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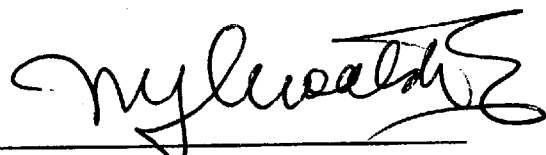
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SCOPE OF WORK
FOR
THE FEASIBILITY STUDY
ON
THE PROPOSED KAZUNGULA BRIDGE OVER THE ZAMBEZI RIVER
BETWEEN
GOVERNMENT OF REPUBLIC OF BOTSWANA
AND
GOVERNMENT OF REPUBLIC OF ZAMBIA

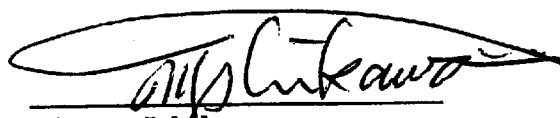
AGREED UPON BY
MINISTRY OF WORKS, TRANSPORT & COMMUNICATIONS OF BOTSWANA
MINISTRY OF WORKS & SUPPLY OF ZAMBIA
AND
JAPAN INTERNATIONAL COOPERATION AGENCY
in Livingstone, Zambia, on 18th of February, 2000



M. J. M. Moatshe
Deputy Permanent Secretary
Ministry of Works, Transport
& Communications
Government of Republic of Botswana

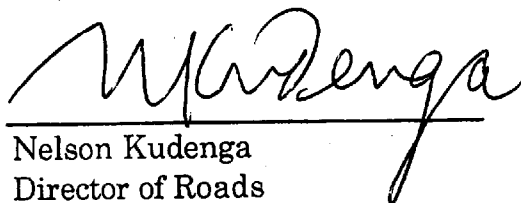


Gerald P. Nyirenda
Permanent Secretary
Ministry of Works & Supply
Government of Republic of Zambia



Mitsuo Ishikawa
Resident Representative
JICA Zambia Office
Japan International Cooperation Agency

Witness:



Nelson Kudenga
Director of Roads
Ministry of Transport and Energy
Government of Republic of Zimbabwe



I. INTRODUCTION

In response to the request of the Governments of the Republic of Botswana (hereinafter referred to as "GOB") and the Republic of Zambia (hereinafter referred to as "GOZ"), the Government of Japan (hereinafter referred to as "GOJ") decided to conduct the Feasibility Study on the Proposed Kazungula Bridge over the Zambezi River between the Republic of Botswana and the Republic of Zambia (hereinafter referred to as "the Study") in accordance with the relevant laws and regulations in force in Japan.

Accordingly, the Japan International Cooperation Agency (hereinafter referred to as "JICA"), the official agency responsible for the implementation of the technical cooperation programmes of GOJ, will undertake the Study in close cooperation with the authorities concerned of Botswana, Zambia, Zimbabwe and Namibia.

The present document sets forth the scope of work with regard to the Study.

II. OBJECTIVE OF THE STUDY

The objective of the Study are:

- 1) to conduct a feasibility study on the new bridge construction over the Zambezi River, and border facilities development at Kazungula; and
- 2) to pursue technology transfer in the course of implementation of the Study.

III. STUDY AREA

The study area shall cover the influence area of the new bridge construction in 4 countries, which should be designed in the surrounding area of existing Kazungula Ferry terminal and border facilities in Botswana and Zambia.

In order to forecast the traffic demand, the neighboring countries within the SADC region should also be considered as the study area.

IV. SCOPE OF THE STUDY

In order to achieve the objectives mentioned above, the study shall cover the following items:

1. Present Condition Survey and Analysis
 - 1) Analysis of existing data and review of relevant transport projects
 - 2) Present condition survey of traffic
(Road Condition, network, traffic volume, etc.)
 - 3) Site survey and environment analysis
2. Traffic forecast up to year 2015
 - 1) Traffic survey (Road-side OD interview survey, traffic counting survey)
 - 2) Socio-economic framework
 - 3) Future traffic demand forecast
3. Alternative study
 - 1) Route alignment alternatives
(Including approach roads and location of one-stop border facilities)
 - 2) Bridge design alternatives
 - 3) Initial environmental examination



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- 4) Overall evaluation and selection of the best alternative
4. Border facilities planning
 - 1) Operation plan for one-stop border facilities
 - 2) Preliminary design of border facilities
5. Preliminary design and cost estimate
 - 1) Engineering survey and analysis
(Topographic survey, soil and geological survey)
 - 2) Hydrological survey and analysis
 - 3) Preliminary design
 - 4) Construction plan
 - 5) Quantity and cost estimate
 - 6) Maintenance plan
6. Environmental impact assessment (Including social impacts)
7. Project evaluation
 - 1) Benefit estimate
 - 2) Economic evaluation
 - 3) Financial evaluation
 - 4) Overall project evaluation
8. Project Implementation Programme
 - 1) Implementation schedule
 - 2) Estimated funds required annually
9. Other relevant issues that may arise in connection with the Study
10. Recommendations

V. STUDY SCHEDULE

The Study will be carried out in accordance with the attached tentative schedule.
(Appendix 1)

VI. REPORTS

1. JICA shall prepare and submit for discussion and consideration by the steering committee the following reports in English to GOB and GOZ.
 - (a) Inception Report
Fifteen (15) copies to each country at the beginning of the study in both countries.
 - (b) Progress Report
Fifteen (15) copies to each country within 2 months of the beginning of the study.
 - (c) Interim Report
Fifteen (15) copies to each country within 4 months of the beginning of the study.
 - (d) Draft Final Report
Fifteen (15) copies to each country within 9 months of the beginning of the study.
 - (e) Five(5) copies of reports of each phase shall be given to Governments of Zimbabwe and Namibia

The steering committee shall provide JICA with its comments in English within one (1) month after the submission of Draft Final Report.



