)

Road Network

Besides the minor approach through Thallaja, there are only one major entrance and one major exit for Old Karak. Even to go to the bus terminal close to the peripheral road, vehicles have to go through the town. These two gates do not suffer serious congestion indicating that the congestion in the Old Karak is not due to the absolute number of vehicles moving in and out of the area but partly due to internal traffic and more possibly due to the drivers' behavior and the poor traffic management. There are 3 major north-south roads and their width is approximately 10 m including sidewalks. All of them are one way roads at present. Among them, Al Malik Husayn Street is the main commercial street. Most major streets allow one-way traffic only. There is no traffic signal in the town or its periphery.

There are two main bus loading areas and a secondary one in Old Karak.

- Area 1
  Buses for Marji, Mazar, Mutah, etc. operate along Umari Street.
- Area 2
  Buses for Rabba, Qasr, Amman, Al Husayniyya, operate in front of the castle.
- Secondary Area
  Buses for Ghor operate from the junction of Khalid ibn Al Walid Street and Al Mutnabbi Street.

Tourist buses

There are three areas where parking of JETT buses is permitted by the police and the municipally.

- in front of the rest house
- in front of Al Fida Restaurant and Peace Restaurant
- in front of Al Qimma Hotel (north of the municipality)

There are no tourist attractions or facilities between the castle and the bus terminal in addition to the steep slopes; travel by foot between the castle and bus terminal is tiresome because of this slope.

Parking

There is very limited off street parking space. Most cars are parked on street. Those who visit the governorate buildings, etc. park in front of the compound. In

addition, some vehicles park in front of the rest house.

In Old Karak, most people and residents do not have parking area and park their vehicles on the street. Six months ago, it was decided that no new house will be permitted without necessary parking. But the decision needs enforcement.

Existing Bus Terminals

The existing bus terminal of the municipality deals with 300 ~ 400 buses, mostly small size buses. The area is about 3,000 sq. m. The major destinations are Amman (Mid-East Terminal), Zarqa (not through Amman), Tafila, Ma'an, Aqaba, Shawbak, Wadi Musa, and major locations in the governorate.

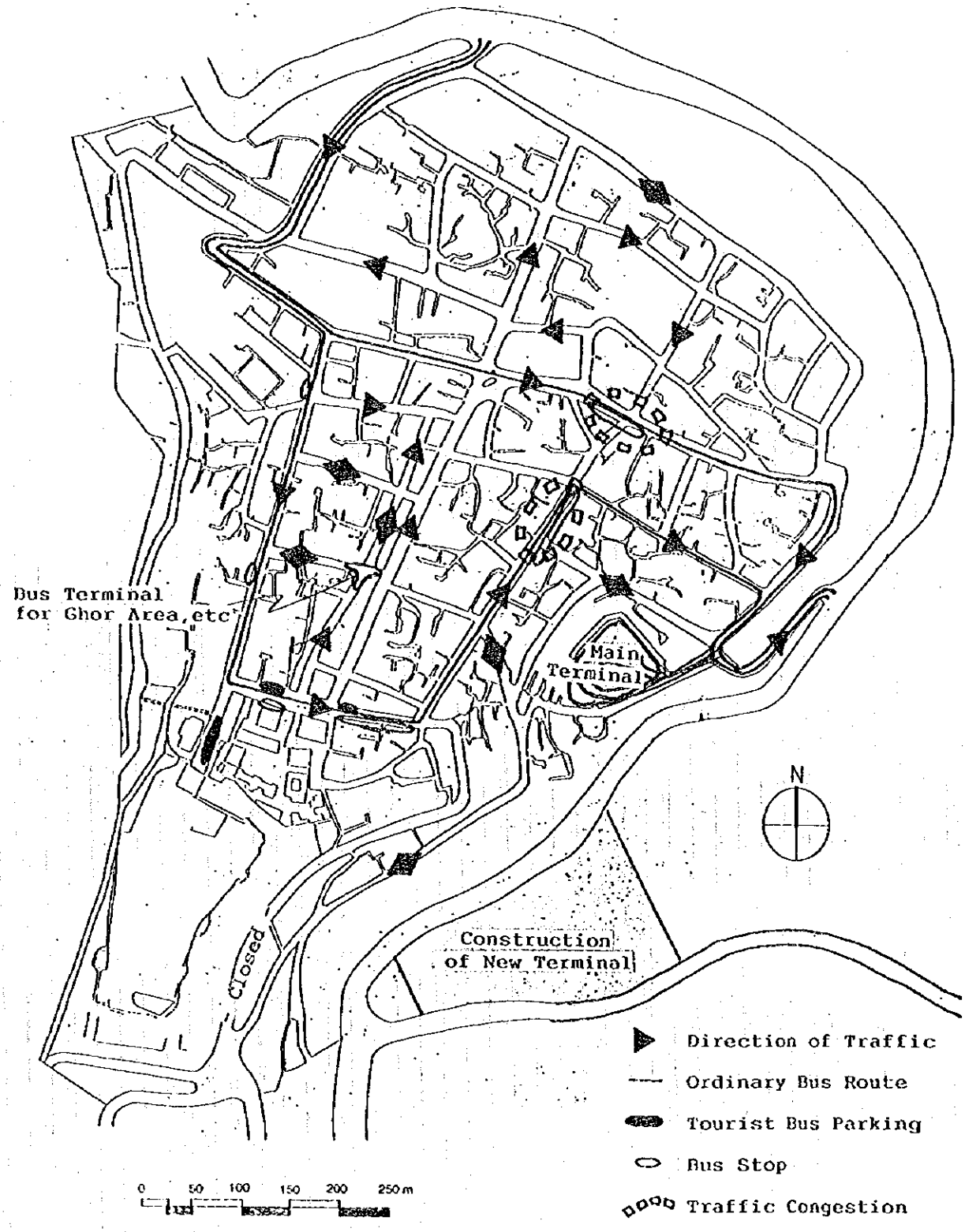
In addition to the main terminal, buses from the junction of Khalid ibn al Walid Street and Al Mutnabbi Street in Old Karak cover Ghor Safi and suburbs of Karak City.

