

No.

Japan International Cooperation Agency (JICA)  
Ministry of Tourism and Antiquities  
Ministry of Planning  
The Hashemite Kingdom of Jordan

# Detailed Design for Tourism Sector Development Project in the Hashemite Kingdom of Jordan

## Final Report

Main Report

**Volume 2MR**

Raghadan Bus Terminal Sub-project

August 2000

Pacific Consultants International  
Yamashita Sekkei Inc.

|               |
|---------------|
| <b>SSF</b>    |
| <b>JR</b>     |
| <b>00-153</b> |

**NOTE**

The following exchange rate was adopted through out this report

US\$ 1.00=JD 0.708 = Yen 106.08 (March 2000)

JD 1.00 = Yen 150

## PREFACE

In response to a request from the Government of the Hashemite Kingdom of Jordan, the Government of Japan decided to conduct the Detailed Design Study on Tourism Sector Development Projects in Jordan and entrusted the study to the Japan International Cooperation Agency (JICA).

JICA selected and dispatched a study team headed by Mr. Takahide Fujihira of Pacific Consultants International and consist of Pacific Consultants and Yamashita Sekkei Inc. to Jordan, three times between March 1999 and July 2000.

The team held discussions with the officials concerned of the Government of Jordan and conducted field surveys at the study area. Upon returning to Japan, the team conducted further studies and prepared this final report.

I hope that this report will contribute to the implementation of the Project and to the enhancement of friendly relations between our two countries.

Finally, I wish to express my sincere appreciation to the officials concerned of the Government of Jordan for their close cooperation extended to the Study Team.

August 2000



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Kimio Fujita

President

Japan International Cooperation Agency

August 2000

Mr. Kimio Fujita  
President  
Japan International Cooperation Agency  
Tokyo, Japan

## Letter of Transmittal

Dear Sir,

We are pleased to formally submit herewith the Final Report and tender documents of “The Detailed Design Study on Tourism Sector Development Project in the Hashemite Kingdom of Jordan.” Which is composed of 7 sub-projects.

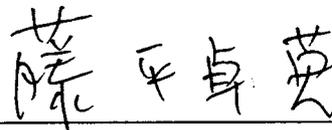
This report compiles the results of the Study including planning, design and tender documents (draft) of each sub-project.

During the study period we had been assisted by many people for the accomplishment of the Study, and we would like to express our sincere gratitude and appreciation to all those who extended their kind assistance and cooperation to the Study Team, in particular, the Ministry of Tourism and Antiquities who acted as the counterpart agency.

Also, we acknowledge the effective assistance by all the officials of your Agency and the Embassy of Japan in Jordan.

We hope that the report will be able to contribute to the implementation of Project and to the further development of Jordan through the completion of the Project.

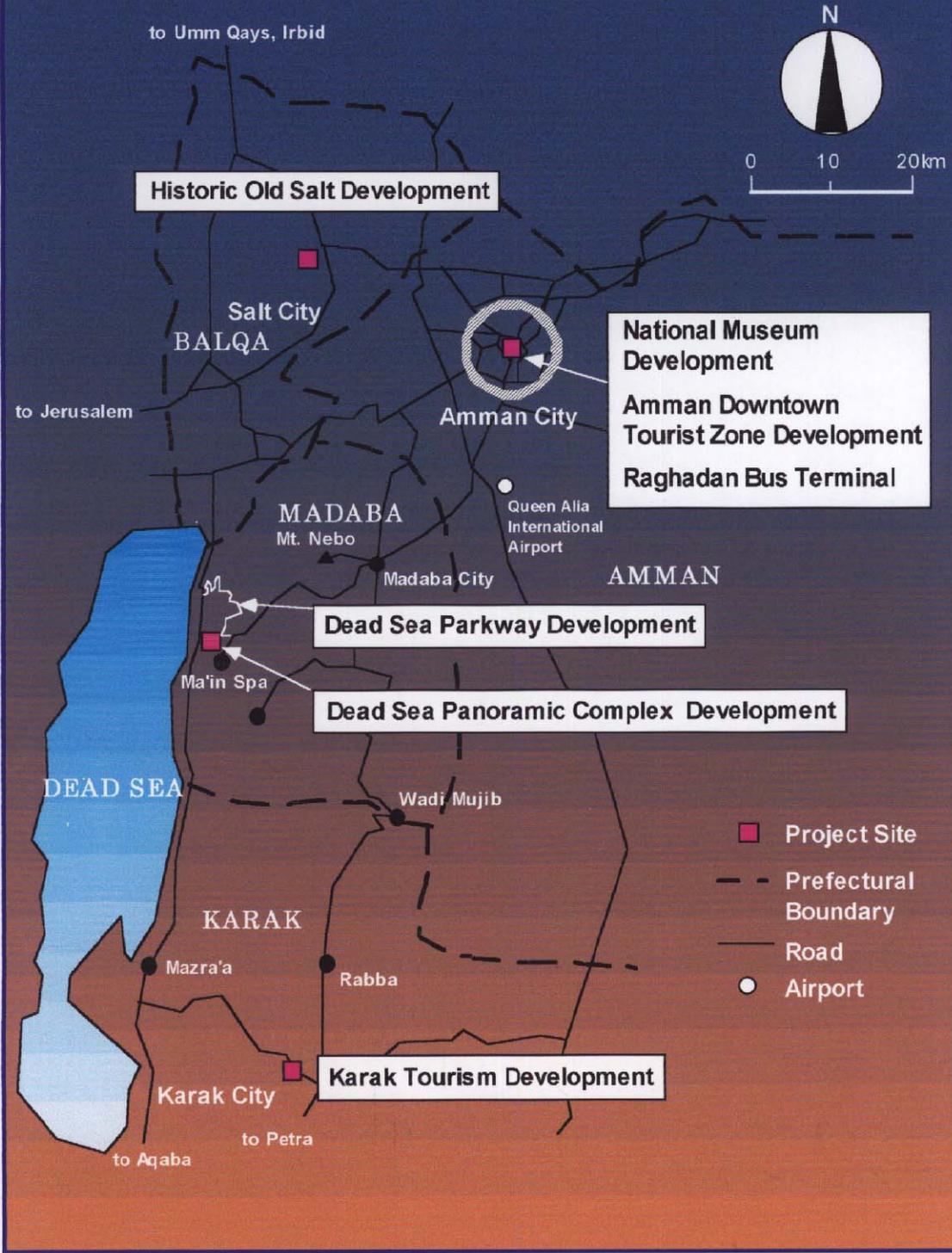
Very truly yours,



---

Takahide Fujihira  
Team Leader,  
The Study Team for  
the Detailed Design Study on  
Tourism Sector Development Project in  
the Hashemite Kingdom of Jordan

**Project Sites for Tourism Sector Development Project**



**Location Map**

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**GENERAL DRAWINGS**

In addition to this Main Report, Final Report and Draft Tender Documents for Raghadan Bus Terminal Sub-project consist the following volume of reports and documents, separately.