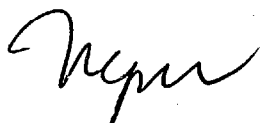
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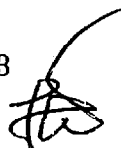
2. JICA shall prepare and submit twenty (20) copies of final report to GOB and GOZ and Five(5) copies of the report to Governments of Zimbabwe and Namibia within two (2) months after the receipt of the written comments on the Draft Final Report from the steering committee.

VII. UNDERTAKING OF GOB AND GOZ

1. To facilitate the smooth conduct of the Study, GOB and GOZ shall take necessary measures:
 - (1) To secure the safety of the Japanese study team;
 - (2) To permit the members of the Japanese study team to enter, leave and sojourn in Botswana and Zambia for the duration of their assignment therein, and exempt them from foreign registration requirements and consular fees;
 - (3) To exempt the members of the Japanese study team from taxes, duties, fees and other charges on equipment, machinery and other materials brought into both Botswana and Zambia for the implementation of the Study;
 - (4) To exempt the members of the Japanese study team from income tax and charges of any kind imposed on or in connection with any emoluments or allowances paid to the members of the Japanese study team for their services in connection with the implementation of the Study;
 - (5) To provide necessary facilities to the Japanese study team for remittance as well as utilization of the funds introduced into both Botswana and Zambia from Japan in connection with the implementation of the Study;
 - (6) To secure permission for entry into private properties or restricted areas for the conduct of the Study;
 - (7) To secure permission to take all data and documents including aerial photographs related to the Study out of both Botswana and Zambia to Japan by the Japanese study team; and
 - (8) To provide medical services as needed, and whose expenses will be chargeable on the members of the Japanese study team.
2. GOB and GOZ shall bear claims, if any, arising against the members of the Japanese study team resulting from, occurring in the course of, or otherwise connected with the discharge of their duties in the implementation of the Study, except when such claims arise from gross negligence or willful misconduct on the part the members of the Japanese study team.
3. The Ministry of Works, Transport & Communications (MWTC) on the part of GOB, and the Ministry of Works & Supply (MWS) on the part of GOZ shall act as the counterpart agency to the Japanese study team, and also facilitate consultation with other governmental and non-governmental organizations concerned for the smooth implementation of the Study.
4. MWTC of GOB shall, at its own expense, provide the Japanese study team with the following, if necessary, in cooperation with other agencies concerned:
 - 1) Available data and information related to the Study, including aerial photographs and maps;



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- 2) Counterpart personnel;
 - 3) Suitable office space with necessary equipment in Gaborone and Kazungla; and
 - 4) Credentials or identification cards to the members of the Japanese study team.
5. MWS of GOZ shall, at its own expense, provide the Japanese study team with the following, if necessary, in cooperation with other agencies concerned:
- 1) Available data and information related to the Study, including aerial photographs and maps;
 - 2) Counterpart personnel;
 - 3) Suitable office space with necessary equipment in Lusaka and Livingstone; and
 - 4) Credentials or identification cards to the members of the Japanese study team.

VIII. UNDERTAKING OF JICA

For the implementation of the Study, JICA shall take the following measures:

- 1) To dispatch, at its own expense, the Japanese Study teams to both Botswana and Zambia; and
- 2) To pursue technology transfer to both Botswana and Zambia counterpart personnel in the course of the Study.

IX. CONSULTATION

JICA, GOB and GOZ shall consult with each other in respect to any matter that may arise from or in connection with the Study.



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Appendix 1

Tentative Study Schedule

Month	1	2	3	4	5	6	7	8	9	10	11	12
Field Work												
Work in Japan												
Report Presentation	△ IC/R	△ PR/R	△ IT/R					△ DF/R		△ F/R		

IC/R : Inception Report
 PR/R : Progress Report
 IT/R : Interim Report
 DF/R : Draft Final Report
 F/R : Final Report

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MINUTES OF MEETING
ON
SCOPE OF WORK
FOR
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AND
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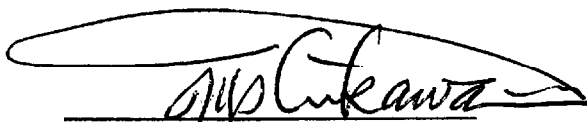
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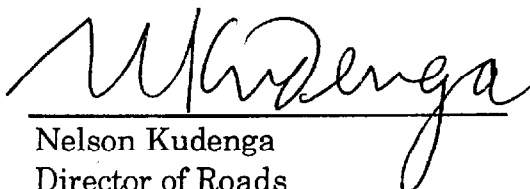


Gerald P. Nyirenda
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Government of Republic of Zambia



Mitsuo Ishikawa
Resident Representative
JICA Zambia Office
Japan International Cooperation Agency

Witness:



Nelson Kudenga
Director of Roads
Ministry of Transport and Energy
Government of Republic of Zimbabwe



Mr. Mitsuo Ishikawa, Resident Representative, JICA Zambia Office, held a series of meetings on the Scope of Work on the Feasibility Study on the Proposed Kazungula Bridge over the Zambezi River between the Republic of Botswana and the Republic of Zambia (hereinafter referred to as "the Study") with relevant authorities of the Government of Botswana (hereinafter referred to as GOB) and the Government of Zambia (hereinafter referred to as GOZ). List of participants is shown in Attachment 1.

As a result of the series of discussions, GOB, GOZ and the JICA (hereinafter referred to as "Tripartite") came to an agreement on the Scope of Work (hereinafter referred as to "S/W") of the Study, and signed it on the 18th February, 2000.