Major Existing Problems

Al Khadr Street and Umari Mosque Street have sections of traffic congestion. On both streets, buses for various destinations waiting, unloading and loading passengers in a rather disorderly manner occupy the road space. Those buses as well as passengers with luggage waiting for them cause congestion.

According to JETT, the space in front of the resthouse can accommodate approximately 5 buses. When there are more buses, they sometimes have to park illegally in front of the government buildings. The sharp and steep corner in front of the Italian Hospital is a difficult corner. However it is difficult to improve it without a setback of the building itself.

Figure 4.6.5 Existing Traffic System of Old Karak



b. Requirement of Transport Facilities

Parking Space for Tourists

Approximately a total of 800 sq.m of parking space is required for visitors to the castle. The space can be created either by demolishing the government building in front of the resthouse or by utilizing the existing open space between the two buildings, the area of which is approximately 1,000 sq.m enough to accommodate the parking as well as unloading/loading space. It is noted that the space neighboring the castle should not be used for parking but be regarded as part of the castle.

Road Space and Space for Bus Stops

No major redundant road space can be identified in Old Karak. Any considerable reduction of road space will cause traffic congestion if no counter measures are taken. At present, bus stops are a major cause of traffic congestion. Therefore, it is required to keep enough space at major bus stops by physical improvement such as creating bus bays wherever possible and by improvement of traffic management such as road markings.

Improvement of Transport System of Old Karak (Figure 4.6.6)

c. Parking for Tourist Buses and Cars

The parking space in front of the government resthouse should be used by tourist buses and cars. That area can accommodate 8 buses and 12 cars at a time, if there are no other vehicles. Buses should only unload and load passengers there and park at a separate parking lot, which can be, for example, in the existing bus terminal by improving the operation there.

Expansion of Parking Space in General

Off street parking space should be expanded. For example, some of the deteriorated old buildings to be demolished along Khalid ibn al Walid Street can be converted to parking space. The open space owned by the municipality at a corner of Al Khar Street may also be a candidate of a small parking area.

Street Improvement

Streets in the Old Karak should be improved and be equipped with tourist and traffic signs. The area from the castle through Al Malik Husayn Street down to the Saladine Statue is a priority section for street improvement. The Al Malik Husayn Section should be a pedestrian priority road with established parking space, wide and improved sidewalks which are shaded wherever possible, street furniture and planting at appropriate locations. Al Qala Street, Al Khadr Street, Al Mayoan Street

and Umar Mosque Streets will continue to be the internal arteries of Old Karak.

Bus Stop Improvement (Figure 4.6.7)
Major bus stops should be improved by establishing clear signs, marking and bus bays wherever possible. Part of the municipality owned open space at Al Khar Street can be used for a bus bay.

Public Transport System Development (Figure 4.6.8)
The public transport system can be developed according to the following steps. It is noted that due to the limited space in Old Karak and the importance of conservation of the landscape and historic assets, construction of a new structure such as a new access road needs special consideration.

The Bus Terminal for Ghor and the main terminal improvement
The bus terminal for Ghor Area should be relocated from the present on street site to the main public bus terminal area, where improvement of operation of buses and English language panels for foreign tourists are needed.

Introduction of Old Karak circulation buses
An idea to make smooth traffic at bus stops in Old Karak is to separate internal and external systems. Outside buses are allowed only to the bus terminal and internally circulating buses can serve the Old Karak vicinity. However, this system has to allow reverse traffic along the access to the terminal. A bus only reverse lane has to be introduced. Traffic signals at the entrance of the terminal will help maintain smooth flow.