### **GENERAL TABLE OF CONTENTS**

#### **FINAL REPORT**

- VOLUME 2MR : MAIN REPORT
- VOLUME 2SR : SUPPORTING REPORT
- Design Calculation Sheets
  - Take off Sheets for Quantity Survey
  - Other Supplemental Survey Report for Design

#### **DRAFT TENDER DOCUMENTS**

- VOLUME 2PQ : PRE-QUALIFICATION DOCUMENT
- VOLUME 2IT : TENDERING AND CONTRACTING REQUIREMENT  
(Volume )
- Invitation for tender
  - Instructions to Tenderers
- VOLUME 2SP-AS : SPECIFICATIONS (Volume )
- Division 1~14, Architecture & Structure
- VOLUME 2SP-ME : SPECIFICATIONS (Volume )
- Division 15~16, Mechanical & Electrical
- VOLUME 2BQ : BILL OF QUANTITIES (Volume )
- VOLUME 2DR-AS : DRAWINGS (Volume )
- Architecture
  - Structure
- VOLUME 2DR-ME : DRAWINGS (Volume )
- Mechanical
  - Electrical
- VOLUME 2CC : CONDITIONS OF CONTRACT (Volume )
- General Conditions of Contract
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## Abbreviations

|        |   |   |
|--------|---|---|
| ADTZ   | : | Amman Downtown Tourist Zone                                     |
| B/D    | : | Basic Design  |
| CDD    | : | Civil Defence Directorate                                       |
| CERM   | : | Cultural Environment Resources Management                       |
| D/D    | : | Detailed Design   |
| DOA    | : | Department of Antiquities (of MOTA)                             |
| DOE    | : | Department of Environment (of MMRAE)                            |
| DSPC   | : | Dead Sea Panoramic Complex                                      |
| DSPW   | : | Dead Sea Parkway  |
| EIA    | : | Environmental Impact Assessment                                 |
| GAM    | : | Greater Amman Municipality                                      |
| GCEP   | : | General Corporation for Environmental Protection                |
| GDP    | : | Gross Domestic Product  |
| GEC    | : | General Environment Corporation                                 |
| GOJ    | : | Government of Japan   |
| HOSD   | : | Historic Old Salt Development                                   |
| ICB    | : | International Competitive Bidding                               |
| IEE    | : | Initial Environmental Examination                               |
| I/P    | : | Implementation Program  |
| JAM    | : | Jordan Archaeological Museum                                    |
| JBIC   | : | Japan Bank for International Cooperation                        |
| JD     | : | Jordan Dinar(s)   |
| JICA   | : | Japan International Cooperation Agency                          |
| JST    | : | JICA Study Team   |
| JVA    | : | Jordan Valley Authority   |
| JY     | : | Japanese Yen  |
| KDC    | : | Karak Development Corporation                                   |
| KM     | : | Karak Municipality  |
| KTD    | : | Karak Tourism Development                                       |
| LB     | : | Local Bidding   |
| LCB    | : | Local Competitive Bidding                                       |
| MMRAE  | : | Ministry of Municipal, Rural Affairs and Environment            |
| MOP    | : | Ministry of Planning  |
| MOT    | : | Ministry of Transport   |
| MOTA   | : | Ministry of Tourism and Antiquities                             |
| MP     | : | Master Plan   |
| MPWH   | : | Ministry of Public Works and Housing                            |
| NGO    | : | Non-Governmental Organisation                                   |
| NIC    | : | National Information Center                                     |
| NM     | : | National Museum   |
| OECF   | : | Overseas Economic Cooperation Fund of Japan                     |
| PMU    | : | Project Management Unit   |
| PSC    | : | Project Steering Committee                                      |
| RBT    | : | Raghadan Bus Terminal   |
| RSCN   | : | Royal Society for the Conservation of Nature                    |
| SAPROF | : | Special Assistance for Project Formation                        |
| SDC    | : | Salt Development Corporation                                    |
| SM     | : | Salt Municipality   |
| S/V    | : | Supervision (of Works)  |
| TCC    | : | Telecommunications Corporation                                  |
| TD     | : | Tender Documents  |
| TOR    | : | Terms of Reference  |
| T/P    | : | Tender Package  |
| UNESCO | : | United Nations Educational Scientific and Cultural Organization |
| USAID  | : | United States Agency for International Development              |
| WB     | : | World Bank  |