This document summarizes major items discussed by Tripartite and is meant to supplement the S/W for the smooth conduct of the Study.

1. S/W proposed by JICA, with modifications resulting from discussions, was agreed upon by the Tripartite and witnessed by the Government of Zimbabwe.
2. Border facilities were agreed to include those facilities required for customs clearance, immigration control, banking, quarantine, police clearance, vehicle inspection and parking areas.
3. Both Botswana and Zambia shall assign at least two (2) engineers each as counterpart personnel for the Study.
4. Botswana and Zambia shall bear costs of their respective personnel assigned to the Study.



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5. The Joint Steering Committee which composed of the Governments of Botswana, Zambia, Zimbabwe and Namibia (hereinafter referred to as "JSC") for the Kazungula Bridge Project shall be the coordinating body for the implementation of the Project.
6. A technical sub-committee co-chaired by the Director of Roads, MWTC, GOB and the Director of Roads, MWS, GOZ, established under the JSC will act as a coordinating body between the two countries at technical level. The technical issues, such as the technical criteria for the new bridge design, shall be determined through the coordination and discussions between the technical sub-committee and the Study Team during the Study.
7. Both GOB and GOZ shall secure the necessary permissions and approvals from neighboring countries, Zimbabwe and Namibia, for the Study Team to conduct the field survey at Kazungula.
8. JICA suggested the establishment of a working group in each country comprising of relevant authorities in order to discuss the issues regarding the operation of one-stop border facilities with the Study Team.
9. Each country shall bear the travel and subsistence expenses of their delegation to the JSC meetings.
10. Both Botswana and Zambia shall issue multiple visas for the Study Team and subcontractors to enable smooth implementation of the Study.
11. The Study Team will be allowed to take out aerial photographs related to the area of Study out of Botswana, Zambia, Zimbabwe and Namibia.



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12. The Tripartite agreed upon the following items on sub-contracting:

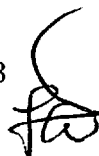
- i. Procedure of the sub-contracting shall be in full accordance with the rules of JICA.
- ii. Local or international sub-contractors shall be allowed to conduct the study in Botswana, Zambia, Zimbabwe and Namibia..

13. Both GOZ and GOB agreed to provide the Study Team necessary office space and basic office equipment for the Study. JICA will convey the request to the Government of Japan to arrange other necessities for the study.

14. Botswana and Zambia requested the JICA to arrange counterpart training in Japan. JICA replied that it was to convey the request to the Government of Japan.



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List of the participants

Zambian Delegation

Gerald .P. Nyirenda

Erasmus M. Chilundika

Stephen Malubila

Michael Daka

Mugeni S. Mulenga

Inyambo Liboma

Chasauka Y. Z. Daka

Jonathan M. Sikazwe

Linda Siwale

Jean N. Wanki

Chola Katanga

Bupe Kaonga

H. S. Muntanga

Permanent Secretary, Ministry of Works & Supply

Leader of Delegation, Chairman

A/Assistant Director, Roads Department

Provincial Roads Engineer, Southern Province

Projects Manager, Zambia Revenue Authority

Senior State Advocate, Ministry of Legal Affairs

Legal Officer, Ministry of Foreign Affairs

Senior Immigration Officer, Immigration Headquarters

Principal Transport Economist, Ministry of Communications and Transport

Economist, Provincial Administration, Livingstone

Chief Superintendent, Deputy commanding Officer, Zambia Police Southern

Officer-in-Charge, Livingstone Central Police

Assistant Director (Econ), Ministry of Works and Supply

Cabinet Office, Livingstone

Botswana Delegation

M.J. Moatshe

C.T. Ntwaagae

B.K. Molosiwa

T.J. Masisi

Andrew Nkaro

Judith Nwako

Paterno G. Alpajora

M.B. Olebile

B.F. Karata

S.S. Samuel

Martin Mokgware

Deputy Permanent Secretary, Ministry of Works, Transport and Communications - Leader of Delegation, Co-Chairman

Deputy Permanent Secretary, Ministry of Foreign Affairs

Director, Development Programs, Ministry of Finance and Development Planning

Director of Operations and Planning, Botswana Defense Force

Acting Director of Roads

Principal Roads Engineer, Roads Department

Senior Bridge Engineer, Roads Department

Principal State Advocate, Attorney General Chambers

Acting Director of Traffic, Botswana Police

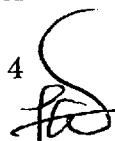
Acting Officer Commanding Police, Kasane

Economist, Ministry of Works, Transport and Communications

Zimbabwe Delegation

Nelson Kudenga

Director of Roads, Ministry of Transport and Energy



Martha Ndoro

Deputy Chief Engineer Planning, Ministry of
Transport and Energy

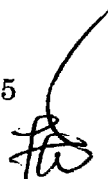
Japanese Delegation

Mitsuo Ishikawa
Osamu Tanabe

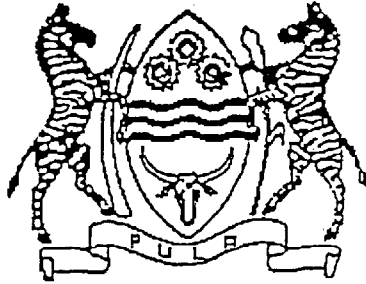
Resident Representative, JICA Zambia
Assistant Resident Representative, JICA Zambia



5



REPUBLIC OF BOTSWANA



BENEFICIARY MINISTRY/DEPARTMENT

MINISTRY OF WORKS, TRANSPORT AND COMMUNICATIONS
ROADS DEPARTMENT
PRIVATE BAG 0026
GABORONE
BOTSWANA

TYPE OF PROJECT INTENTIONED

TRANSPORTATION INFRASTRUCTURE

APPLICATION

FOR

DEVELOPMENT STUDY OF THE KAZUNGULA
BRIDGE CONSTRUCTION OVER ZAMBEZI RIVER

COMPONENTS OF CONSIDERATIONS

THE DEVELOPMENT STUDY
OF THE KAZUNGULA BRIDGE ACROSS ZAMBEZI RIVER, TRUCK
PARKING BAY, ACCESS ROAD AND BORDER POST FACILITIES.

