

HIGHWAY CONSTRUCTION
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Government of Andhra Pradesh
Proposed State Highway Project
Construction Supervision Consultants
Terms of Reference

INTRODUCTION

1. The Government of India has applied for financial assistance in the form of a Loan from the International Bank for Reconstruction and Development (the Bank) which will be made available to the Government of the State of Andhra Pradesh (GoAP) for a State Highway Project. Part of this financial assistance will be applied towards civil works for the widening and strengthening of about 1,100 km of State Highways and Major District Roads. The Loan will also be used to finance construction supervision as further detailed below.

THE WORKS

2. The first tranche of works consists of three lots:

Lot APSH1	Cuddapah - Tadipatri	98 km
Lot APSH2	Narketpalli - Addanki	167 km
Lot APSH3	Lakshitetpet - Warangal	116 km

The Construction Supervision of these three lots is the subject of these TOR.

3. The works would consist of the following, as required, basically on existing alignments:

- (i) Sub base, base and bituminous pavement;
- (ii) Raising the pavement grade in areas subject to frequent flooding;
- (iii) Widening and paving of shoulders;
- (iv) Widening and stabilizing of embankments;
- (v) Improvements to or replacement of culverts;
- (vi) Repair and replacement of bridges;
- (vii) Improvements to side drainage;
- (viii) Traffic safety features; and
- (ix) Road signs and road markings.

4. The works will be bid under international competitive bidding open to prequalified bidders who may bid on one or more contracts.

5. The supervision of the civil works will be carried out by qualified international consultants with satisfactory experience in implementing projects of similar nature and size. The construction contract documents are based on FIDIC General Conditions of Contract, Fourth Edition 1987, reprinted 1992 with editorial amendments, as modified by Conditions of Particular Application.

6. If the supervision consultant is a joint-venture of a qualified international firm and a firm not qualified as such, leadership of the joint-venture will be the responsibility of the qualified international firm, which will provide the key personnel.

OBJECTIVES

7. The objectives of the consultancy services are:

(a) to ensure that high quality construction is achieved and to ensure that all work is carried out in full compliance with the engineering design, technical specifications and other contract documents;

(b) to demonstrate the efficacy of contract supervision by independent external agencies experienced in this field of work; and

(c) to promote technology transfer either through joint ventures between expatriate and local firms or by employment of local staff.

SCOPE OF SERVICES

8. The Andhra Pradesh Roads and Buildings Department, in its role as "Employer", will employ an international Consultancy firm to undertake supervision of the civil works. The Consultant will appoint an individual to act as the "Engineer" as defined in the construction contract documents. The Engineer will delegate some of his authority to the three Resident Engineers (RE), who will act as "the Engineer's Representative" also as defined in the construction documents, and their teams.

9. Each supervision team will be composed of highly qualified and experienced experts, who can carry out all the routine construction supervision duties as a fully competent and independent unit. However, in preparing his financial proposal for the construction supervision services, the Consultant should allow for a suitable mechanism which will ensure thorough coordination of the teams, so that each team is at all times fully aware of the remedies to common problems used by the other teams, and so that the full experience of all the members of the teams as well as that of the Engineer and his staff can be applied as necessary for all three contract packages. As a minimum, coordination will involve monthly visits by the Engineer to each of the three job sites and quarterly meetings in Hyderabad of the three Resident Engineers and the Engineer. Each of

these coordination meetings, both those on the job sites and those in Hyderabad, will be attended by a representative of the GoAP having authority to make binding decisions on behalf of the Employer.

DUTIES AND RESPONSIBILITIES OF THE ENGINEER

10. The duties of the Engineer are to supervise the works and to approve the materials and workmanship of the works in cooperation and consultation with the Employer, as spelled out in the contract documents for the works. As stated there, he shall have no authority to relieve the Contractors of any of their duties or obligations under the contracts or to impose additional obligations not included in the contracts. The principal responsibilities of the Engineer will be the following:

- (a) to issue the Order to Commence to the Contractors;
- (b) to approve the contractor's work program and the source of materials;
- (c) to authorize, with the Employer's approval, the Contractors' subletting parts of the work;
- (d) to explain and/or adjust ambiguities and/or discrepancies in the Contract Documents;
- (e) to review, verify and further detail the design of the contract works, to approve the Contractors' working drawings and, if necessary, to issue further drawings and/or to give instructions to the Contractor;
- (f) to approve the setting out of the works,
- (g) to approve the Contractors' key superintendence personnel, construction programs, land to be occupied by the Contractor, materials and sources of materials;
- (h) to order special tests of materials or completed works and/or removal and substitution of improper materials and/or work as required;
- (i) to control and appraise the progress of the works, to order suspension of works and to authorize, with the Employer's approval, extensions of the period for completion of the works;
- (j) to issue variation orders, evaluate variations, fix rates for unpriced work, or order daywork all after obtaining prior approval of the Employer, and/or to make recommendations to the Employer regarding alternatives;
- (k) to issue interim certificates for payment to the Contractors on the basis of measured work items or to certify the completion of the works or parts thereof;

- (l) to inspect the works periodically, during the construction period and the Defects Liability Period and to issue Defects Liability Certificates after the rectification by the Contractor of possible defects,
- (m) to carry out generally all the duties of the Engineer as specified in the Contract, within the limitations specified therein;
- (n) to advise the Employer on all matters relating to claims from the Contractor and to make recommendations thereon, including the possible recourse to arbitration; and
- (o) to prepare a Construction Supervision Manual outlining routines and procedures to be applied in contract management, construction supervision and administration.

Actions Requiring Specific Approval of the Employer

11. The Engineer will be required to obtain the specific approval of the Employer before taking any of the following actions specified in Part I of the General Conditions:

- (a) approving subcontracting of any parts of the Works under Clause 4.1 of Part I
- (b) certifying additional cost under Clause 12.2 of Part 11
- (c) determining an extension of time under 5 1.1 of Part 1;
- (d) issuing a variation order under clause 51.5 of Part I, except:
 - (i) in an emergency situation, as reasonably determined by the Engineer; or
 - (ii) when such variation orders increase the contract price by less than 1% per individual approval, or add up less than 10% in aggregate.
- (e) fixing rates or prices under Clauses 52.2, 52.3 and 52.4 of Part I.

DUTIES AND RESPONSIBILITIES OF THE ENGINEER'S REPRESENTATIVE

12. The duties of the Engineer's Representatives are, under the overall control of the Engineer, to supervise construction of the work and to test or order to test and examine any materials to be used or workmanship employed in connection with the works. He shall have no authority to relieve the Contractor of any of his duties or obligations under the Contract nor to order any works involving delay or any extra payment by the Employer nor to make any variation of or in the works. The Engineer may from time to time delegate to the Engineer's Representative any of the duties and authorities vested in the Engineer and he may at any time revoke such delegation. Any such delegation or revocation shall be in writing and shall not take effect until a copy thereof has been delivered to the Employer and the contractor.