## List of Participants

| <u>Name</u>  | <u>Title</u>                                      |
|--|---|
| <b>JORDANIAN SIDE</b>                              |   |
| <b>• National Museum Steering Committee</b>        |   |
| H.M. Queen Rania                                   | Head of National Museum Steering Committee        |
| H.E. Dr. Reema Khalaf                              | Former Deputy Prime Minister/Minister of Planning |
| H.E. Akel Biltaji                                  | Minister of MOTA                                  |
| H.E. Eng. Nidal Al-Hadid                           | Mayor of Greater Amman Municipality               |
| H.E. Dr. Taleb Al-Refai                            | Minister of Information                           |
| Dr. Alia Hatough Bouran                            | Secretary General of MOTA                         |
| Dr. Abu-Ayyash                                     | Executive Manager, PMU                            |
| Dr. Ghazi Bisheh                                   | Former Director of DOA                            |
| Prof. Dr. Zeidan Kafafi                            | Dean of Research and Graduate Studies             |
| Mr. Bilal Hammad                                   | Architect/Private Sector                          |
| <b>• Project Steering Committee</b>                |   |
| <b><u>Higher Committee</u></b>                     |   |
| H.E. Akel Biltaji                                  | Chairman of the Committee, Minister of MOTA       |
| H.E. Michael Marto                                 | Minister of MOF                                   |
| H.E. Husni Abu Ghaida                              | Minister of MOPWH                                 |
| H.E. Jawad Al-Hadid                                | Minister of MOP                                   |
| H.E. Reema Khalaf                                  | Former Deputy Prime Minister/Minister of MOP      |
| H.E. Abdul Rahim Okour                             | Minster of MoMREA                                 |
| H.E. Nidal Al-Hadid                                | Mayor of GAM                                      |
| <b><u>Executive Committee</u></b>                  |   |
| Dr. Alia Hatough Bouran                            | Secretary General of MOTA                         |
| Eng. Abdelmajid Kabariti                           | Secretary General of MOPWH                        |
| Dr. Jamal Salah                                    | Secretary General of MOP                          |
| Eng. Abdal-Rahim F. Boucai                         | Deputy Mayor of GAM                               |
| Mr. Mahir Abu Al-Saman                             | Mayor of Salt Municipality                        |
| Mr. Khalid Al-Dmour                                | Mayor of Karak                                    |
| <b>• Project Management Unit (PMU)</b>             |   |
| Dr. A. Abu-Ayyash                                  | Executive Manager                                 |
| Mr. Khalid Laham                                   | Financial Manager                                 |
| Eng. Essam M. Jabri                                | Project Engineer                                  |
| <b>• Relevant Authorities</b>                      |   |
| <b><u>Ministry of Planning</u></b>                 |   |
| Dr. Nael T. Al-Hajaj                               | Director of Multilateral Co-operation             |
| Eng. Benitta Saad                                  | Tourism Section                                   |
| <b><u>Ministry of Public Works and Housing</u></b> |   |
| Eng. Sami Jiries Halaseh                           | Director of Highway Studies Directorate           |
| <b><u>Jordan Valley Authority</u></b>              |   |
| Eng. Avedis Serbekian                              | Secretary General of JVA                          |
| Mr. Mahannad Qudah                                 | Former Assistant Secretary General, JVA           |
| Mr. Jamil Itijazai                                 | Town Planner, Executive Department, JVA           |

| <u>Name</u>                      | <u>Title</u>  |
|----------------------------------|---|
| <u>Department of Antiquities</u> |   |
| Dr. Fawaz Khreshah               | Director of DOA   |
| Dr. Ghazi Besheh                 | Former Director of DOA                                      |
| Dr. Abdel Sami Abu Dayyeh        | Cultural Resources Management,<br>Department of Antiquities |
| Dr. Mohammad Najjar              | Excavation Section, Department of Antiquities               |
| Ms. Tamara Bermamet              | Assistant Curator, National Archaeological Museum           |

### **Advisory and Technical Committees for the respective sub-projects**

- **Amman Downtown Tourist Zone**
- **Raghadan Bus Terminal**
- **National Museum**

#### **Advisory Committee**

|                            |                              |
|----------------------------|------------------------------|
| H.E. Eng. Nidal Al-Hadid   | Mayor of GAM                 |
| Eng. Abdal-Rahim F. Boucai | Deputy Mayor of GAM          |
| Eng. Falah Omoush          | Under Secretary of GAM       |
| Eng. Shehada Abu-Hdeib     | Consultant for Planning, GAM |

#### **Technical Committee**

|                        |   |
|------------------------|---|
| Eng. Mohammad Khalifat | Director of Design Department, GAM            |
| Eng. Ahmed Armouti     | Traffic Department                            |
| Arch. Fadwa Abu Ghaida | Chief Architect of Design Department of GAM   |
| Eng. Majid Nimri       | Tech. Assistant of GAM                        |
| Eng. Bakker K. Abbadi  | Landscape Engineer, Design Department of GAM  |
| Eng. Meshal J. Halaseh | Work Department, GAM                          |
| Eng. Wasfi Mseis       | Traffic Department, GAM                       |
| Eng. Mohammad Basheer  | Director of Finance Department                |
| Eng. Anwar Manasra     | Planning Department of GAM                    |
| Arch. Alma Al-Fahham   | Architect, Design Department of GAM           |
| L.Arch. Raud Al-Nsour  | Landscape Architect, Design Department of GAM |
| Dr. Nawzat Abidah      | Director of DOA, MOTA                         |
| Dr. Sahar Mansour      | Archaeologist, Department of Antiquities      |
| Eng. Asma Shhaltoug    | Archaeologist, Manager Amman Citadel Project  |

- **Dead Sea Parkway**

#### **Advisory Committee**

|                          |  |
|--------------------------|--|
| H.E. Husni Abu Ghaida    | Minister of MOPWH                                |
| Eng. Abdelmajid Kabariti | Secretary General of MOPWH                       |
| Mr. Nasir Madadha        | Director General, Government Tenders Directorate |

#### **Technical Committee**

|                          |   |
|--------------------------|---|
| Eng. Sami Jiries Halaseh | Director of Highway Studies Directorate, MPWH |
| Dr. Mohammed Al-Smadi    | Geotechnical Engineer, MPWH                   |
| Eng. Iman Ramahi         | Head of Geometric Design Section, MPWH        |
| Eng. Wafa J. Haddadin    | Senior Highway Engineer, MPWH                 |