SUBMISSION DATE

APRIL 1998

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(F)	BOTSWANA GOVERNMENT COMMITMENT Location Maps Organisation Chart of Implementing Agency Letter from Southern Africa Development Community (SADC)

(A) APPLICATION FOR JAPANESE GRANT AID
BY
THE GOVERNMENT OF BOTSWANA

Project : Design and Construction of the Kazungula bridge which will replace the Ferry Operation operating across the Zambezi River at Kazungula to bridge the two countries of Botswana and Zambia.

Applicant : The Government of the Republic of Botswana

Economic Sector : Transport

Project Type : Construction of Bridge and other Facilities

Project Cost : US \$ 45 Million

Responsible Ministry: Works, Transport and Communications

Implementing Agency: Roads Department

Other Interested Parties: Joint Project with the Republic of Zambia

Status of The project: Southern African Development Community (SADC) Recognised Project.

DEVELOPMENT STUDY FOR THE CONSTRUCTION OF THE KAZUNGULA BRIDGE ACROSS THE ZAMBEZI RIVER

1.0 PROJECT DIGEST

1.1 Project Title

The Development Studies for the Construction of the Kazungula Bridge over the Zambezi River.

1.2 Location Map

The location maps are attached hereto.

1.3 Background of Implementing Agency

1.3.1 Name of Agency

Roads Department of the Ministry of Works, Transport and Communications.

1.3.2 Profile on Agency's Personnel

Profession	Numbers
Director of Roads	1
Chief Roads Engineer	1
Principal Roads Engineer	6
Senior Roads Engineer	13
Roads Engineers	8
Technicians	161
Supervisors and others	2288
Total	2478

1.3.3 Organisation Chart of Implementing Agency

The copy of the organisation chart is attached.

1.3.4 Budget Allocation

BUDGET IN BOTSWANA PULA			
Main Division	Actual 1995/96	Actual 1996/97	Estimated 1997/98
Maintenance	94 745 682	109 372 820	108 880 700
Construction of Roads and bridges	127 814 962	172 264 619	251 980 000
TOTAL	222 560 644	281 637 439	360 860 700

Exchange rate – P1 = JPY34.13, January 1998

1.4 Project Justification

1.4.1 Background

Botswana is landlocked and straddles the Tropic of Capricorn in the Southern African Plateau. It is surrounded by four countries, which are Zimbabwe in the east, to the North is Zambia, Namibia in the west and South Africa in the south. The majority of motorised transport in Botswana uses the State Road Network, and this system of roads carried over 90% of the rural passenger journeys, and 60% of import and export freight.

Transportation in landlocked countries rely on the port services of the surrounding countries. In addition, the problem involved in the transportation routes between landlocked countries and trading ports, have been the main factors interrupting economic and social development in the region for many years.

The increase in traffic between the neighbouring countries has resulted in traffic bottlenecks at the Kazungula border over the Zambezi river between Botswana and Zambia. This situation is expected to worsen with the admission of Republic of Congo as a member of SADC as more trading centres will open in this country and beyond, thus increasing the movement of goods and people.

Botswana's road sector is categorised as a Public Highway Network (PHN). This is under the jurisdiction of two Road Agencies, namely;

- i) Central Government – Primary and Secondary roads
- ii) Local Authorities – Tertiary and Access roads

The PHN is defined in terms of length as follows:-

Primary and Secondary roads	= 8761 km	
Tertiary and Access roads	= 9566 km	Total = 18 327 km

Approximately 5 000 km of primary and secondary roads are bitumenised.

1.4.2 Transport Bottlenecks

SADC has increased the number of member states to thirteen with the admission of Seychelles and Democratic Republic of Congo (DRC). The peace development in Angola, Mozambique and Democratic Republic of Congo has boosted the dynamics of the work towards the promotion and activation of the economies of the SADC member states. This can only be achieved by promoting free and unobstructed communication, including movement of cargo and people, within and out of the region. That is, the region has to be made accessible from within and from outside. Bottlenecks that exist at Kazungula river crossing drastically hamper such movement. This can only be alleviated by the construction of a bridge across the Zambezi at Kazungula between Botswana and Zambia.

1.4.3 Traffic Volume

Eight years of traffic counts at counting point No: N12 located along the Kasane - Kazungula trunk road situated near the Kazungula bridge shows a steady growth for articulated trucks. The decline in traffic volume in 1993 was due to the unsafe state of the ferry. The ferry sank in 1991 with vehicles and passengers on board. The old ferry was replaced by a new one which since then has attracted more traffic. But, unfortunately, the ferry system cannot cope with the present and projected traffic volumes. The system is further handicapped by the seasonal high tides of the river and the inability to operate at night.

The traffic volume summary is on the table below.

**CLASSIFIED TRAFFIC COUNT AT STATION N12
KASANE - KAZUNGULA TURN OFF.**

Years	Cars & Light Vehicles	Light & Heavy Trucks	Articulated Trucks	Buses	Total ADT
1990	29	4	11	2	46
1991	32	5	14	11	62
1992	16	3	20	2	41
1993	12	1	14		28
1994	34	2	15	1	52
1995	20	3	13	1	37
1996	29	2	24	4	57
1997	19	4	29	3	55

1.5 PROBLEM TO BE SOLVED IN THE ROAD SECTOR

Although most of the primary road network is in place, there is need for expansion of the Road Network in Botswana in order to facilitate development of all areas of both economic and social importance. However, these developments are hampered by shortage of funds.