- Relocation of the existing terminal to the new location above Wadi Zayatin

According to this relocation arrangement, a separation of external and internal bus services is possible without introducing a reverse lane along the section between the existing terminal area and the Al Hizam Street (the peripheral road). However, if the existing terminal area is redeveloped as a site for traffic-generating uses such as a large scale shopping area or large of commercial, business, administration facilities, a direct link between the site and the new terminal will be required; otherwise, all the trips to the site need to pass through Old Karak. Therefore, in this case, a bus only reverse lane along the section to the site will be needed for the shuttle or circulation buses and also for some external buses just to stop at the site. In either case, traffic signals to manage the traffic to and from the new terminal will be required. Part of tourists will use the new terminal; therefore the terminal should be equipped with simple tourist service facilities such as tourist information panels.

Figure 4.6.6 Proposed Traffic Improvement for Old Karak

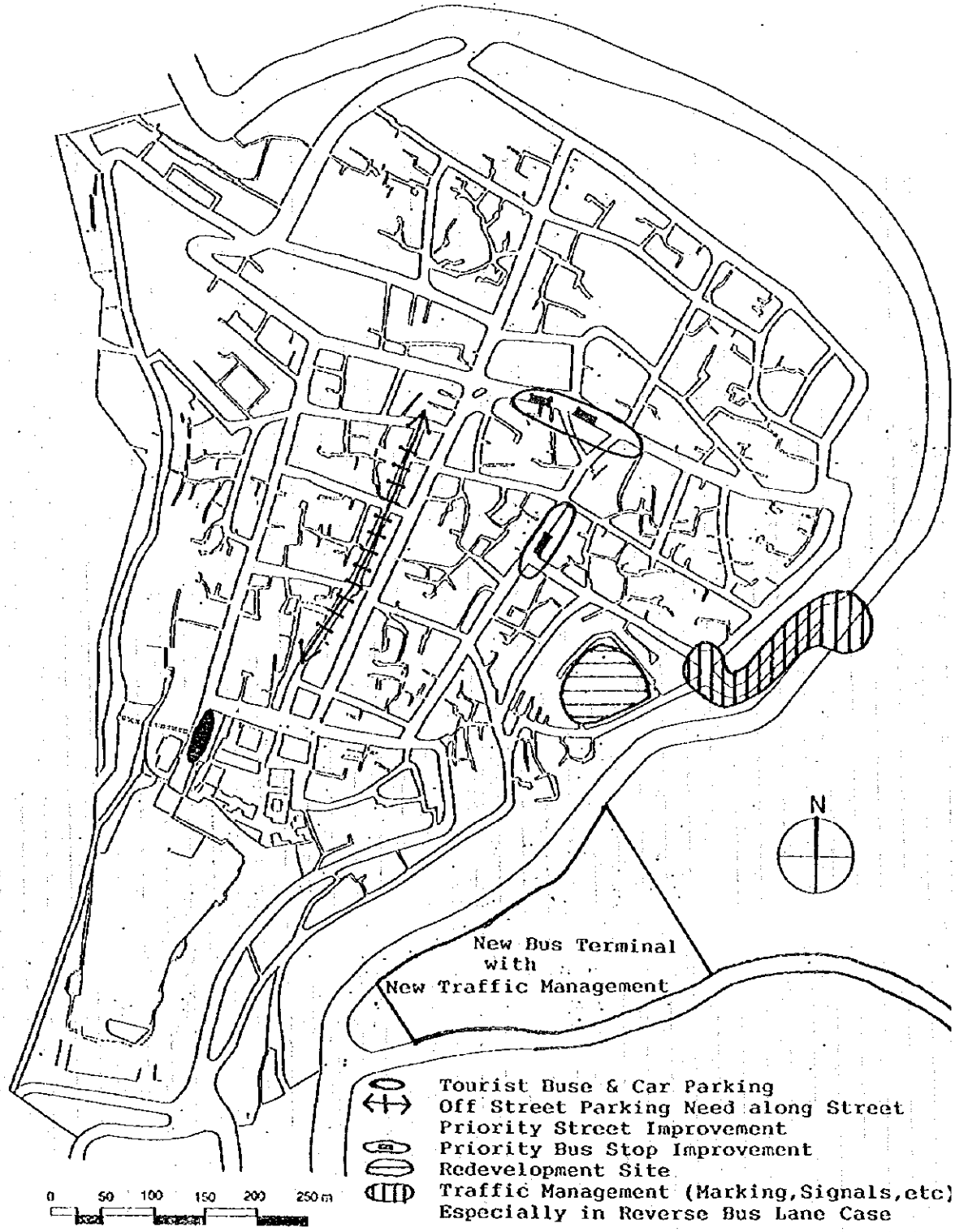


Figure 4.6.7 Proposed Improvement of Bus Stops

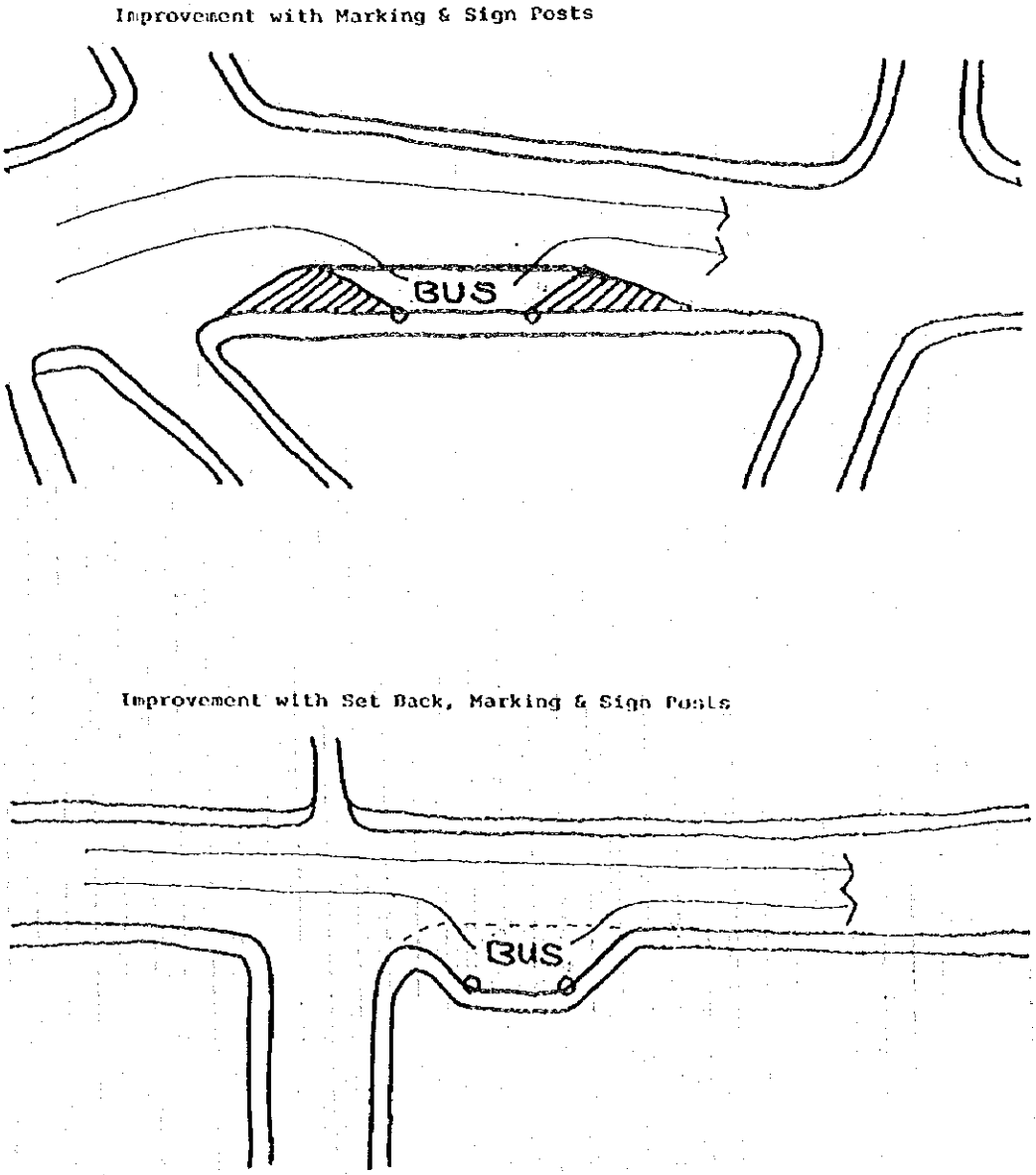
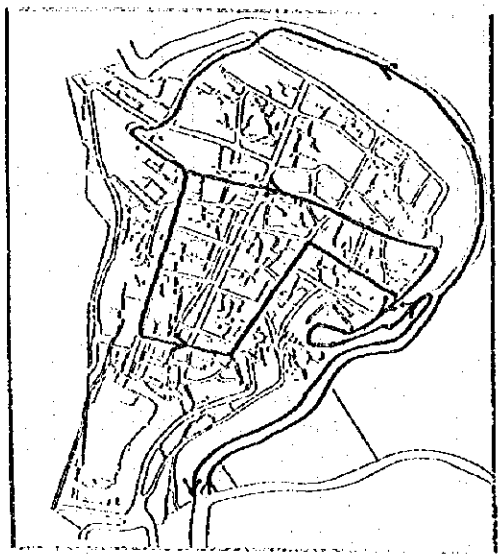