| <u>Name</u>                                    | <u>Title</u>  |
|--|---|
| <b>• Dead Sea Panoramic Complex</b>            |   |
| <b><u>Advisory and Technical Committee</u></b> |   |
| Dr. Alia Hatough Bouran                        | Chairman of Committee   |
| H.E. Mr. Shafiq Zawaydeh                       | Former Minister of MPWH   |
| Mrs. Muna Shafiq Zawaydeh                      | Madaba Heritage Society   |
| Mr. Qasem Abu Di-Haija                         | Mayor of Madaba   |
| Mr. Ali Abu Rbeiha                             | House of Parliament   |
| Dr. Abdel Ilah Abu-Ayyash                      | Executive Manager/PMU   |
| Mr. Ahmed Eddissi                              | Doctor at University of Jordan  |
| Mr. Khalid Shawabkeh                           | Geologist of Natural Resource Authority (NRA)                                 |
| Dr. Khalid Moumani                             | Quaternary Geologist (NRA)  |
| Dr. Mohammad Waheeb                            | Archaeologist of DOA  |
| Dr. Abdel Sami Abu Daya                        | Archaeologist of DOA  |
| <b>• Karak Tourism Development</b>             |   |
| <b><u>Advisory Committee</u></b>               |   |
| Mr. Ahmad Al-lawzy                             | Governor of Karak   |
| Eng. Khalid Dmour                              | Mayor of Karak  |
| Mr. Saber Aljwazneh                            | Director of KDC   |
| Mr. Jamil Salman                               | Head of Commerce Chamber, KDC   |
| Mr. Husain Tarawneh                            | Representative of KDC   |
| Ms. Arwa Masadeh                               | Director of Museum  |
| Dr. Ghazi Bisheh                               | Former Director of DOA  |
| Mr. Amir Qimish                                | Archaeologist, DOA  |
| Mr. Hakim Mohamid                              | Archaeologist, DOA Karak  |
| <b><u>Technical Committee</u></b>              |   |
| Arch. Emad Suhimat                             | Architect, KDC  |
| Eng. Yousef Al-Bustangy                        | Engineer, KM  |
| Arch. Nahla Nasraween                          | Architect, KM   |
| Eng. Mustafa Sakhniny                          | Electrical Engineer, KM   |
| Eng. Radi Mahadeen                             | Communication Engineer, KM  |
| Mr. Ghaleb Al-Jamaya                           | Traffic Management, KM  |
| Mr. Jafar Shihadeh                             | MOTA  |
| Eng. Nayef Al-Nawayseh                         | Public Works  |
| Eng. Tawfiq Al-Habashneh                       | Water Authority   |
| Arch. Luma Al-Majalieh                         | Architect, KM   |
| <b>• Historic Old Salt Development</b>         |   |
| <b><u>Advisory Committee</u></b>               |   |
| Mr. Mahir Abu Al-Saman                         | Mayor of Salt Municipality  |
| Prof. DR. Mohammed Al Ma'aney                  | Assistant Professor, Department of Architecture at University of Jordan       |
| Eng. Ranwa Yahyaa Khatib                       | Building Research Centre, Royal Scientific Society                            |
| Eng. Mervat Ma'moun Habbsh                     | Field Liaison Officer, King Hussein Environmental Management Training Program |
| Eng. Mo'ayad R. Mihyar                         | Engineer, Private Office  |
| Eng. Andrew de Carpentier                      | General Director of the Holy Land Institute for the Deaf, Salt                |
| Ms. Maisoon S. Shaheen                         | General Corporation for Environment Protection (GCEP)                         |

| <u>Name</u>          | <u>Title</u>  |
|----------------------|---|
| Ms. Lamia Shareef    | Regional Planning Department, Ministry of Municipalities, Rural and Environment Affairs |
| Mr. Hesham Al-Abbadi | Director of Belqa Tourism Office  |
| Mr. Jawad Al-Bana    | Representative of SDC   |

**Technical Committee**

|                           |                                      |
|---------------------------|--------------------------------------|
| Mr. Salah Ibrahim Salah   | Director, Engineering Department, SM |
| Mr. Abdul Rahman Al-Hyari | Director, SM                         |
| Mr. Mohammed A. Hiasat    | Architect, SM                        |
| Ms. Lina S. Abu Salym     | Architect, SM                        |

**Consulting Services-Construction Supervision**

**Tender Technical Committee**

|                          |                                |
|--------------------------|--------------------------------|
| Eng. Mahmood Murad       | Government Tenders Directorate |
| Eng. Mohamed Al Hazaymeh | Government Tenders Directorate |
| Dr. A. Abu-Ayyash        | PMU/MOTA                       |
| Eng. Smai J. Halaseh     | MOPWH                          |
| Eng. San'a Al Nazer      | MOPWH                          |
| Eng. Ismi'l Al Osta      | GAM                            |
| Eng. Hana KaKish         | Government Audit Bureau        |

| <u>Name</u>                            | <u>Title</u>  |
|--|---|
| <b>JAPANESE SIDE</b>                   |   |
| <b>• Embassy of Japan</b>              |   |
| Mr. Koichi Matsumoto                   | Ambassador  |
| Mr. Takashi Ashiki                     | Former Counsellor   |
| Mr. Tohru Kuramata                     | Counsellor  |
| Mr. Masaya Tanaka                      | First Secretary, Economic Section   |
| Mr. Tadateru Nakazawa                  | First Secretary, Economic Section   |
| <b>• JICA Headquarters</b>             |   |
| Mr. Takao Kaibara                      | Director, First Development Study Department,<br>Social Development Study Division        |
| Mr. Hidenori Kumagai                   | Deputy Director, First Development Study<br>Department, Social Development Study Division |
| Mr. Tetsuro Ikeda                      | First Development Study Department,<br>Social Development Study Division (Predecessor)    |
| Mr. Kazuya Narukawa                    | First Development Study Department,<br>Social Development Study Division (Successor)      |
| <b>• JICA Jordan</b>                   |   |
| Mr. Yoshio Yabe                        | Resident Representative   |
| Mr. Hiroshi Kurakata                   | Deputy Resident Representative  |
| Mr. Masaaki Iwai                       | Assistant Resident Representative   |
| Eng. Adel O. Zureikat                  | Research Coordinator  |
| Mr. Koji Oyama                         | Member of Japan Overseas Cooperation Volunteers   |
| <b>• JICA Technical Appraisal Team</b> |   |
| Mr. Toshikatsu Omachi                  | Advisor for Urban Facility Design   |
| Mr. Hideo Matsuzono                    | Advisor for Highway Design  |
| Mr. Hiroo Oda                          | Advisor for Construction Plan/Tender Documents  |
| Mr. Miki Watanabe                      | Advisor for Building Design   |
| <b>• JICA Study Team</b>               |   |
| Mr. Takahide Fujihira                  | Team Leader   |
| Mr. Takanori Tanaka                    | Deputy Team Leader/Architect  |
| Mr. Yasuhiro Nakajima                  | Deputy Team Leader/Landscape and Street Design  |
| Mr. Sotaro Watanabe                    | Facility Design   |
| Mr. Ryunosuke Okamoto                  | Structural Design   |
| Mr. Kazuo Tonoshi                      | Mechanical/Electrical Design  |
| Mr. Shigeyoshi Kurihara                | Road Design   |
| Mr. Fumio Arai                         | Construction Planning/Cost Estimation (1)   |
| Mr. Hisao Matsumura                    | Civil Design/Construction and Cost Planning (2)   |
| Mr. Hidejiro Ushizaki                  | Bus Terminal Design/Road Facility Planning  |
| Mr. Akira Ogiwara                      | Environmental Impact Assessment   |
| Mr. Youichi Kumakura                   | Exhibition Planning   |
| Mr. Naoki Watanabe                     | Exhibition Facility Planning  |
| Mr. Akio Ishikawa                      | Operation Planning  |
| Mr. Yuichi Fukuoka                     | Maintenance/Landscape Planning  |
| Mr. Makoto Harada                      | Tender Document Specialist  |
| Mr. Shoji Kumita                       | Geotecnic Engineer  |
| Mr. Hirotsugu Kato                     | Administration Coordinator  |

## Chapter 1 Introduction

### 1.1. Background of Sub-project

This improvement of the existing bus terminal was originally one of the components of the sub-project of Amman Downtown Tourist Zone Development, however, it was decided to separate it and formulate a sub-project, due to the differences of the characteristics of the scope and the size of the development.