13. The principal responsibilities of the Engineer's Representative are likely to be as follows:

- (a) to ensure that the construction work is accomplished in accordance with the technical specifications and other Contract Documents;
- (b) to check all quantity measurements and calculations required for payment purposes and ensure that all measurements and calculations are carried out in a manner and at the frequencies specified in the contract documents;
- (c) to identify construction problems and delays and recommend to the Engineer actions to expedite progress if the Works fall behind schedule;
- (d) in consultation with the Engineer, to interpret and apply various legal provisions of the contract documents, in particular with respect to claims from the Contractor for time extensions or extra payments and in general with respect to the Contractor's conformance and compliance with his contractual obligations
- (e) to prepare detailed recommendations to the Engineer for contract change orders and addenda, as necessary, to ensure the best possible technical results are achieved with the available funds;
- (f) to monitor and check the day-to-day quality control and quantity measurements of the works carried out under the Contract and countersign the monthly payment certificates when the quality of the works is satisfactory and the quantities are correct. The consultant shall draw the Engineer's attention to any instances of non-conformance of the Contractor's works with the technical specifications;
- (g) to supervise the Contractor in all matters concerning safety and care of the works (including the erection of temporary signs at roadworks) and, if required, to request the Contractor to provide any necessary lights, guards, fencing, and watchmen;
- (h) to direct the Contractor to carry out all such works or to do such things as may be necessary in his opinion to avoid or to reduce the risk of any emergency affecting the safety of life or of the works or of adjoining property and to advise the Engineer thereof as soon thereafter as is reasonably practicable;
- (i) to write a day by day project diary which shall record all events pertaining to the administration of the Contract, requests from and orders given to the Contractor, and any other information which may at a later date be of assistance in resolving queries which may arise concerning execution of the works;
- (j) to carry out such duties under the terms of the Contract which may from time to time be delegated in writing by the Engineer;

(k) to verify, and if necessary order correction of, the as-staked drawings supplied by the Contractor;

(l) to assist the Engineer with the execution of the Taking Over by the Employer from the Contractor of each Contract, in particular by preparing lists of deficiencies which need to be corrected, and assisting with monitoring of the performance of the works during the Defects Liability period;

(m) to verify and correct the as-built drawings supplied by the Contractor

REPORTING REQUIREMENTS

14. The Consultant will prepare and submit to the Employer twenty copies and to the Bank office in New Delhi two copies of each of the following reports:

Monthly Reports

15. The Engineer will, no later than the 10th of each month, prepare a brief progress report summarizing the work accomplished by each of the supervision teams for the preceding month. The report will outline any problems encountered (administrative, technical or financial) and give recommendations on how these problems may be overcome. Brief work progress summaries will be included for on going road and bridge works, outlining problems encountered and recommending solutions. The report should record the status of payment of all contractors monthly certificates, of all claims for cost or time extensions, and of actions required of government and parastatal agencies to permit unconstrained works implementation.

Quarterly and Periodic Reports

16. The Engineer will prepare a comprehensive report summarizing all activities under the services at the end of each quarter, and also at other times when considered warranted by either the Engineer or the Employer because of delay of the construction works or because of the occurrence of technical or contractual difficulties. Such reports shall summarize not only the activities of the Engineer and the Engineer's Representative but also the progress of the Contracts, all contract variations and change orders, the status of Contractor claims, if any, brief descriptions of the technical and contractual problems being encountered and other relevant information for each of the ongoing contracts.

Technical Reports

17. The Engineer will produce as necessary technical reports and position papers dealing with technical matters arising during the project. In particular, for each major design change, the Engineer shall prepare a detailed design review report containing:

- (a) the data on which the original as-tendered design was based;
- (b) a complete record of all new design data relevant to the design review;
- (c) an as-built record showing the location and detailed dimensions of all work carried out to date under the contract;
- (d) a copy of all previously approved Change Orders and Contract Addenda;
- (e) a copy of the Contractor's bid, including all the tendered unit prices and detailed unit price analyses;
- (f) a description of the design assumptions adopted where these differ in any way from the standards adopted for the project;
- (g) drawings clearly showing both the original design and the proposed revised design;
- (h) a rescheduled list of quantities and costs, relevant to the proposed revised design; and
- (I) drawings showing the exact location of the proposed design changes.

Final Completion Reports

18. The Engineer will prepare a comprehensive final Completion Report for each of the three construction contracts which reaches a stage of substantial completion during the period of the services. These reports which must be submitted immediately after the Taking Over of each contract, shall summarize the method of construction, the construction supervision performed, and recommendations for future projects of similar nature to be undertaken by the Employer. The Engineer will then summarize and consolidate in a single Team Final Report the key information from the three supervision Final Completion Reports.

STAFF QUALIFICATIONS

The Engineer/Team Leader

19. The Consulting firm employed by the Employer will appoint an individual to exercise the authority of the "Engineer". This individual, who will reside in Hyderabad on a full-time basis throughout the period of the construction supervision services, will be a senior highway engineer with at least 15 years professional experience, including assignments in developed countries with

at least 4 years of relevant managerial positions, as well as at least 4 years on similar projects in developing countries including in Asia. The candidate should have a proven record of managerial capability through the directing/managing of major international civil engineering works, including projects of a similar magnitude financed by a major multilateral international lending agency. The duties as the Engineer will include the issuing of decisions, certificates and orders as specified in detail in the construction contract documents.

20. The Engineer will act as the consultant's authorized representative and administrator for the construction supervision consultancy services contract, with authority to raise with the Government and make binding decisions on behalf of the Consultant on all matters pertaining to the consultancy services. The Engineer will also coordinate the three supervision teams, to ensure that technical policies are correctly and consistently implemented on all the road sections included in the project.

Resident Engineer (Three positions)

21. Each RE will be a Senior Engineer with at least 15 years of professional engineering experience and at least six years experience as a Resident Engineer, Assistant Resident Engineer or equivalent on similar construction works, including assignments in developed countries; at least 4 years on similar projects in developing countries, particularly in Asia; and at least two years experience with internationally financed road projects. A thorough understanding and experience with international “best practices”, modern highway construction technology and contractual arrangements used for the project is important.

22. One Resident Engineer/Supervision Team Leader will be assigned to each Contract package being supervised by the Engineer, to act as the Engineer's Representative as defined in the construction Contract Documents.

Senior Quality Assurance Engineer (Engineer's Office)

23. This position requires a senior Engineer with at least 15 years of professional engineering experience including at least six years establishing quality assurance programs in highway construction projects using modern highway construction technology in both developed and developing countries. The candidate should have demonstrated capability of supervising the setting up, organization and layout of the various Contractors' field laboratories; monitoring the mobilization of the testing equipment to ensure that the laboratories are adequately equipped and capable of performing all the specified testing requirements of the Contracts; and supervising the setting-up of the various Contractors' rock crushers and bituminous mixing plants to ensure that the specified requirements for such equipment are fully met.

Senior Bridge Engineer (Engineer's Office)

24. A qualified structural engineer with at least 15 years experience in bridge engineering including at least 2 years of assignments in developed countries, and 4 years in developing countries including in Asia. The candidate should have a thorough understanding and experience

with international “best practices”, and of modern bridge construction technology. The candidate should be capable of monitoring the Contractors’ bridge rehabilitation and repair works to assess and determine the need for adjustment of the works specified in the Contracts, and, as required, provide working drawings, specification details and instructions to the Contractors for any bridge within the construction site for works which are found during the construction period to require rehabilitation but are not already specifically scheduled for rehabilitation under the contract.

Senior Quality Control/Materials Engineer (Resident Engineer’s Team)

25. This position requires an Engineer with at least 15 years of professional engineering experience including 6 years supervising the testing and evaluation of highway construction materials used in modern highway construction techniques. This experience should include at least 4 years on projects of a comparable nature in developed countries or on projects in developing countries with international financing. The candidate must be thoroughly familiar with all the standard laboratory testing procedures specified in the Contract Documents and must have had past experience in pavement design and bituminous mix design works as well as earthworks.