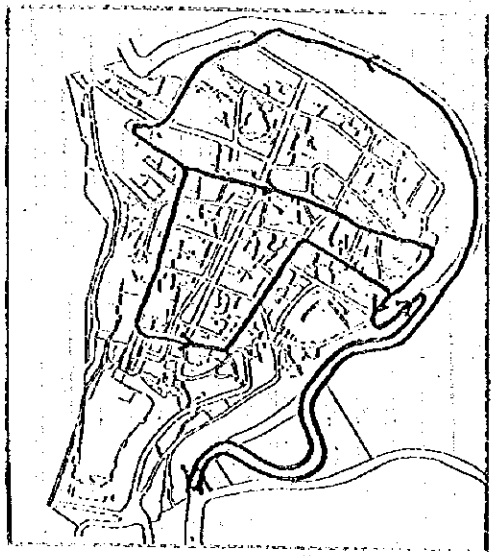
Figure 4.6.8 Alternative Schemes of Public Transportation Flow

Present Scheme

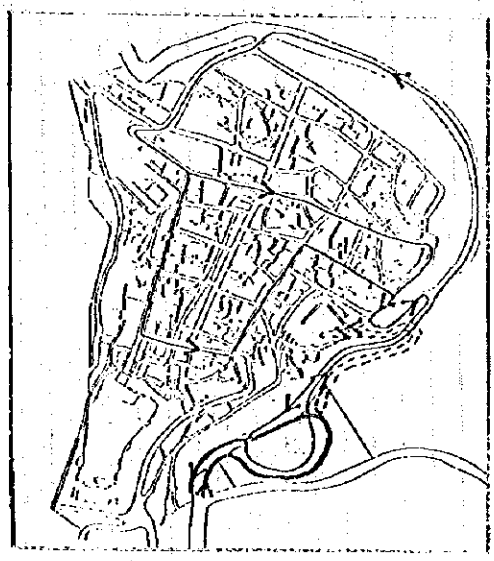


Separation of Internal & External Flow

Use of New Terminal



Separation of Internal & External Flow with New Terminal



Bus Terminal
—— Ordinary Buses
—— Inner Circulation Buses
---- Shuttle Buses &/or Extension of Ordinary Buses in Case of Large Scale Development at Existing Terminal Site

B. Water supply, Sewerage and Drainage

a. Water supply

Based on the forecast of tourists in the year 2000, the water consumption of tourists and of local inhabitants of Karak is estimated as follows:
(Assuming two days average tourists stay and daily water use of 400 litters/capita/day and 160 l/c/d for inhabitants).

- Tourists 70,000 x 400 x 2 = 0.06 MCM
- Local inhabitants 219,150 x 160 x 365 = 12.8 MCM

From the comparison above, the water consumption of tourists amount to 0.47% of local consumption. In this context, the supply of water for tourists is of little significance when compared to the area's overall needs.

The water supply network is already almost 100% complete. But water supply is limited to two days a week especially in summer season from May to October. Most housing/buildings are advised by the Water Authority of Jordan to have storage tanks. In the future, recycled water from sewerage through the high-tech device should be reused for the irrigation, industry and toilet flushing. Thus, more water supply will be available. As the recommendable matter, although existing water supply pipes of galvanized material are mostly exposed in the castle and the urban area, to avoid the corrosion due to acid soil, it is better to embed the pipes in the earth or cover using PVC material to protect from the damage and to promote beautification.