1.6 OUTLINE OF THE PROJECT

For many years, the only form of crossing the Zambesi River at Kazungula between Botswana and Zambia, has been the use of ferries. It has been discovered, however, that the two ferries are old and have deteriorated to a point that are rendered unreliable and have become a danger to the security of the travelling public as evidenced by a series of disasters experienced in the last five years. The ferries have many times sunk with the cargoes and people on board. This has not only led to great loss of human life but also disruption of trade in the region and in particular, between the two countries. Besides, there is the aspect of safe environment to be considered. Ferries operations are environmentally unfriendly to the aquatic life due to pollution of water by the oil spillage.

1.7 NEED TO IMPROVE THE TRAFFIC FLOW

The need to improve the traffic flow and cut on the travel time, the travelers safety factor, the free movement of people within the region and preservation of the environment are the major reasons for the Governments of Botswana and Zambia to place the construction of the Bridge as high priority in the Road Sector development.

1.8 SHORT TERM OBJECTIVES

- To provide a modern double lane bridge at Kazungula that allows free traffic flow in both directions for both heavy and light vehicles.
- To decrease serious traffic bottlenecks on the regional road at the Kazungula border post.
- To create larger scale employment opportunities for the local inhabitants of this region.
- To improve strategic road network within the SADC region for the benefit of all SADC countries.

1.9 MEDIUM AND LONG TERM OBJECTIVE

- Improved strategic road communication network in the SADC countries.
- Improved economies through trade and tourism within the SADC countries.
- Improved free movement and social integration within the SADC region.

1.9.1 Prospective Beneficiaries

As the bridge will form a vital link and be part of the Southern Africa Transport and Communication Commission (SATCC) road network in the SADC region, the beneficiaries are the population of the entire member states and other member countries of the Common Market for East and Southern Africa (COMESA).

1.9.2 Project Priorities

Botswana rates the construction of the Kazungula Bridge as a project high on the priority list because it connects Botswana, not only to Zambia but also to other countries in the north.

1.9.3 Desirable Scheduled Time to Commencement of the Project

The development study of the Kazungula Bridge should start as soon as possible, preferably in the second quarter of 1998.

1.9.4 Expected Funding Source and/or Assistance

Government of Japan.

(B) TERMS OF REFERENCE OF THE DEVELOPMENT STUDY OF THE KAZUNGULA BRIDGE

1.0 Necessity / Justification Of The Study To Botswana

The construction of the new bridge at Kazungula will require approximately 700 metres span. A large bridge of this magnitude and size naturally requires a thorough study of the project, its influence on the people and the environment. The study will include current and future traffic trends, topographical, geo-technical surveys, meteorological conditions, etc.

The bridge will be an important part of the SADC regional trunk road network. As such, it is justifiable that a study must be carried out to assess the economic impact of the bridge on trade, tourism and employment of the SADC member states.

A technical study of the design criteria must be also carried out to ensure that the bridge will satisfactorily bear the International traffic load of today and the future.

2.0 Necessity / Justification of The Japanese Technical Cooperation

Over the years the Japanese Government has extended it's assistance to develop infrastructure and provide technical assistance to Botswana. Japan has advanced technology in the bridge construction field and also has experience in similar projects in the region.

In the process we believe that we will benefit greatly through professional technology transfer, especially that we intend to assign our engineers as counterparts to the Japanese experts. Technology transfer is encouraged

in Botswana, and in particular in the Roads Department, as a way for a sustainable future of road construction, maintenance and management.

3.0 Objective of The Development Study

The objective of the proposed development study of the Kazungula Bridge are:

- a) To determine the design criteria to satisfy International traffic loads, inter-alia, that of the SADC member states;
- b) To determine both the ground and underground conditions of the site by carrying out geo-technical studies, in order to determine the suitability of the site;
- c) To determine the most suitable type of bridge;
- d) To design the bridge, with the considerations of the aesthetic value, environment and none obstruction of natural river navigation;
- e) To determine and estimate the cost of construction;
- f) Study the socio-economic impact of the bridge to the people;
- g) Study the environmental impact of the bridge; and
- h) Study the actual economic impact of the finished bridge to the two countries and the region as a whole.

4.0 Area to be covered by the study

The SADC region is the area to be covered by the study on a wider scale, and the Kazungula Bridge site for the local investigations.

5.0 Scope of The Study

The scope of the proposed developmental study is:

- a) Determination of the development of the SADC countries trade as influenced by the construction of the bridge;
- b) Determination of the population projections to determine the movement within the SADC region;
- c) Determination of the use of the Southern African ports including the Maputo-Walvis Bay corridor through this bridge in future;
- d) Determine future traffic demand for the bridge;

- e) Determine highway design capacity for the bridge;
- f) Considerations affecting the type and design of the bridge;
- g) Determine of the underground condition of the soil by carrying out the geotechnical studies;
- h) Carrying out topographical survey to determine possible site for the bridge;
- i) Constructions on alternative bridge types;
- j) Determination and recommendation of the border facilities in order to improve on border time lags;
- k) Considerations on the bridge access road rehabilitation;
- l) Provision of tentative designs of both the bridge, bridge access road and the border facilities requirements;
- m) Determination of the cost estimates for the construction of bridge, border facilities and the bridge access road; and
- n) Compiling of the report.