There are four major bus terminals in Amman City: Madoba Bus Terminal serves the south-west and south directions; Abdali Bus Terminal is for the north and west directions, and Ras Al-Ain Bus Terminal serves the South, while Raghadan Bus Terminal serves the east directions and the inner-city of Amman, primarily catering for the local people residing in Amman and its neighbouring regions.

The sub-project has been formulated to improve one of those major bus terminals, the Raghadan Bus Terminals, located in the centre of Amman.

The Raghadan Bus Terminal serves three (3) types of land transport; white taxi, mini-bus and large bus. They are commercially operated by the private sector as well as public sector. The white taxi has a fixed route for each destination, and has a different function to its conventional yellow taxi, which serves any destination in accordance with the passenger's request.

Table 1.1 Existing condition of the main Bus Terminals in Amman City

| Name of Bus Terminal                | Name of Place            | Site Area (m <sup>2</sup> ) | Number of Lanes                                  | Max. Operation Capacity /Day                         |
|-------------------------------------|--------------------------|-----------------------------|--|--|
| <b><u>Raghadan Bus Terminal</u></b> | <b>Raghadan</b>          | <b>22,650</b>               | <b>White taxi 44<br/>M. Bus 23<br/>L. Bus 20</b> | <b>White taxi 1460<br/>M. Bus 496<br/>L. Bus 109</b> |
| <i>Abdali Bus Terminal</i>          | <i>Abdali</i>            | <i>20,000</i>               | <i>69</i>  | <i>White taxi 351<br/>M. Bus 218<br/>L. Bus 98</i>   |
| <i>Ras Al-Ain Bus Terminal</i>      | <i>Wadi Al-Seir</i>      | <i>4,000</i>                | <i>20</i>  | <i>M. Bus 139<br/>L. Bus 10</i>                      |
| <i>Madoba Bus Terminal</i>          | <i>Southern Terminal</i> | <i>30,000</i>               | <i>45</i>  | <i>White taxi 416<br/>L. Bus 230</i>                 |

Source: Transport Department

This Sub-project also has another important work-component, to develop a tourist deck over the terminals. The tourist deck is planned to develop a tourism node in the tourist network in the zone, providing tourist facilities such as a variety of café terraces, restaurants, souvenir shops, and plazas which could attract domestic and foreign tourists as well as the local residents.

### 1.2. Study Objectives

The study objectives are summarised as follows:

- 1) Review and reassessment of previous studies of the Project such as JICA Master Plan Report (February 1996) and SAPROF Report (March 1997);
- 2) Conduct supplemental site investigations, topographic surveys, soil investigations and traffic volume survey;

- 
- 3) Establishment of the definitive plan including preliminary design and provisional cost estimates in consideration of the amount of construction cost allocated in JBIC loan agreed with HKJ;
  - 4) Preparation of the detailed design of the facilities to be constructed under the Project including construction plan and cost estimates in consideration of the amount of the construction cost allocated in JBIC loan agreed with HKJ;
  - 5) Preparation of the tender documents of the Tourism Sector Development Project;
  - 6) Preparation of the study reports, and
  - 7) Pursuing technology transfer to Jordanian counterpart personnel in the course of the Study.

### **1.3. Site Location and Work Components**

Figure 1.1 shows the location of Raghadan Bus Terminal in conjunction with the Tourist Trails, Tourist Street and prominent tourist spots in downtown Amman.

The sub-project has two work-components: 1) improvement of the existing bus and taxi terminals of Raghadan; and 2) development of a new tourist deck over the terminals.

### **1.4. Scope of Work**

The main objective of the sub-project is to upgrade the existing bus terminal into a tourism node of the Amman Downtown Tourist Zone to attract both international and domestic tourists as well as the residents of Amman. The items to be improved are as follows:

#### **(1) Bus Terminal**

The existing bus and taxi terminal will be improved in the following aspects:

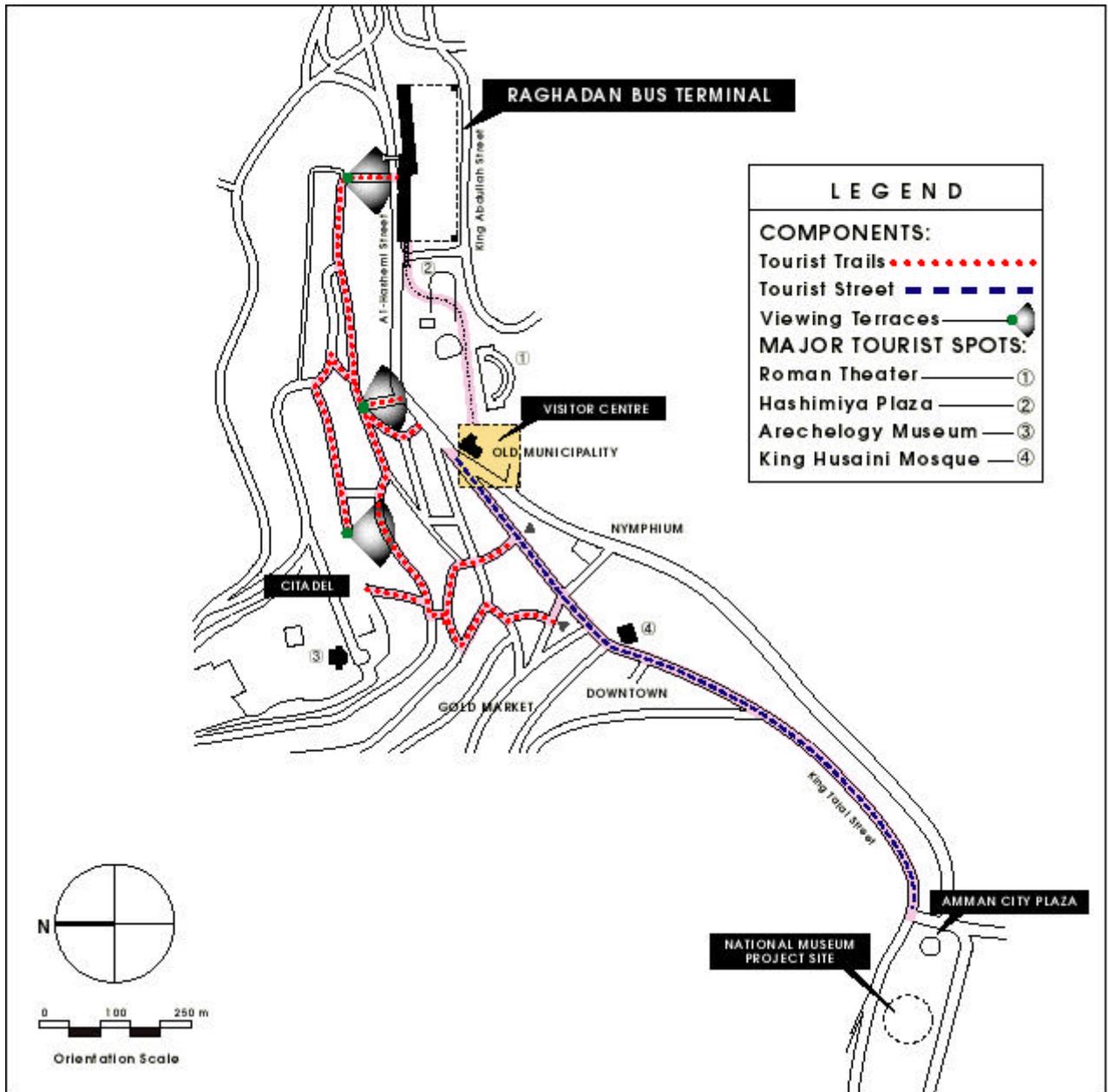
- 1) Traffic circulation
- 2) Functions of terminals (re-layout of bus lanes, parking areas and relevant facilities, signs/symbols, etc.)
- 3) Increase parking spaces for buses, mini buses and service taxis
- 4) Provision of tourist bus parking space
- 5) Provide safe and comfortable waiting space for passengers

#### **(2) Tourist Deck**

The tourist deck will be introduced in order to provide:

- 1) Pedestrian linkage between the Citadel, the Terminal and the Roman Theatre
- 2) Safe and comfortable access to the Terminal
- 3) New identity of the Terminal
- 4) New tourist spot for resting, eating and shopping

Figure 1.1 Location Map of Raghadan Bus Terminal



Source: JICA Study Team

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## **1.5. Responsible Agencies**

The following are the relevant agencies responsible for coordination of the Raghadan Bus Terminal development in the detailed design and construction stages and the operation stage:

- (1) Development
  - 1) Greater Amman Municipality (GAM)
- (2) Operation
  - 1) GAM for Taxi and Bus Terminal
  - 2) Ministry of Tourism and Antiquities (MOTA) for Visitor Centre on the deck (MOTA is responsible for tourism promotion of the tourist deck)

## Chapter 2 Existing Conditions

### 2.1. Location

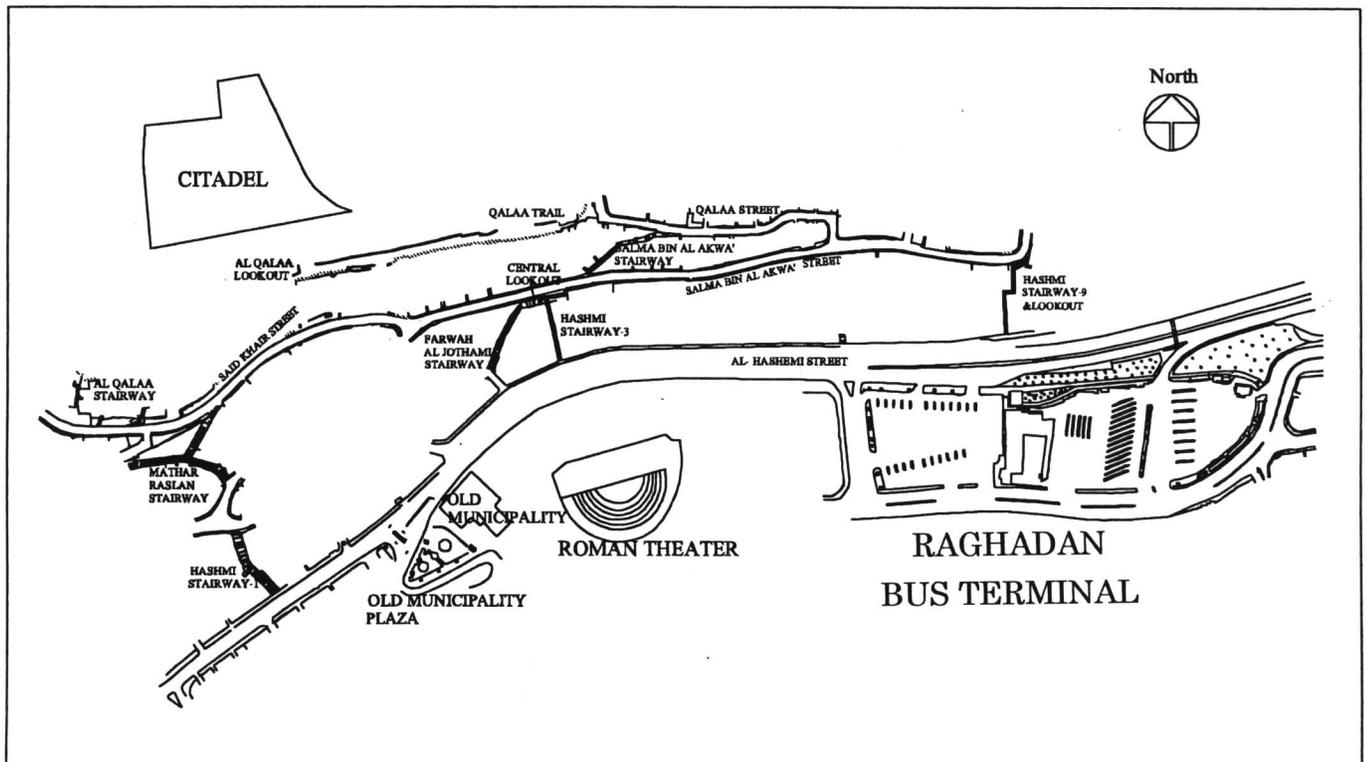
The location of the project site is the east end of downtown Amman, by Al -Hashemi Street, the major axis running through the downtown area in the east-west direction, which is strategically situated for serving passengers residing in the east region of Greater Amman.