b. Sewerage

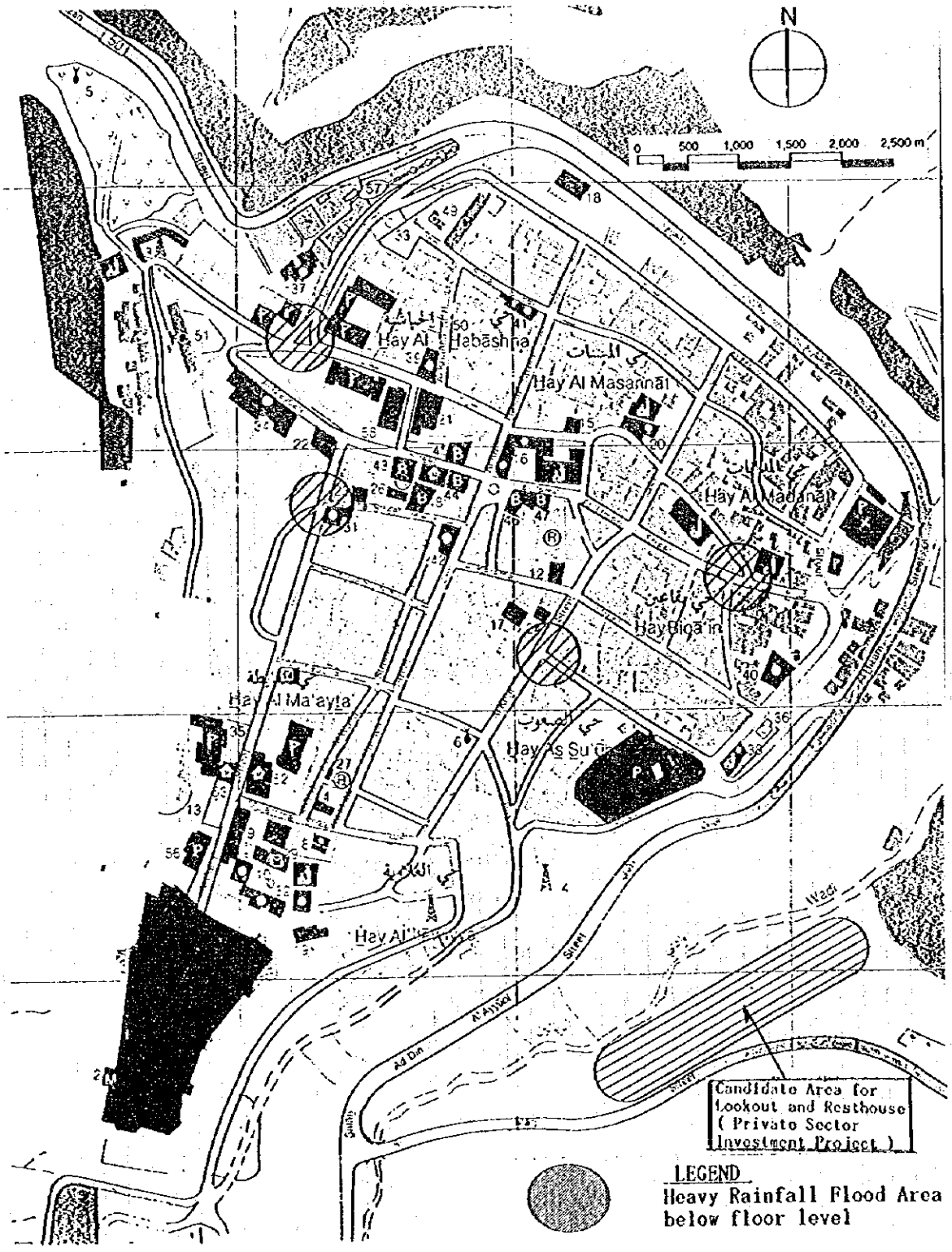
Sewerage network in the urban area is almost 100% completed.
Waste water is conveyed using pipes to a conventional waste water treatment plant.
No problem on the sewerage in the project area is foreseen.

c. Drainage

Special problems of drainage in the Castle have not been found so far. But, in case some drainage improvements are needed, stone materials of castle touching directly with drainage water should be avoided as much as possible to protect the castle from corrosive action due to oxidation from water leakage. The existing drainage system in the urban area and hill top area poses no serious problems so far for the proposed infrastructure. But, especially in the urban area of Old Karak, some main streets as shown in Figure 4.6.9 are flooded under heavy rain. Since these streets

are located relatively near the proposed project area, it is better to improve the drainage system in due time.

Figure 4.6.9 Flood Area of Old Karak



C. Waste Management

a. Existing and Projected Situation

The domestic and commercial waste generated within the old city is deposited within 1.1m3 containers which are emptied by the Karak municipality using screw compacting, rear end loading waste vehicles for disposal at the dump located 25 km away from the city. The significant difference between the volume of waste reported and that recorded as being removed may result from the low rate of waste generation compared to more prosperous areas e.g. Amman.

It is estimated that an additional 47,000 tourists will visit the city in the year 2000 (total population 63,000) and that this will generate an additional 0.05 tones/day which is less than 3% of that currently collected from the old town. This additional quantity is easily accommodated within the existing waste collection and disposal arrangements currently operated by Karak Municipality. However, the project provides the opportunity for upgrading waste collection within the town to the benefit of both tourists and residents, as well as providing a model for managing waste within archaeological sites.

b. Recommendations

In order to achieve a higher standard of cleanliness measures similar to those of other urban areas are recommended as follows:

General Refuse Collection and Street Sweeping

- the purchase of small (4 m3) capacity, dedicated compacting refuse trucks similar to those intended to operate within the narrow streets of Amman;
- the replacement of existing containers with new containers, and their placement in major waste generating areas;
- the location of containers in purpose built alcoves or behind screens made of local materials;
- the equipping of street cleaners with waste collection trolleys in place of the existing untidy assorted barrows; and
- the involvement of the local community in the development of schemes affecting them.

Karak Castle

- the employment of dedicated maintenance personnel by DOA with specific responsibility for litter collection within the vicinity of the castle, including the moat
- the placing of attractive litter bins at information points and at the museum, to

be emptied by maintenance personnel;

In the event of the development of the original entrance to the castle beneath the town as the principal access to the bus park, this might require separate waste management arrangements, to be handled by the city collection system.