STAFFING SCHEDULE

26. The implementation period for each of the three construction contracts is expected to consist of a construction period (including Contractor's mobilization) of 30 months for contracts APSH1 and APSH3, and 36 months for APSH2, and a defect liability period of 12 months. The Engineer would be expected to mobilize approximately one month in advance of the commencement of works, in time to assist the Employer with activities leading up to mobilization of the Contractors.

27. Each of the three site supervision teams would be mobilized on the date of actual commencement of works by the Contractor. During the defect liability period, the Engineer will continue on a part-time basis while the supervision team members would be mobilized on an as-required intermittent basis. After the end of the defect liability period, the Engineer and the team leaders are expected to need one month to close the Contracts.

28. The Consultant is free to organize his resources as he wishes. However, some indication given below of the anticipated key staff inputs which are likely to be required:

<u>Position</u>	<u>Supervision Activity (months)</u>				<u>Staff-months</u>			
	Pre- Const- ruction	Const- ruction	Defects Liability	Contract Comple- tion	Internat'l		Domestic	
					No	S-M	No.	S-M
The Engineer's Office								
Engineer	1	36	2	1	1	40		
Sr. Qual/Matls Eng.		36	1		1	37		
Sr. Bridge Engineer		22	1		1	23 *		
Office Engineer		36	2	1			1	39
Data processing		36		1			1	37
Resident Engineer's Office								
RE		30/36	1	1	3	102		
ARE		30/36	1	1			4	138
Sr. Qual/Matls Eng.		12			3	12 *		
Qual/Matls Eng.		30/36	1				3	99
Bridge engineer		30/36					3	96
Survey Eng.		30/36					3	96
Quantity surveyor		30/36					3	96
Sr. lab. techn.		30/36					3	96
Total Staff-months						214/ 179		697/ 732

* International or domestic

Lithuania Highway Project

Terms of Reference Supervision

Background

1. After gaining its independence from the Soviet Union, Lithuania suffered from severe budgetary constraints. The road sector budget decreased drastically and only emergency road repair could be carried out resulting in an increasing backlog of periodic maintenance. Following the Lithuanian Government's policy, part of the road construction industry has been privatized, competitive bidding for works has been introduced, the Lithuanian Road Administration (LRA) and its design, research and laboratory institutions are subject to continuous review and development, and a road fund has been established to raise the level of financing for upkeep of public roads and the major streets in the municipalities.
2. LRA is organized to carry out road project management and supervision departmentally and is also since October 1996 fully responsible for road safety development, the Transport and Road Research Institute (TRRI), now an independent state owned institution carries out highway surveys, feasibility studies, and bridge inspections for LRA and some municipalities and is in charge of the Pavement Management System recently established for LRA. The central laboratory Problematika is now operating as an independent state owned institution, and is capable of performing all main testing of construction materials and has a special unit with reasonably modern equipment for testing and research of pavements. TRRI and Problematika rely economically entirely on fees from works that they carry out on contract basis for other state organizations and for private companies. Kelprojektas, a privatized former state owned design institute, prepares the detailed design of roads, bridges and streets, including the preparation of bidding documents and specifications for LRA and the municipalities on a fee basis.
3. The road design standards of the former Soviet Union have been subject to a recent review by LRA assisted by a German consultant. The substantially revised Lithuanian standards are now mainly based on the German DIN norms.
4. The Lithuanian Road Administration, the World Bank and the EBRD have prepared a project that will provide for increased level of periodic maintenance over a three year period starting at the beginning of the 1997 construction season. This project provides among other components, USD 9.5 million for repaving of the East West Highway and sections of the Regional Road network, USD 2.8 million for Bridge Repair, USD 4.0 million for Elimination of Traffic Accident Black Spots and USD 5.0 million for Repair and Repaving of streets in the city of Vilnius. These works will be let through international (ICB) as well as national (NCB) competitive bidding. The size of the ICB contracts range from USD 1 million to USD 1.8 million and the NCB contracts from USD 200,000 to USD 450,000. The bidding documents

and the contracts conform with the present World Bank Standard and the main bulk of contracts are based on Unit Price. A few Lump Sum type contracts will be adapted to the smaller works let through NCB. The total amount of contracts to be carried out annually is approximately 12. The bulk of the contracts to be carried out in 1997 are located in the vicinity of Vilnius and Kaunas.

5. The supervision of the works will be carried out departmentally by the LRA supervision units with laboratory support from Problematika and support for determining final roughness and bearing capacity from TRRI. In the past the supervision has been too closely linked and possibly dependent on the construction companies. As a result the quality of works has sometimes been fluctuating as well as poor. Modern standards, possibly new road pavement technologies and new testing methods will be introduced. The quality of work will be established as the quality of the end product and the contractor will be responsible for assuring and testing that the quality of work carried out conforms with the technical specifications for materials and end products. Some supervision, quantity and quality control systems have recently been set up and training to the use of such systems has been provided by Denmark. Local contractors are at present being trained in bidding, scheduling and planning, contract management, quality assurance, human resource management and cooperation with the project manager. The support of an international consultant is required to ensure the appropriate execution of the individual contracts within the Highway Project and the introduction of well functioning new supervision systems to the local counterparts of LRA and the Technical Division of the City of Vilnius (TDCV).

Objectives

1. Ensure that the supervision of works, including quantity measuring and quality assurance, is carried out so that the civil works are completed in accordance with the contract documents.
2. Provide training to the local counterpart staff of LRA and TDCV with the aim that they assisted by their Lithuanian support units, TRRI and Problematika, can provide the adequate project monitoring and supervision services also after completion of the services provided by the consultants.
3. Develop the performance of the local contractors related to scheduling and planning of activities, quality assurance of production and cooperation with the project management of the employer.

Activities

1. The Project Manager appointed by the Consultant shall decide all contractual matters between the Employer and the Contractor in the role representing the Employer.

2. The Supervision Team appointed by the Consultant shall monitor the supervision of the works to be carried out under the Highway Project in 1997 and 1998. The Supervision Team shall check that the quality assurance is adequate and functioning, that the actual quality and quantity measuring is properly carried out by the Contractor as well as the local supervision staff, that site diaries are kept and that the reporting system is adequate and functioning. The Supervision Team shall also ensure that all work having failed to meet contractual quality requirements is rejected and that the Contractor acts in accordance with his contractual role.

3. The duties of the Project Manager appointed by the Consultant shall include, but not be limited to, site inspections at random and regular site meetings, checking and approval of monthly certification of works, approval of work plans and schedules proposed by the Contractor, approval and issuing of variation orders, addressing of defects, approval of extension of time and decision on penalties to be applied and termination of contract.

4. The Project Manager shall assist LRA in preparation of quarterly and annual progress reports and on monthly basis keep the PIU informed of site progress and approved changes in quantities and total contract price.

Reporting

The consultant shall after 6 weeks submit an Inception Report, highlighting any findings that might affect the successful completion of the project, or issues that might justify any amendment of the Consultant's tasks, and an annual report after the end of each construction season. The Consultant shall also submit a final report summarizing the main findings and recommendations. The reports shall be written in Lithuanian as well as in English. Three copies in Lithuanian and one in English of each report shall be sent to the Employer and two copies in English to the World Bank.