The Raghadan Bus Terminal is to be a major urban node in the downtown area, especially planned for the tourism sector, since valuable tourism assets exist and are planned in the surrounding areas as shown below:

- 1) Hashimiyah Plaza adjacent to the western side of the Terminal
- 2) Roman Theatre at the western side
- 3) Old Municipality and Visitor Centre at the western side
- 4) Citadel Hill at the northern side on the opposite side of Hashim Street
- 5) Tourist Trails being formulated in the Project on Citadel hill at the northern side of the Terminal
- 6) Tourist Street being formulated in the Project on King Talal Street, which is expanded from Hashim Street running just along the northern boundary of the Terminal

The south end of the greenbelt in the middle of the parking area, where GAM will develop a Mosque.

Figure 2.1 Site Vicinity



Source: JICA Study Team

## 2.2. Site Conditions

The following is the outline of site conditions to be taken into consideration in the building design.

### 2.2.1. Physical Condition Survey

#### (1) Topography

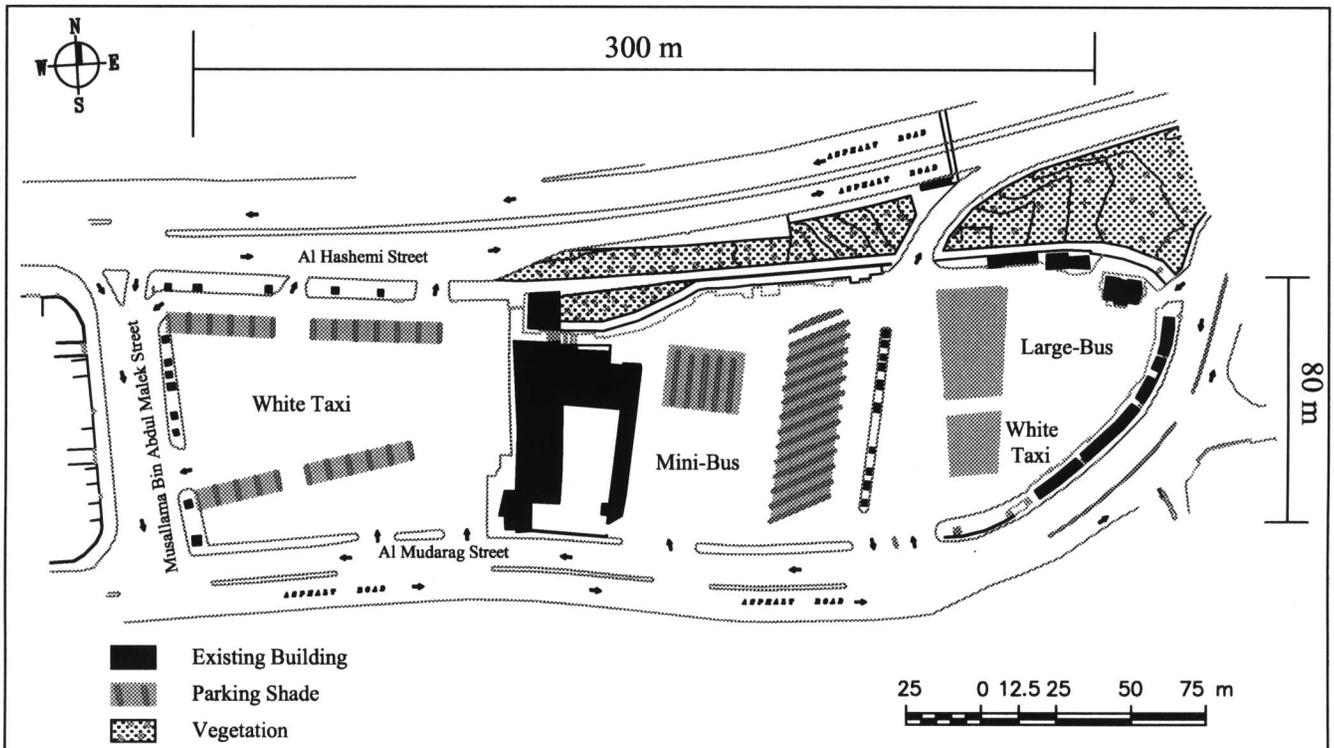
The sub-project site is a rectangular lot having an approximate area of 24,000sq.m, with the dimension of 300 m east to west and 80 m south to north, as shown in Figure 2.2.

The site is on the Wadi Abdoun, originally a main tributary of the Zerqa River which has been channelled into a culvert from the intersection of Princess Basma Street and Ali Bin Abu Taleb Street. As a result of this culvert construction work completed in 1992, the ground level of the site has been levelled flat and raised to that of the front road. A part of the site is now used as a nursery for trees.

In general, the site has approximately 4.0m difference in height between the east and west ends, and 2.0 m in the north-south direction. The height difference is currently adjusted in the central area where the shopping and administrative building is located.

The terminal site is increased to approximately 28,000m<sup>3</sup> with the 80m x 350m area adjacent to the east side of the Terminal where GAM plans to develop a shopping complex.

Figure 2.2 Proposed Site



Source: GAM

## (2) Soil Conditions

The existing terminal was constructed on land reclaimed from the Wadi about 15 years ago.

The result of the soil investigation by borehole survey of the site indicates that the sub-surface material is mainly Quaternal alluvial deposits covered by thick recent fill materials, which are composed of silt, sand and gravel with cobbles, and boulders. The material is heterogeneous and non-uniform in terms of lithology and density, with different engineering properties. Therefore, the design of foundations of the proposed building should take careful consideration of excessive differential settlement of the structure.

**2.2.2. Land Use, Numbers of Buses and Taxis, and Lanes**

## (1) Existing land use

The terminal is organised with 3 lots, namely:

- 1) White taxi lot; serving different routes/destinations and 27 of them are currently under use.
- 2) Mini bus lot; used by mini buses operating for 20 different routes/destinations in addition to three routes operating to the east of Amman.
- 3) Large bus lot; serving 23 routes/destinations, and is occasionally used by mini buses.