Bus Park

- pedestrian areas are clearly demarcated;
- vendors are strictly controlled and responsible, as part of their permission to operate within the bus park for disposal of the waste generated by their activities into 1.1 m3 containers to be emptied by the municipality; and
- maintenance activity within the bus park is to be prohibited.

Other facilities

It is not expected that the other facilities will generate significant additional volumes of waste and that these cannot be incorporated within the existing waste collection and disposal system.

c. Operational Arrangements

The responsibility for waste collection is as follows:

- Karak Castle DOA
- Karak Town Karak municipality

In view of the distinct character of the old city and the number of government installations within the boundary of the city, consideration should be given to contracting out waste management services to a private operator. The contracting out of such services appears to be possible under item 11 of the Rural Government Board Law 29 (1955) and already has a precedent in Aqaba and Jerash. In order to take full advantage of competition within the private sector and encourage achievement of performance targets, the contract period should not exceed five years.

Contracting out could be extended to the following locations and services: locations:

- existing government facilities;
- the bus park;
- street sweeping with the old city or the entire city; and
- the collection of waste from the old city of the entire city.

D. Initial Environmental Examination (IEE)

a. Description of the Site

The project site is the historic and commercial center of Karak. The old town's residential population is about 18,500 persons. The number of visitors is about 200 to 250 per day.

b. Main Environmental Issues of the Initial Site

- Nuisances generated by traffic conditions: Air pollution, water pollution during heavy rain, noise, and traffic congestion are major problems, partly due to the lack of large streets.
- Water related problems: Irregularity of water supply, importance of water leakage, flooding of streets in case of heavy rain
- Waste related problems: Accumulation of litter and insufficient collection of waste occur regularly, particularly in passageways and stairways of the poor residential area within the project site. These are sources of unsalubrity (children are playing outside), and disamenity (visual landscape and doors).
- Land subsidence and landslide: Due to lithological characteristics, climate conditions, and remaining underground historical caves or passages, the ground and slopes can be unstable.

b. Sources of Impacts

Components of the project cannot be considered as sources of negative effects on the environment. The reason is that each component will help to improve the living urban environment. Another reason is that these components basically do not change the physical conditions of the site. Possible sources of negative impacts are rather those induced by the operation of the project.

They are:
- Increased visitor volume
- Change in the traffic density and traffic pattern

These components are mentioned in Table 4.6.3, which is a checklist of direct effects of the project components.

c. Potential Impacts

Checklist and Ranking of Direct Impacts

Potential impacts of the project on the environment are summarized in Table 4.6.3.

The global ranking is made in the last column.

- Definitions: In this table, population means life style, habits, and traditions of local people. Settlements means housing and housing pattern, or other infrastructure like buildings and roads. Social cohesion means cohesion in standards of living, mentality, and education.
- Ranking: Ranking of the effects of the project is only indicative and is made by summing up the items having effects according to a coefficient attributed to each component of the project. The coefficient is intended to reflect the relative importance in terms of potential source of impacts. Such coefficients have been attributed as follows:

    - Coefficient 1 for items that do not effect the city and are more specifically addressed to tourists
    - Coefficient 2 for items that affect the aesthetic of the city and concern also the living environment of people
    - Coefficient 3 for items subject to evolution in time and that could generate pressure on the people and the quality of environment

Components coefficients are the following:
- Landscaping: 2
- Information: 1
- Urban services: 1
- Tourism: 2
- Visitor volume: 3
- Tourism traffic (vehicles): 3

The total ranking is classified as follows:
- Notable (I): 4 to 6
- Significant (II): 7 to 8
- Important (III): 9 to 12

Results

This table shows the expected important effects, which are almost positive.
- Effects on amenities and living environment
- Effects on economic activity

Significant negative impacts as shown in the table are limited to the following:
- Effects on local population (life style, habits, traditions)
- Effects on traffic conditions (and its induced effects on the quality of the living environment)

The range of potential issues could be summarized as follows:

- Effects on the community (cultural, social and economic gap between inhabitants and visitors, possible rise in goods and land prices, and substitution of poor population by a higher income population in the long term)
- Effects on resources consumption and management (water, electricity) and health conditions (capacity of collection and treatment of solid waste and wastewater)
- Effects on the quality of the living environment (traffic conditions, air, noise, litter)

Table 4.6.3 Checklist of Positive or Negative Direct Effects

	Structure Components				Operation Components		
	Landscaping	Information	Services	Tourism	Visitors volume	Traffic Develop	Ranking of Effects
Land Use	E	-	-	-	E	-	Notable
Settlements Population	-	-	-	E	E	E	Significant
Economic Activity	E	-	E	E	E	E	Important
Traffic Conditions	-	-	-	E	E	E	Significant
Use of Resources	E	-	-	-	E	-	Notable
Solubility	-	-	-	-	E	-	Notable
Sanitation Social Cohesion	-	-	-	E	E	-	Notable
Health	-	-	-	-	-	E	Notable
Prices	E	-	-	-	-	-	Notable
Noise	-	-	-	E	-	E	Notable
Living Environment	E	-	E	E	E	E	Notable

E: effect -: no effect or not relevant

E. Environmental Management

Significant environmental protection measures are those which relate to the involvement of communities, management of water, wastewater and solid waste, and management of traffic conditions.