Timing

The Consultant's work is planned to be started in April 1997 and to be completed in October 1998. It would be an advantage for the project if the Consultant could make the Project Manager available for participation in the evaluation of bids prior to the signing of contracts and commencing of work.

Resources available

The Employer has included provision of office facilities and surveying equipment in the bidding documents. The Employer will make sure that the offices are equipped with standard means for communication and copying. The Employer will make adequate equipment available for quality control. The Employer will appoint one full time counterpart for each staff employed by the Consultant and appoint local site supervisors. The Employer could also

make available personal transport for the core staff of the supervision team but would prefer if such transport were arranged by the Consultant.

The Consultant is expected to provide the computer hardware and software for the supervision assignment and provide training to the counterparts in the use of computerized project progress and quality monitoring systems.

Consultant's proposal

The Consultant is requested to submit a technical proposal, including comments on these TOR's, the Consultant's description of the actions he intends to carry out, with detailed schedule of the planned activities, a list and CVs of the staff proposed, a list of equipment and instruments he intends to supply and use, and any other specific issue that the Consultant would like to raise. A financial proposal with a breakdown of costs is requested in a separate marked envelope.

Project Budget

USD 250,000

Development of the Local Construction and Consulting Industries

DRAFT TERMS OF REFERENCE FOR A STUDY OF THE CIVIL WORKS CONSTRUCTION INDUSTRY, THE BUILDING CONSTRUCTION INDUSTRY AND CONSULTING SERVICES IN ZAMBIA

1. BACKGROUND

1.1 The present Government wishes to encourage the development of the private sector, hereunder the construction industries and the related service sector. Because of the previous predominance of statal and parastatal enterprises and the general economic recession the sectors mentioned are not in good shape and may find it difficult to play the important part which the Government has intended for them in its reconstruction program. It has therefore been considered advisable to conduct a study with the purpose of assessing the present capabilities of the sectors and to formulate plans for their future development. The study shall cover the following sectors:

1. The Civil Works Construction Industry
2. The Building Construction Industry
3. The Consulting Services

1.2 Due to an extreme shortage of funds the Zambian road network has for many years suffered from lack of maintenance with severe deterioration as the result. A number of major rehabilitation works is being undertaken at present, financed by donors and implemented in most cases by foreign contractors and designed and supervised by foreign consultants. Other maintenance is supposed to be carried out by Roads Department's own labor force and equipment but, as mentioned, this has been done to a very limited extent only.

1.3 Due to the economic recession the activity within the building construction sector has been limited and the situation has been aggravated by the fact that lack of foreign exchange has caused shortages of such building components which are not produced in Zambia.

1.4 Most of the local engineering and planning consulting firms are branches of foreign firms. When needed they can always draw on their home office to provide specialist staff. In contrast, it would appear that the truly indigenous firms are staffed by design engineers with little opportunity to find the specialists required in most study projects.

2. OBJECTIVES

The objectives of the consultancy shall be:

2.1 To evaluate the technical and professional capacities of the existing, locally based civil works construction firms seen in relation to the demand for rehabilitation/major maintenance for

roads during the period 1994-2003 and to present proposals for such feasible developments which may be considered necessary for the upcoming tasks.

2.2 To develop a framework for the creation and training of a core of small-scale road contractors, including labor-only contractors in rural areas, who can take over large parts of the routine and recurrent road maintenance which at present is supposed to be done by Roads Department.

2.3 To evaluate the technical and professional capacities of the existing, locally based building construction industry. The survey shall include not only contractors but also manufacturers of, for instance, concrete products, bricks, tiles, doors and windows, fittings etc.

2.4 To evaluate, concentrating on the indigenous sector, the present capacities of the local consulting services firms and to make proposals for how these firms' capacity and, equally important, their professional range can be expanded so that they can successfully compete with foreign firms.

3.0 SCOPE OF WORK

3.1 General

3.1.1 In carrying out the work the consultant shall co-operate with the Government and in particular with the Roads Department of the Ministry of Works and Supply as well as with other agencies related to the project, including the World Bank. Clause 6 states which reports the consultant shall submit to Roads Department during the course of the study.

3.2 The Civil Works Construction Industry

The consultant shall:

3.2.1 Estimate the annual demand for road works for the period 1994-2003, grouped in types of activities, e.g. routine maintenance, recurrent maintenance, periodic maintenance and full rehabilitation/reconstruction. The estimates shall be based on the information, contained in a study, "Road Organization, Maintenance and Training", prepared for Roads Department and published in February 1993 plus information collected from Roads Department, including its Provincial Roads Engineers.

3.2.2 Conduct a survey of existing civil works contractors, who could undertake road works, including investigation of:

- plant and equipment (type, capacity, age)
- technical staff (numbers, training, experience)
- workshop facilities
- previous work
- financial status

- 3.2.3 Establish suitable criteria for dividing the contractors into categories or classes, based on the magnitude and the type of work they can undertake.
- 3.2.4 Examine to which extent facilities exist in Zambia for major maintenance and repairs to equipment and plant, including availability of spare parts.
- 3.2.5 Examine which credit facilities are available to contractors, including access to foreign exchange, as well as to bank guarantees and bonds for bid and performance securities. Access to insurance of the work shall also be examined.
- 3.2.6 Evaluate the current legal basis for establishment and operation of firms within the construction industry, including laws regulating the activities of foreign firms and foreign investment in local firms as well as laws governing arbitration and litigation.
- 3.2.7 Evaluate current government and local government regulations and procedures for procurement of works and services and determine if any changes of these could facilitate development of contracting and consulting services industries.
- 3.2.8 Investigate current availability and general skill levels of engineers, technicians and skilled laborers, and their prevailing wages and benefits for the public sector and the private sector respectively.
- 3.2.9 Examine the functions of existing contractors' associations (if any) and assess how such associations can benefit the development of the contracting industry. If appropriate, make proposals for the set-up of such organization(s).
- 3.2.10 Examine the availability and quality of local and imported civil works materials, including crushed stones, bitumen, cement, and reinforcing bars, and suggest what steps, if any, are needed to improve such supplies.
- 3.2.11 Identify candidates for a group of small-scale contractors, including labor-only contractors, on a sample basis to carry out routine and recurrent maintenance. Possible sources are small-scale "General Contractors" and experienced road foremen and workers from Roads Department.
- 3.2.12 Prepare work procedures for the various maintenance operations and establish a training program to teach these procedures, including an on-the-job training period, to be set up in conjunction with the Roads Department's Road Training School.
- 3.2.13 Make proposals for how the contractors can set up shop with regard to organization, financing and equipment.
- 3.2.14 Establish criteria and simplified bidding documents for awarding contracts to the small-scale contractors.

3.3 The Building Construction Industry

The consultant shall:

3.3.1 Conduct a survey of the existing building contractors including investigation of:

- plant and equipment (type, capacity, age)
- technical staff (numbers, training, experience)
- workshop facilities
- previous work
- financial status

3.3.2 Establish suitable criteria for dividing the contractors into categories or classes, based on the magnitude and the type of work they can undertake.

3.3.3 Examine to which extent facilities exist in Zambia for major maintenance and repairs to equipment and plant, including availability of spare parts.

3.3.4 Examine which credit facilities are available to contractors, including access to foreign exchange, as well as to bank guarantees and bonds for bid and performance securities. Access to insurance of the work shall also be examined.

3.3.5 as 3.2.6

3.3.6 as 3.2.7

3.3.7 as 3.2.8

3.3.8 as 3.2.9

3.2.10 Identify existing manufacturers of components for the building construction industry, assess existing capacity, the need for expanding it and the feasibility of expanding the range of products.