6.0 Development Study of The Bridge Schedule

Study in SADC countries	2 months
Study of the present crossing	1 month
Site study including geotechnical	3 months
Review of geotechnical investigations	
And production of draft report in Japan	3 months
Review of studies in Japan	1 month
Discussions with the Governments of Botswana and Zambia	1 month
Final compilation of report in Japan	1 month

Total 12 months

7.0 Expected Major Output Of The Development Study

An inception report shall be submitted within three weeks of awarding the proposed study agreement to a Consultant company

A preliminary report shall be submitted by the 3rd month.

A draft final report shall be submitted by the 10th month

A final report and recommendations shall be submitted at the end of the

study agreement.

8.0 Request Of Study To Other Donor Agencies If Any.

No request has been made to other Donor Agencies as regards the development studies, design, construction and supervision of the Kazungula Bridge.

9.0 Other Relevant Information if any

Request to include the funding of Botswana engineers to be attached to the project developmental studies as a way of technology transfer, through on the job training. The attachment will have to cover the entire study programme and wherever deemed necessary.

**(C) FACILITIES AND INFORMATION, DOCUMENTS, MAPS etc
RELATED TO THE STUDY AVAILABILITY**

1.0 Available data, information, documents, maps etc related to the study

Maps 1:50 000, records of meteorology, record of traffic trends and the hydrographs of the river are available with different relevant Ministries but could easily be obtained whenever needed.

2.0 Information on the Security Conditions in the Study Area

There has never been any incidence at this border with Zambia and we do not expect any in future, however, security is guaranteed by the presence of the Botswana Police Service stationed at the crossing.

**(D) GLOBAL ISSUES SUCH AS ENVIRONMENTAL, WOMEN IN
DEVELOPMENT, AND POVERTY etc.**

**1.0 Environment Components (such as pollution control, water supply,
sewage treatment environmental management, forestry, biodiversity)
of the Project, if any**

The bridge type and design has to permit the free navigation on the water and there will be little disturbance of the natural vegetation at the site during construction. The finished bridge should not have any severe negative impact on the river. Great concern and caution should have to be exercised during both the design and construction stages, in order to minimise the negative effect on both the river and the environment.

**2.0 Anticipated Environmental Impact (both natural and social) by the
Project if any**

There will be no negative impact caused by the bridge on the natural environment.

No negative social impact expected, apart from the positive stimulation of the economy due to the construction of the bridge that will be beneficial to the local community during construction and after the completion of the bridge.

3.0 Women as Main Beneficiaries or not?

Women like the men folks compete favourably in our economic set up. Since the women form the great part of the business and professional community the bridge will be more to their benefit.

The Ministry has both male and female professionally qualified engineers.

4.0 Poverty Reduction Component of the Project

The project upon completion will greatly increase regional trade and tourism, thus contributing to the poverty reduction of the country and the region as a whole. The project will provide employment to the local people. This, we believe, will raise their standards of living and improve their welfare.

5.0 Anticipated Constraints caused by the Project to the People

None anticipated.

(E) LOCAL ADMINISTRATION OF THE PROJECT

The Botswana Government shall bear responsibility for the local administration of the project.

(F) BOTSWANA GOVERNMENT COMMITMENT

The Roads Department shall act as the counterpart agency to the Japanese study team and also as co-ordinating body in relation with other Government Organisations concerned for the smooth implementation of the study.

The Botswana Government has further assured the Japanese Government that the matters referred to in this form will be ensured for a smooth conduct of the Development Study by the Japanese Study Team.