PART II

DEVELOPMENT PLANS FOR PRIORITY AREAS

Chapter 5.

Five Year Action Plan

Chapter 5. Five Year Action Plan

5.1 Overall Evaluation

All of the six projects presented in the preceding Chapter are individually beneficial to the economy of Jordan as demonstrated in the respective sections. All of them will serve to strengthen Jordan in the international tourism market as a destination.

Amman and its environs would become a competitive destination marketable in the international market side by side with Petra once sufficient amount of tourism products as represented by the six projects are in place. It is highly desirable therefore to implement all of the six projects at the same time so that the overall effect would become much more than the simple sum of the six. From the view point of efficiency and effectiveness, these six projects should be treated as one package, i.e. a sectoral project for creating a tourism core and corridor in the priority areas in Jordan.

The combined projects at estimated total financial cost of US$ 76 million would yield at least an economic internal rate of return of 27%, calculated against streams of costs and benefits as the simple sum of individual projects. Excluding the National Museum project, which is expected to yield a very high return on investment, the combined internal rate of return has been calculated at 21%. Actual combined effect can be expected to be much higher.

5.2 Five Year Action Plan

5.2.1 Implementation Program

As stated earlier, Jordan has plentiful existing and potential tourism resources but so far has been lacking concerted effort to properly prepare its tourism sector for accommodating today's demanding international tourists. The proposed six model projects are intended to give a clear signal to the international market and to the people in public as well as private sectors in Jordan that Jordan has seriously embarked on the modern tourism development. Considering the fiercely competitive nature of international tourism market, the proposed six model projects should be immediately implemented and be completed by 2000 as a package.

Figure 5.2.1 shows a schedule of a five year action plan for the implementation of the six model projects. The plan includes the basic design period with necessary investigations, the detailed design period, and the period of actual construction.

5.2.2 Recommended Action

In order to initiate these projects for implementation, institutional arrangements as well as financial arrangement will have to be made.

It is recommended that a project office be established under MOTA, which will ensure a close coordination among various concerned agencies as presented in sections describing each project in Chapter 4.

For financial arrangements, financial sources should be tapped that would recognize the importance of the program of model projects. Because of the fact that the program is a combination of infrastructure preparation and public sector institutional development and is therefore to be implemented by the public sector, financing schemes suitable for such a public sector program should be sought.

Implementation of each of the six model projects however is only one side of the story. Various national institutional measures as suggested in Volume 1, Part I of the Report should be implemented at the same time.

Figure 5.2.1 Five Year Action Plan

Amman Downtown Tourist Zone	96	97	98	99	2000	US$ million
a. Tourist Street						2.3
b. Tourist Trails				District Office	Museum	2.5
c. Municipal Museum						2.3
d. Tourist Bus Terminal						12.7
e. Information Centre	Interim				Permanent	0.7
f. Training				Overseas	Domestic	0.3
Cost in US$ million	0.9	1.8	8.8	7.8	1.5	20.8

National Museum	96	97	98	99	2000	US$ million
a. Building construction						10.0
(F.F.E)						3.5
b. Human Resources				Training	Training	1.0
Cost in US$ million		0.4	0.5	4.8	8.8	14.5

Historic Old Salt	96	97	98	99	2000	US$ million
a. Visitor Centre						2.3
b. Tourist Trails				Model Trails		5.0
				Nodes		
					Panorama	
c. Training				Overseas	Domestic	0.3
Cost in US$ million	0.2	0.6	4.1	2.6	0.1	7.6

Dead Sea Panoramic Complex	96	97	98	99	2000	US$ million
a. Rest House (with Panorama Spa)						9.6
b. Dead Sea Museum						2.1
c. Cable Car						6.0
d. Infrastructure						1.7
Cost in US$ million	0.5	0.7	6.7	11.5		19.4

Madaba - Dead Sea Parkway	96	97	98	99	2000	US$ million
a. Planning and Design						0.9
b. Road Construction						6.0
c. Landscape and Supporting Facilities						0.6
Cost in US$ million	0.2	0.2	0.2	4.2	2.7	7.5

Karak Tourism Development	96	97	98	99	2000	US$ million
a. Castle						2.4
b. Tourist Street						2.4
c. Visitor Centre						0.35
d. Observation Points						0.45
e. Training			Overseas	Domestic		0.3
Cost in US$ million	0.3	2.1	3.4	0.1		5.9

Cost Grand Total in US$ million	2.1	5.8	23.7	31.0	13.1	75.7

B/D D/D Implementation