3.3.11 Examine the existing government Standards for building components and the present procedures for checking the manufacturers' products. If appropriate propose measures for improvements.

3.4 Consulting Services

The consultant shall:

3.4.1 Conduct a survey of the local consulting firms within the engineering sector, including an examination of which fields the various firms cover, an assessment of the professional training and experience of their staff and to which extent they rely on resources outside Zambia for special

assignments. Special attention shall be paid to the indigenous consulting firms with an in-depth analysis of their capabilities as well as their shortcomings with regard to undertaking more complex assignments such as studies including technical, economic and environmental aspects.

3.4.2 Make an assessment of which resources with regard to specialist knowledge are available within Zambia, e.g. staff from universities and other institutions, and how they can most efficiently be explored/utilized.

4. OBLIGATIONS OF THE CONSULTANT

4.1 The consultant shall include in his proposal the numbers and types of personnel and their periods of employment, together with curricula vitae, that he needs to carry out the services required. During the field work the consultant shall provide at least one senior engineer in Zambia.

4.2 The consultant shall make his own arrangements for all office and living accommodation, transportation, supplies, investigations, secretarial services etc. in connection with the work.

5. OBLIGATIONS OF THE GOVERNMENT OF ZAMBIA

5.1 The Government will make available to the consultant all relevant reports and data in its possession but the consultant shall be fully responsible for the interpretation and use of the material in question.

5.2 The Government will liaise with other government offices as required in order to facilitate the consultant's work.

6. REPORTS AND TIME SCHEDULE

The consultant shall:

6.1 Commence his work within 28 days of the date of award of the contract (effective date of contract)

6.2 Within 56 days of the effective date of contract submit an Inception Report describing actual progress of work and indicating possible changes in methodology and work program.

6.3 Within 154 days after the effective date of contract submit his Draft Final Report, containing the data collected, analyses, conclusions, and proposals for which measures can be taken to achieve the desired goals.

6.4 Within 28 days after having received RD's comments to the draft report, submit the Final Report to Roads Department.

6.5 All reports shall be submitted in 5 copies.

Developing Environmental Guidelines{PRIVATE }

Terms of Reference for Study to Develop Environmental Guidelines for Design/Implementation of Inland Surface Transport Projects

Introduction

The government is anxious to consolidate gains already made under IRP I and the Railway Restructuring Project to introduce sound environmental strategies to guide transport sector development. The former project pays particular attention to regulation of civil works implementation to ensure construction traffic does not disrupt game parks, site camps have adequate arrangements for disposing of waste, attention is paid to design of drainage arrangements and that borrow pits do not simply become breeding grounds for mosquitoes. The latter project likewise pays particular attention to use of environmentally-friendly weedicides and locomotive coolants, to recycling waste oil, improving safety in heavy engineering workshops and generally strengthens health & safety at work.

Objectives

The present study intends to take these initiatives one step further in conjunction with the design and implementation of the **Mwanza-Nzega Roadworks** and the **Ngorongoro Access Roads Study**. The objectives of the present study will be to: (i) review the effectiveness of initiatives started under IRP I, Railway Restructuring and Mwanza-Nzega Roadworks projects; (ii) participate in design and implementation of the Ngorongoro road study with a view to evaluating potential environmental impacts, designing remedial measures and taking steps to ensure they are incorporated during project implementation; (iii) recommend the potential scope, functions and procedures for the environmental division in the proposed Safety and Environmental Directorate which is expected to form part of a restructured MCT; (iv) using the insights developed under (i) and (ii) above, prepare a manual setting down sound environmental design and management strategies for design and implementation of inland surface transport projects; and (v) prepare a training course, based on this manual, to raise awareness of environmental issues and strengthen environmental management practices for presentation to technical and professional staff from MCT, MOW and TRC.

Scope of Work

The study team will be expected, among other things, to undertake the following tasks:

- (i) Review the environmental strategies built into IRP I and the Railway Rehabilitation Project, together with any other documents relating to sound environmental management practices which have been produced by the World Bank and other organizations.
- (ii) Evaluate how successful the environmental strategies built into the above two projects have been and what amendments, if any, might have helped to make them even more effective.

- (iii) Participate in the study of the Ngorongoro road project and advise on potential adverse environmental impacts and what might be done to minimize them. Also advise on the circumstances which might make it desirable to discuss remaining impacts, either on this or any other major civil works project, in the context of a public inquiry.
- (iv) Participate in preparation of bid documents and advise on what steps need to be taken to ensure that the remedial measures identified under (iii) are incorporated into plans for implementing the project.
- (v) Take what ever steps appear to be needed to ensure that the above measures are indeed adhered to during implementation of the project, including that they be written into the Terms of Reference for the organization responsible for supervising implementation of civil works.
- (vi) Since the government is considering restructuring MCT to enable it to better regulate and coordinate transport sector operations, recommend the scope, functions and procedures which might be followed by a proposed new division in MCT which would form part of a Safety and Environment Directorate. The recommendations should bear in mind that MCT is expected to deal with the environmental aspects of air, lake and maritime transport, as well as those related to inland surface transport.
- (vii) Based on the above project work and the review of available documents, prepare a simple, practical manual to guide others in undertaking environmental analysis of inland surface transport projects. The manual should contain a short executive overview, the main text and examples of application of the environmental techniques proposed.
- (viii) Prepare a training program for technical and professional staff in MCT, MOW and TRC to introduce them to the above methods of analysis and provide practical training (through examples) on their application.

Consultant Services

It is intended that the work should be carried out by a local research institution, consulting firm, or university group. The aim is to ensure that: (a) the study develops local environmental expertise; (b) links that expertise to a group able to provide advisory and consulting services; and (c) is able to provide a range of training courses for managerial and technical staff.

Feasibility Studies of Roads and/or Bridges

DRAFT TERMS OF REFERENCE FOR DETAILED DESIGN AND PREPARATION OF TENDER DOCUMENTS FOR REHABILITATION OF THE KAPIRI MPOSHI-NAKONDE ROAD

1. BACKGROUND

As part of its efforts to achieve sustainable growth the Government is putting great emphasis on rehabilitation of the country's infrastructure, hereunder the roads. A donor-funded trunk road study was carried out by consultants in 1985-86 and partially updated in 1989. On the basis of this study the international donor community was approached for financial assistance to the rehabilitation program. A number of donors have responded positively and the following sections of the trunk road network are now under rehabilitation: Lusaka - Kafue; Kafue - Mazabuka; Lusaka - Kabwe; Kapiri Mposhi - Chingola. IDA is at present considering to extend an Engineering Credit to Zambia, and Roads Department is planning to finance the detailed engineering of the rehabilitation of Kapiri - Nakonde Road under this credit.

2. OBJECTIVES

The objective of the consultancy shall be:

2.1 To carry out the necessary surveys and prepare engineering designs appropriate to the laid-down design criteria and the available financial resources and, furthermore, to prepare economic analyses of the project, see sub-clause 3.2.11.

2.2 To prepare tender documents and assist the Government in the procurement of a contractor to undertake the works.

These two objectives also describe the two phases of the consultant's work and 2.2 shall not be undertaken unless and until the potential donor agency has approved 2.1.

3. SCOPE OF WORK

3.1 General

3.1.1 The consultant shall perform all the work necessary to achieve the objectives of the assignment and shall at all times utilize the most economical, effective and widely accepted engineering concepts in this work.