A.V. Lionjanga
Permanent Secretary

Ministry of Works, Transport and Communications

Date: 30 April 1998

On behalf of Government of Botswana

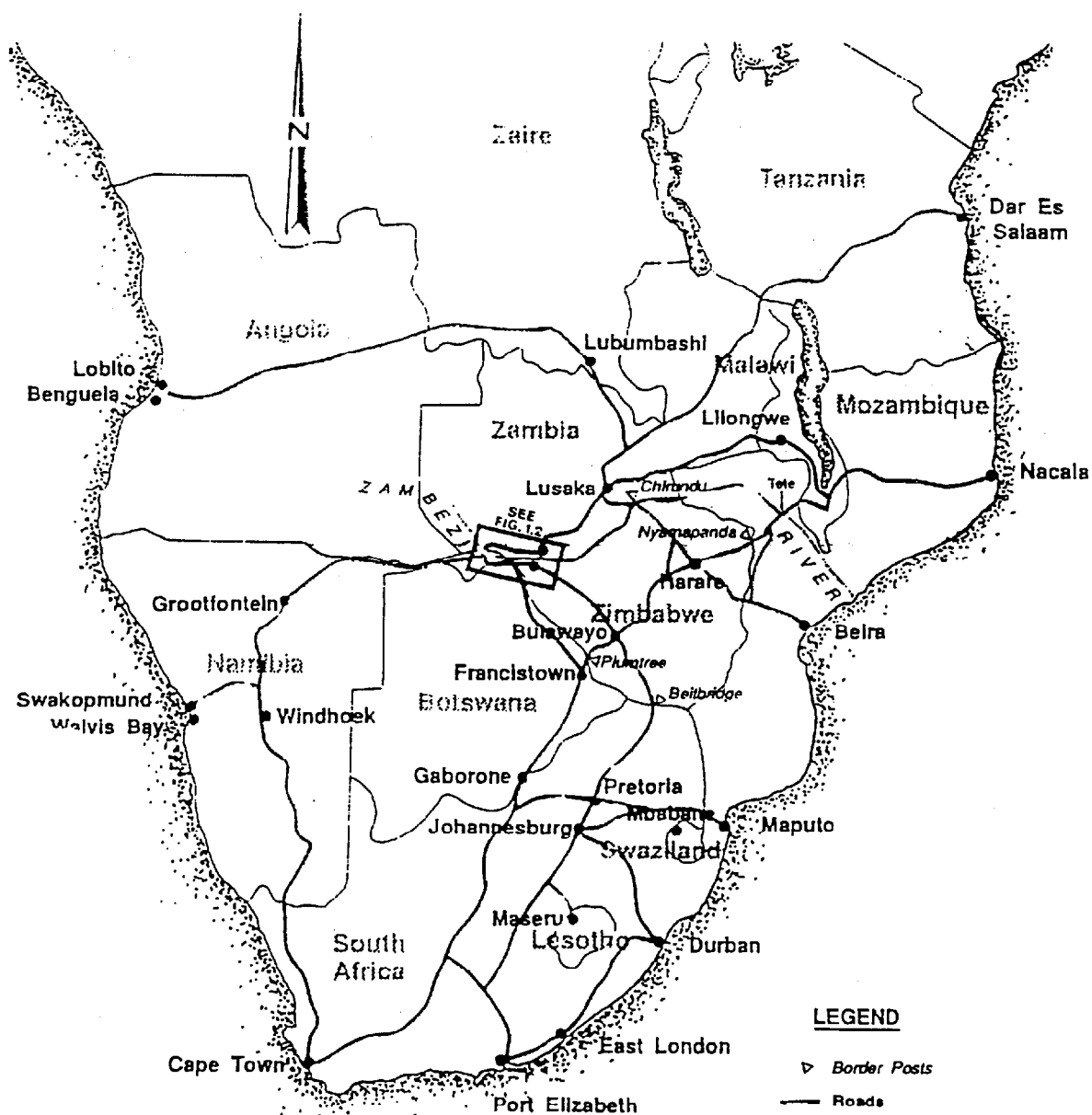


Figure 1.1

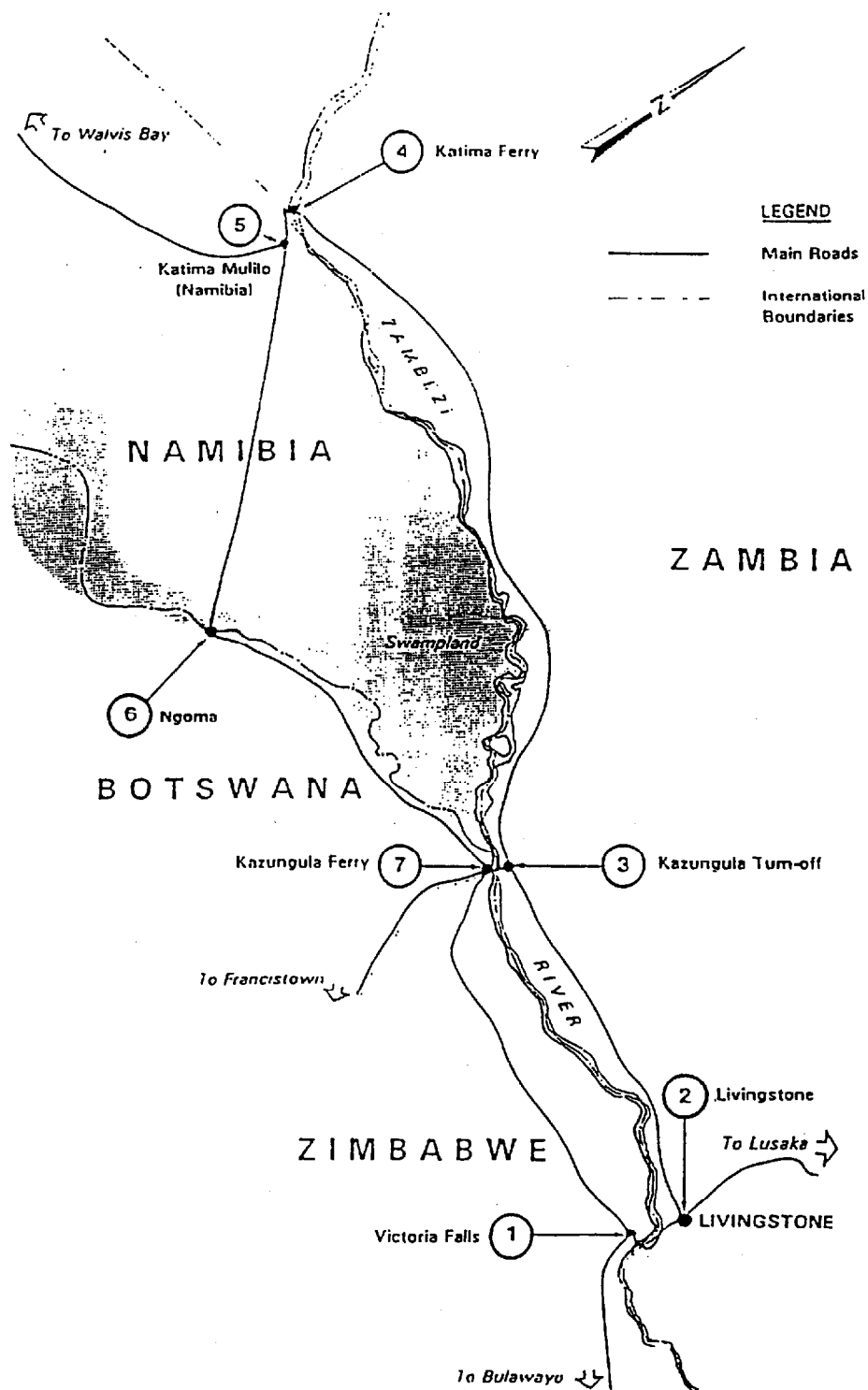
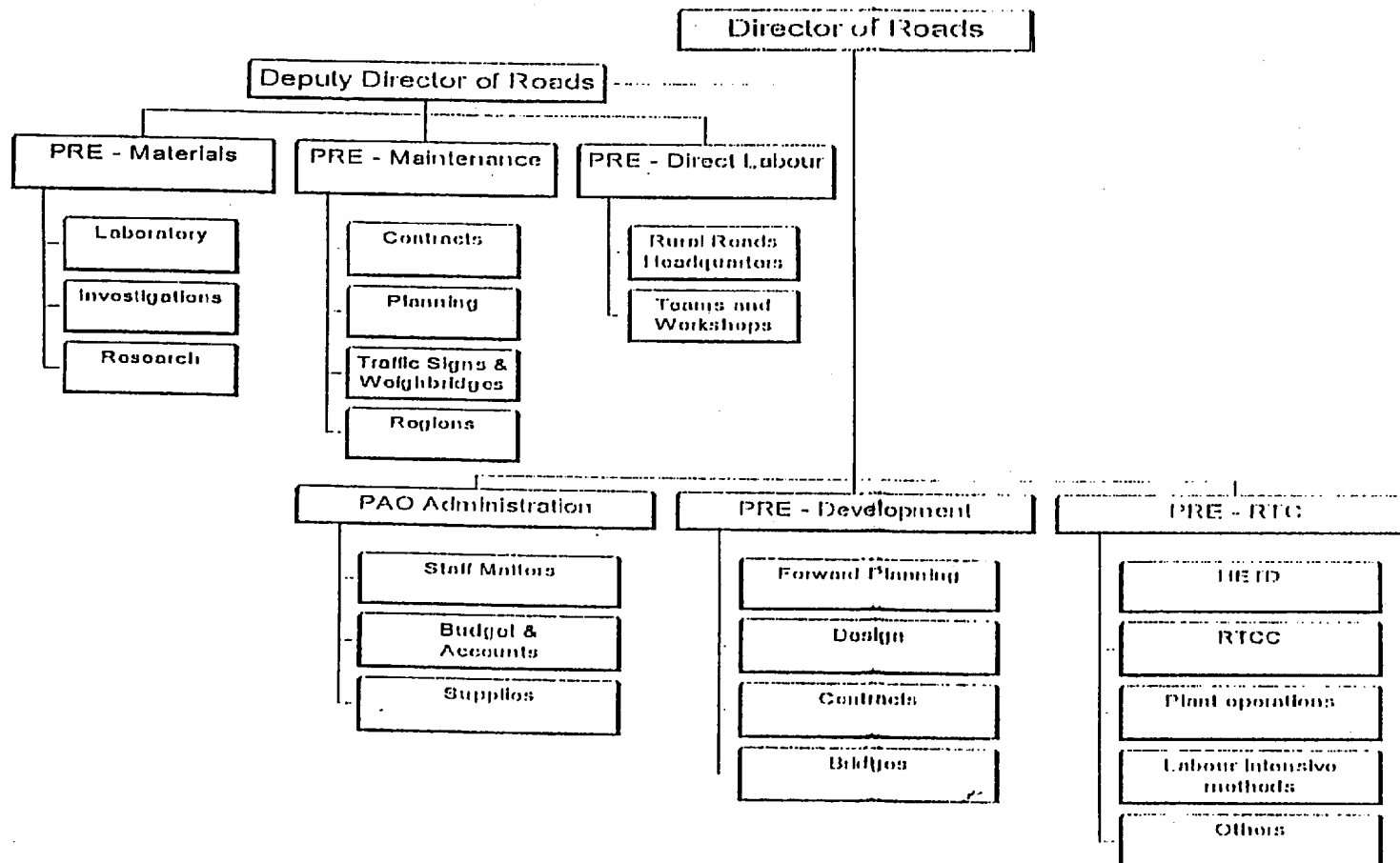