The analysis has shown that large bus and mini bus requirements are met within the new arrangement. Also, the same number of lanes as exist should be provided in the new terminal for the white taxis.

## (2) Number of buses, taxis and lanes

The site for the existing bus and taxi terminal is limited and is not able to accommodate the number of buses and taxis, which will increase in the future. The number of operational vehicles (White Taxis, Large Buses and Mini Buses) of Raghadan Bus Terminal in total is as shown in Table 2.1, which was given by the Traffic Engineering Department of GAM.

In the existing system of allocation of lanes, one lane (one platform) is provided for one route. Therefore, the number of lanes required is the same as the number of routes. This system is applied for all modes of vehicles, i.e. white taxis, mini buses and large buses, in the terminal.

**Table 2.1 Existing Number of Taxis and Buses by operation body and number of lanes**

| Type       | Number of Taxis and Buses using this terminal by operation body |                |       | Number of Lanes |
|------------|---|----------------|-------|-----------------|
|            | Public Sector   | Private Sector | Total |                 |
| White Taxi | -   | 1,238          | 1,238 | 27              |
| Mini Bus   | 393   | 148            | 541   | 23              |
| Large Bus  | 160   | 32             | 192   | 12              |

Source: Transport Department, GAM

## (3) General traffic flow

All vehicles are generally entering from King Abdullah Street, and exiting mainly to Al - Hashemi Street.

### 2.2.3. Shops, Kiosk and Booths

There are various types of commercial facilities located in the bus terminal, which are mainly serving passengers and drivers of the white taxis and buses, as well as for local residents living nearby and people coming to pray in the mosque. All of them are on rental basis to each tenant from the Expropriation Department of GAM.

The type of facilities are as shown below:

- 1) Shops in the central building
- 2) Shops in the simple building at the east end
- 3) Kiosks in perimeter areas
- 4) Booths in perimeter areas

There are 115 lots in total and average floor area of one lot is 10.3m<sup>2</sup>, while the floor area of the Shop is more than 11.0m<sup>2</sup> and other (Kiosk and Booth) less than 8.0m<sup>2</sup>. The shops are used in two categories; for selling commodities (60%), and for food and drinks (40%). Kiosks and Booths are only in the category of selling commodities.

The existing shops currently located in the terminal are summarised in Table 2.2.

**Table 2.2 Existing Shops in Raghadan Bus Terminal**

| Location     | Shops        |                 | Food and Drinks |                 | Total   |                  |
|--------------|--------------|-----------------|-----------------|-----------------|---------|------------------|
|              | Numbers      | Floor Area      | Numbers         | Floor Area      | Numbers | Floor Area       |
| Central Area | 40<br>(62.5) | 444.00<br>11.10 | 24<br>(37.5)    | 301.30<br>12.55 | 64      | 745.30<br>11.65  |
| Eastern Area | 10<br>(52.6) | 112.50<br>11.25 | 9<br>(47.4)     | 101.25<br>11.25 | 19      | 213.75<br>11.25  |
| Sub-total    | 50<br>(60.2) | 556.5<br>11.13  | 33<br>(39.8)    | 402.55<br>12.20 | 83      | 959.05<br>11.55  |
| Kiosk        | 25<br>(100)  | 189.13<br>7.57  | 0               | 0               | 25      | 189.13<br>7.57   |
| Booth        | 7<br>(100)   | 35.86<br>5.12   | 0               | 0               | 7       | 35.86<br>5.12    |
| Sub-total    | 32<br>(100)  | 224.99<br>9.53  | 0               | 0               | 32      | 224.99<br>7.03   |
| Total        | 82<br>(71.3) | 781.49<br>9.53  | 33<br>(28.7)    | 402.55<br>12.20 | 115     | 1184.04<br>10.30 |

Note: Figure at the lower line in the column of floor area shows average floor area of each shop.  
Figure in ( ) shows proportion of shops and food and drinks in %

Source: arranged by JICA Study Team based on the data by GAM

### 2.2.4. Infrastructure

The construction site has generally no critical problem in the infrastructure, except city water supply during the dry summer season as water supply is stopped by the Municipality. The outline of the existing conditions of infrastructure of the site is as follows.

(1) Access

The site is directly facing to the existing roads; Al -Hashemi Street at the north, Al Mudarag street at the south and Musallama Bin Abdul Malek street as shown in Figure 2.2. The main access road is Al Mudarag street to the terminal and other two roads are utilised as exit roads to the destinations.

(2) Water supply

The city water network of the Amman Water Authority, GAM covers the area of the Raghadan Bus Terminal site. A main water pipe running the Al -Hashemi Street along the north boundary of the site is the connection point for the water supply to the site. However, in order to maintain water supply during the dry summer when the water supply is limited to one (1) pumping day per week, storage water tanks for the terminal building shall be required.

(3) Drainage

The current rainwater drainage is a gravity flow system. A all rainwater in the parking area is to flow to the southern direction and out to Al Mudarag street.

(4) Sewerage

The area is served by a city sewerage system managed by the Execution and Coordination Department of GAM. The sewerage system needs to be connected to the existing sewerage pipes running along Al Madarag Street.

(5) Solid waste disposal

The solid waste disposal from the bus terminal as well as tourist deck can be integrated into the existing disposal system managed by the Execution and Coordination Department of GAM. The solid waste will be collected and recycled by the GAM system. No dedicated incinerator or disposal facility is required in the site.

(6) Electrical supply

The electrical service for the Museum can be connected to the existing primary distribution system managed by the Jordan Electrical Power Company's system, JEPCO. The primary distribution cable is located along the arterial road Al Mudarag Street.

(7) Telecommunications

The telecommunication system of the bus terminal and tourist deck as well as offices in the corner towers can be connected to the cable running along Al-Hashemi Street, since the cable has sufficient number of lines as reported by JTTC.

#### **2.2.5. Physical and Operational Issues**

Physical and operational issues of the existing Raghadan bus terminal are as follows:

- 1) Lack of amenities to attract tourists, both international and domestic
- 2) Visually obstructed from road and tourist trails
- 3) Environmentally deteriorated
- 4) Lack of safety measures for passengers
- 5) No parking space for tourist buses
- 6) No pedestrian linkage between North-South (Citadel-Al Jofah) and East-West (Hashimiya)

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Plaza-the Terminal) axes

- 7) No platforms, islands or shelters/shading device where people are waiting for white taxis and standing in line on the asphalt pavement