3.1.2 In carrying out the work the consultant shall co-operate with the Government and in particular with the Roads Department of the Ministry of Works and Supply, which will administer the construction contract, and with other agencies related to the project.

3.2 Detailed Engineering Design

The consultant shall prepare detailed engineering design and cost estimates for three design options taking into account:

3.2.1 Each detailed engineering design shall be carried out to a degree of accuracy that will enable quantities of principal items of construction materials to be estimated. Such principal items shall include earth work, sub-base materials, base course materials, surfacing/resealing materials, drainage structures, and other structures.

3.2.2 The consultant will undertake a complete review of the condition of the Great North Road from the Junction between trunk roads T2 and T3, 5 km north of Kapiri Mposhi to the southern border of Nakonde township, and make detailed recommendations for the rehabilitation measures considered necessary. In order to make such recommendations the consultant shall undertake topographical surveys, geotechnical surveys, identify sources for construction materials and make quantitative and qualitative assessment of them, carry out pavement strength tests (including deflection surveys), traffic counts, axle load measurements and riding quality surveys. The works proposed shall be quantified and specified in terms of materials and workmanship quality required and their location clearly identified.

No major realignments are considered necessary, but the consultant shall nevertheless make a careful assessment of the existing horizontal and vertical alignments and present possible proposals for improvement to the Roads Department for consideration (e.g. a heavy-traffic lane on steep gradients).

The above-mentioned surveys will take their starting point in the information provided under the Trunk Road Study.

3.2.3 The rehabilitation work shall include restoration of the existing road surface and shoulders, clearing and repair of drainage facilities and renewal of road furniture.

3.2.4 Detailed surveys shall be carried out where missing. This will include centerline staking, setting out of beacons and permanent reference marks for principal points of curves and intervisibility points on straight sections to enable detailed design of the road (geometrical and structural) together with structures and appurtenances.

3.2.5 In deciding on the required rehabilitation measures to be taken, the consultant shall aim at the restoration of the existing facilities and components and their capacities to meet the design standards to which the road was originally constructed. However, the design period for the rehabilitation works shall be 15 years, assuming satisfactory routine maintenance and resealing at 5 or 6 year intervals.

3.2.6 Where failure of base course, subbase or subgrade has occurred, the consultant shall decide on which rehabilitation measures shall be taken: reconstruction, and if so which type of reconstruction, or overlay, both followed by a surface treatment.

3.2.7 No widening of the carriageway is considered necessary but throughout the whole length of the road shoulders shall be scarified to a depth of 150 mm, stabilized with cement and recompacted. Where necessary suitable material shall be added.

3.2.8 As part of the materials survey the consultant shall identify suitable quarry sites for the production of road aggregates including surface dressing stones.

3.2.9 A Materials Report and a Design Report shall be prepared. The Materials Report shall include test results and information on borrow areas and quarries such as location, accessibility, suitability of materials, and estimated yields. The Design Report shall describe the background for the project, summarize the surveys carried out and the design methodology used. The data collected shall also be stored on three 1/2" floppy disks in a form to be discussed beforehand with Roads Department.

3.2.10 On the basis of the surveys and design the consultant shall provide an estimate of the cost of the constructions broken down into major items. The costs shall be given in US\$ throughout. As it may take up to two years after the estimate has been prepared before the construction contract can be awarded the cost estimate shall contain separate cost elements for:

- (i) price increases during this period, and
- (ii) increase in rehabilitation costs necessitated by the additional deterioration taking place during this period.

3.2.11 In order to assess the economic justification of the investment which the rehabilitation costs represent, the consultant shall carry out a cost/benefit analysis of the project for the twenty year period following the completion of the road rehabilitation. The evaluation shall be expressed in terms of:

- (i) the economic internal rate of return; and
- (ii) the net present value in relation to the Government's current opportunity cost of capital.

A preliminary economic analysis for the project shall be carried out at the earliest possible stage, i.e., as soon as the necessary minimum of traffic surveys and relevant cost data have been obtained. This preliminary analysis shall be discussed with Roads Department before the work proceeds.

It is expected that traffic surveys will show marked differences in traffic intensity among the three sections T2/T3 jct. - T2/D235 jct.; T2/D235 jct - T2/M1 jct; T2/M1 - Nakonde. If this proves to be the case the final economic analysis shall be carried out for each of the three sections as well as for the project road as a whole.

3.2.12 The consultant shall submit his findings to Roads Department. A subsequent meeting will be held between Roads Department and the consultant to discuss the technical proposal and alternative technical solutions before preparing the tender documents.

3.2.13 The consultant shall in his design ensure that the road project causes a minimum of damage to the environment, e.g., the risk that outfall from culverts create gullies or end up in stagnant pools must be eliminated. The consultant shall likewise ensure that construction traffic and deviations do not infringe on the Lavushima Manda National Park or any other vulnerable areas.

The consultant shall in clauses in "Conditions of Special Application" specify requests to the contractor which can ensure:

- (i) that the latter provides adequate housing, sewerage and sanitation on site, as well as medical attention and first aid assistance for the labor employed on the works. The contractor shall also be instructed to undertake adequate refuse collection and disposal of all site refuse.
- (ii) that a minimum of damage to the environment is caused by the road project, e.g., instructions with regard to disposal of wastes from fuel, bitumen, lubricants, etc., planting at quarries and gravel pits, containment of dust from crushers.

3.3 Preparation of Tender Documents

3.3.1 Contingent upon the potential donor agency's approval the consultant shall prepare Tender Documents for the proposed works. The documents shall comply with the requirements of the World Bank and the Government and shall include:

- (i) Instructions to Tenderers
- (ii) Form of Tender and Form of Agreement
- (iii) Conditions of Contract
- (iv) Technical Specifications
- (v) Bills of Quantities
- (vi) Drawings
- (vii) Guarantees and Performance Bonds

ad 3.: in two parts: Part I shall be the FIDIC General Conditions for Works Contracts; and Part II shall be Conditions of Particular Application.

ad 4.: in two parts: Part I shall be Roads Department's Standard Specifications, Revised Edition; Part II shall be Specifications of Particular Application.

ad 6: Tender Drawings shall be produced in both A1 and A3 size (reduced from the original A1 size). To the extent possible drawings shall be prepared in accordance with Roads Department's Standard Designs, Revised Edition.

3.3.2 Concurrent with preparation of tender documents the consultant shall undertake pre-qualification of contractors. The consultant shall prepare a pre-qualification questionnaire and notice in accordance with Government regulations and after submission to and approval by the potential donor agency and the Government he shall assist the Government by arranging for the advertisement of the pre-qualification notice in appropriate international publications. The consultant shall compile all responses to the advertisement, undertake an evaluation (including where possible the corroboration of any data or information supplied by the prospective contractors) and recommend a list of contractors to be pre-qualified to tender for the work.

3.3.3 On completion of the pre-qualification procedures and approval by the Government of the recommended list of contractors and the contract documents, the consultant shall assist the Government in the tendering process, evaluation of tenders, contract negotiations and the award of the contract. In particular, but not limited to, the consultant shall:

3.3.3.1 Produce an adequate number of sets of tender documents and send invitations to the pre-qualified contractors to collect the documents.

3.3.3.2 On the dates specified in the letter of invitation assist the Government in conducting the site visit and the pre-bid conference. He shall also prepare the minutes of these meetings and circulate them among the prospective tenderers attending.