Figure 1.2

ORGANISATION OF ROADS DEPARTMENT





SOUTHERN AFRICA TRANSPORT AND
COMMUNICATIONS COMMISSION
(SATCC)

SOUTHERN AFRICAN
DEVELOPMENT COMMUNITY

CP 2877 MAPUTO
MOZAMBIQUE

TEL: +258-1-420214/420240/427202/429177 — FAX: 420213/431248
TELEX: 6597 SATCC MO — E-MAIL: DIRECTOR @ SATCC. UEM.MZ

TO: EMBASSY OF JAPAN

ATTENTION: Mr. HATAKENAKA, AMBASSADOR

FAX Num: 27 12433922 COUNTRY: R S A CITY: PRETORIA

DATE: 19/11/97 TU/F/48/97

SUBJECT: KAZUNGULA BRIDGE

Dear Sir,

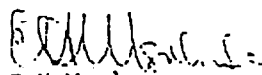
The crossing of Zambezi River is one of the most important issues in the SADC region given the implications to the transport system. This project has been approved by SATCC from the beginning and discussions have taken place for quite a long time. The request for the Japanese Government to finance the construction of a bridge at Kazungula and other facilities is a culmination of the referred discussions among the SADC member States in particular between Botswana and Zambia the first beneficiaries of the project.

We do support the initiative of the Governments of the Republic of Botswana and the Republic of Zambia in proposing the Japanese Government to finance the project since the ferry which has been operating since 1979 is now inefficient due to the traffic increase.

We believe that the proposed bridge will accelerate the transport system growth in the region, taking into account the fact that the member States will benefit from the project.

Should you need any further clarification please don't hesitate to contact us.

Sincerely Yours,


E. H. Msolomba
Director

Member States	Angola	Malawi	Namibia	Tanzania
	Botswana	Mauritius	South Africa	Zambia
	Lesotho	Mozambique	Swaziland	Zimbabwe