3.3.3.3 During the tender period answer all questions from prospective tenderers in accordance with the tender documents and prepare and issue any addenda as necessary.

3.3.3.4 After receipt of the tenders carry out the analysis and evaluation and submit within 4 weeks the tender evaluation report for the consideration and approval of the Government.

3.3.3.5 Upon approval of the recommendations of the tender evaluation report assist the Government in the negotiations for the award of the contract. He shall arrange and attend the meetings between the contractor and the Government, minute the discussions and draw up memoranda of understanding as necessary.

3.3.3.6 On conclusion of the negotiations prepare contract documents for signature by the contractor and the Government.

4. OBLIGATIONS OF THE CONSULTANT

4.1 The consultant shall include in his proposal the numbers and types of personnel and their periods of employment, together with curricula vitae, that he needs to carry out the services required. During the field work the consultant shall provide at least one senior engineer in Zambia.

4.2 The consultant shall make his own arrangements for all office and living accommodation, transportation, supplies, surveys, investigations, testing, secretarial services etc. in connection with the work.

5. OBLIGATIONS OF THE GOVERNMENT OF ZAMBIA

5.1 The Government will make available to the consultant all relevant reports and data in its possession but the consultant shall be fully responsible for the interpretation and use of the material in question.

5.2 The Government will liaise with other government offices as required in order to facilitate the consultant's work.

6. REPORTS AND TIME SCHEDULE

The consultant shall:

6.1 Commence his work within 30 days of the award of the contract (effective date of contract).

6.2 Within 32 weeks of the effective contract date submit his findings and recommendations for the scope of works together with the draft Tender Documents and Cost Estimates.

6.3 Submit his evaluation and recommendations on contractors to be pre-qualified within 3 weeks of the closing date for applications for pre-qualification.

6.4 Submit a tender evaluation report within 4 weeks of the closing date for submission of tenders.

6.5 Submit completed contract documents within 3 weeks after having received the request to do so.

DRAFT TERMS OF REFERENCE FOR INVESTIGATION OF THE LUANGWA BRIDGE

1. BACKGROUND

The Luangwa Bridge carries the Great East Road across the Luangwa river approximately 230 km east of Lusaka. The single-lane, cable-stayed bridge was opened in 1968 but some faults had to be rectified and the completion certificate was not issued until early 1973. However, already in 1970 some of the high friction grip bolts in the steel structure were found to have failed. Failure of bolts have continued over the years. In 1981 the design engineers were requested to inspect the bridge, and they stated in their report that as long as the failed bolts were replaced all was well and that there would be no problems with the moving load of 70 t, proposed by Roads Department.

The present traffic regulations for the bridge are: (i) only one vehicle at a time on the bridge; (ii) maximum vehicle weight 50 t; and (iii) speed limit 5 km/hr. The last restriction would appear to have been imposed for security reasons. It does not originate from Roads Department.

With the increasing and increasingly heavy traffic on the Great East Road this situation has become unsatisfactory. The Roads Department therefore needs a thorough examination of the bridge in order to assess the actual condition of it and proposals with cost estimates for possibly required remedial works to ensure that the bridge can function properly during the coming years.

2. OBJECTIVES

These Terms of Reference have two objectives. First, to establish the feasibility of repairing or replacing the Luangwa Bridge, and, second, to carry out detailed engineering for the most economic option identified in the feasibility study.

During the first phase, the consultants would thus:

2.1 Carry out a careful examination of all elements of the existing structure, including the foundations, and to get the original calculations and drawings in order to provide a correct assessment of the bridge's present condition and bearing capacity.

2.2 Prepare proposals for such remedial works which are considered necessary to make the bridge capable of carrying the present standard bridge loading, taking into account any possible adverse environmental impact, and prepare cost estimates for such works.

2.3 In the event the bridge turns out to be beyond repair, prepare broad estimates of the cost of constructing a completely bridge to replace the existing one.

2.4 Carry out an economic evaluation of the preferred engineering solution identifies above to establish whether the proposed remedial works, or construction of an entirely new bridge, are economically justified.

During the second phase, the consultants would then:

2.5 In case the bridge can be repaired, prepare Tender Documents for the implementation of the proposals outlined in 2.2 above, including clauses instructing the contractor regarding location and operation of the construction camp and routing of traffic to avoid that the construction works create adverse environmental impacts.

2.6 In case the bridge is judged to be beyond repair, undertake necessary field investigations and prepare an outline design, detailed Terms of Reference and a comprehensive briefing for consultants who would be appointed to prepare the full design for a replacement bridge.

3. SCOPE OF WORK

3.1 General

3.1.1 The consultant shall perform all the work necessary to achieve the objectives of the assignment and shall at all times utilize the most economical, effective and widely accepted engineering concepts in this work.

3.1.2 In carrying out the work the consultant shall cooperate with the Roads Department of the Ministry of Works and Supply.

3.2 Detailed Investigation

This shall include but not necessarily be confined to the following:

- (i) check all dimensions against the construction drawings;
- (ii) take samples of materials and carry out strength tests;
- (iii) carry out visual inspection of all construction elements for location of damages;
- (iv) carry out non-destructive testing (X-ray, ultra-sound or other) of relevant construction elements in order to detect possible cracks in steel parts and bolts;
- (v) carry out deflection measurements.

3.3 Structural Analysis

This shall at a minimum include the following:

3.3.1 Determining the present, actual bearing capacity of the bridge, taking into consideration various load combinations, such as (i) a number of smaller loads (light goods vehicles); and (ii) one large load (a heavy goods vehicle train), and assuming the existing defects are repaired. This

information will make it possible for Roads Department to consider a revision of the present restrictions for the bridge.

3.3.2 Determining which, if any, strengthening will be required to make the bridge capable of carrying the present standard bridge loading, bearing in mind that a number of overweight vehicles will pass the bridge.

3.4 Replacement Bridge

3.4.1 If the investigations mentioned in 3.3.1. and 3.3.2 indicate that the existing bridge cannot by reasonable means be brought to a satisfactory state and therefore should be replaced, then the consultants shall carry out additional investigations necessary to prepare the detailed design for a replacement bridge and the results presented in a separate report.

3.5 Cost Estimates and Economic Analysis

3.5.1 Cost estimates shall be prepared for:

- (i) repairs required to eliminate the present defects;
- (ii) strengthening required in accordance with sub-clause 3.3.2.

or in the event the bridge is beyond repair

(iii) design and construction of a new bridge (the costs in this case to be given only in very broad terms)

3.5.2 An economic analysis in the form of a cost/benefit analysis for the twenty year period following the completion of the repairs and possible strengthening shall be carried out, considering three cases:

- (i) do nothing;
- (ii) carry out repairs as per sub-clause 3.3.1; and
- (iii) carry out above repairs and strengthening as per sub-clause 3.3.2.

The evaluation shall be expressed in terms of:

- (i) the internal rate of return; and
- (ii) the net present value in relation to the Government's current opportunity cost of capital.

3.5.3 In case a new bridge is required, the economic analysis will consider only two cases:

- (i) do nothing
- (ii) construct a new bridge as per 3.4.

3.6 Preparation of Tender Documents

3.6.1 Contingent upon the potential donor agency's approval of the outcome of the feasibility study, the consultant shall prepare Tender Documents (which shall comply with the requirements of the donor agency and the Government).

3.6.2 In case of repairs, the documents shall include:

1. Instructions to Tenderers
2. Form of Tender and Form of Agreement
3. Conditions of Contract
4. Technical Specifications
5. Bills of Quantities
6. Drawings
7. Guarantees and Performance Bonds

ad 3.: in two parts: Part I shall be the latest edition of the FIDIC Conditions of Contract for Works of Civil Engineering Construction (or such other Conditions of Contract as the donor agency may approve); Part II shall be Conditions of Particular Application.

ad 4.: in two parts: Part I shall be Roads Department's Standard Specifications, Revised Edition; Part II shall be Specifications of Particular Application.

ad 6.: Tender Drawings shall be produced in both A1 and A3 size (reduced from the original A1 size). To the extent possible drawings shall be prepared in accordance with Roads Department's Standard Designs, Revised Edition.

3.6.3 Concurrent with preparation of tender documents, the consultant shall undertake pre-qualification of contractors. The consultant shall prepare a pre-qualification questionnaire and notice in accordance with Government regulations, and after submission to and approval by the potential donor agency and the Government, he shall assist the Government by arranging for the advertisement of the pre-qualification notice in appropriate international publications. The consultant shall compile all responses to the advertisement, undertake an evaluation (including where possible the corroboration of any data or information supplied by the prospective contractors) and recommend a list of contractors to be pre-qualified to tender for the work.

3.6.4 On completion of the pre-qualification procedures and approval by the Government of the recommended list of contractors and the contract documents, the consultant shall assist the Government in the tendering process, evaluation of tenders, contract negotiations and the award of the contract. In particular, but not limited to, the consultant shall:

3.6.4.1 Produce an adequate number of sets of tender documents and send invitations to the pre-qualified contractors to collect the documents.

3.6.4.2 On the dates specified in the letter of invitation assist the Government in conducting the site visit and the pre-bid conference. He shall also prepare the minutes of these meetings and circulate them among the prospective tenderers attending.

3.6.4.3 During the tender period answer all questions from prospective tenderers in accordance with the tender documents and prepare and issue any addenda as necessary.

3.6.4.4 After receipt of the tenders carry out the analysis and evaluation and submit within 4 weeks the tender evaluation and submit within 4 weeks the tender evaluation report for the consideration and approval of the Government.

3.6.4.5 Upon approval of the recommendations of the tender evaluation report assist the Government in the negotiations for the award of the contract. He shall arrange and attend the meetings between the contractor and the Government, minute the discussions and draw up memoranda of understanding as necessary.

3.6.4.6 On conclusion of the negotiations prepare contract documents for signature by the contractor and the Government.

3.7 Report on a Possible Replacement Bridge

3.7.1 In case a replacement bridge is required, the consultant shall prepare a report presenting the results of his investigations and considerations with regard to the possible construction of the new bridge.

4. OBLIGATIONS OF THE CONSULTANT

4.1 The consultant shall include in his proposal the numbers and types of personnel and their periods of employment, together with curricula vitae, that he needs to carry out the services required.

4.2 The consultant shall make his own arrangements for all office and living accommodation, transportation, supplies (including scaffolding), surveys, investigations, testing, secretarial services, etc., in connection with the work.

5. OBLIGATIONS OF THE GOVERNMENT OF ZAMBIA

5.1 The Government will make available to the consultant all relevant reports and data in its possession and will endeavor to obtain copies of the original calculations and drawings from the design engineers. However, the consultant shall be fully responsible for the interpretation and use of the materials in question.

5.2 The Roads Department will liaise with other government offices as required in order to facilitate the consultant's work.

6. REPORTS AND TIME SCHEDULE

The consultant shall:

- 6.1 Commence his work within 30 days of the award of the contract (effective date of contract);
- 6.2 Within 8 weeks of the effective contract date present an Inception Report describing the progress of work and indicating possible changes in methodology and work program.
- 6.3 Within 20 weeks of the effective contract dates submit his Final Report containing all relevant information on the study methodology, details of all investigations, analysis, findings and recommendations, definition of proposed rehabilitation works and strengthening works, method of undertaking the work, costs, proposed implementation program, financial analysis and consequences of "no action taken".
- 6.4 Within 4 weeks of having received the Government's comments on the Final Report submit Tender Documents for the proposal selected.
- 6.5 Submit his evaluation and recommendations on contractors to be pre-qualified within 3 weeks of the closing date for applications for prequalification.
- 6.6 Submit a tender evaluation report within 4 weeks of the closing date for the submission of tenders.
- 6.7 Submit completed contract documents within 3 weeks after having received the request to do so.

Miscellaneous Terms of Reference{PRIVATE }

1. Reorganization and Strengthening of the Ministry of Works

Proposed Terms of Reference for Studies to Improve the Functioning of MCT and Coordination Between MCT, MOW and Other Transport Agencies

1. Introduction

The government is proposing to undertake a series of small studies to review the functioning and organizational structure of MCT and the need for better arrangements for coordinating the activities of MCT, MOW and other transport agencies. The studies will be carried out over a period of about a year and will involve preparation of short-term plans covering the period up to October 1995 and long-term plans which might be implemented thereafter. The studies will be guided by a small working level committee made up of selected staff from MCT and MOW, together with representatives of end users like THA, TRC and the road transport industry. The working level committee will forward the recommendations from each study to the IRP Inter-Ministerial Steering Committee (IMSC) for their consideration and action. It has been decided to carry out the review by using small studies, to ensure: (i) the process deals with the reforms on a step-by-step basis; (ii) it deals with the most important issues first; and (iii) produces results in a form which lie within the absorptive capacity of the IMSC.

The need for the review has been precipitated by recent actions and proposals to re-activate and restructure existing transport sector agencies. These include: (a) re-activation of the National Road Safety Council; (b) establishment of a Central Roads Board under existing legislation to advise MOW on ways to strengthen management of roads; (c) the proposed review of the Transport Licensing Authority Act; (d) the proposed review of the Maritime Merchant Act; (e) the proposal put forward by MCT to establish an autonomous Airports Authority covering the five main airports; (f) a similar proposal to establish a Civil Aviation Authority to manage minor airports and regulate air transport services; (g) the proposal to establish an autonomous Highway Authority to manage main and regional roads; and (h) the proposal to turn NTC into a consultant organization. Steps are also being taken to widen ownership of the RETCOs and UDA, although these agencies are essentially owned by the regions and Dar-es-Salaam City Council respectively and have only remained under the nominal jurisdiction of MCT for historical reasons. Once these actions have been put into effect, there will be a clear need to re-define the role of MCT, to restructure it and develop its manpower to enable it to effectively carry out its new policy, regulatory and coordination functions.

The restructuring of the transport sector seeks, among other things, to separate the regulatory and policy-making functions from those of implementation. It also seeks to concentrate all regulatory, policy-making and sector coordination functions under one ministry. The implementation functions could remain with other ministries. The restructured MCT would then perform the regulatory, policy-making and coordination functions for the sector as a whole. In this connection, MCT would be expected to perform at least five major tasks:

- (i) **Oversight.** There will be a need to ensure the autonomous transport agencies support overall national priorities, have policies which are consistent with the government's objectives regarding poverty (and, when the government wishes them to provide services which are not commercially viable, that such services are supported through public service obligation grants) and that the views of user groups (e.g., Tanzania Roads Association, Freight Forwarding Association, etc.) are fully taken into account. These oversight functions will involve liaison with all transport agencies and also with transport user groups.
- (ii) **Coordination: International.** The government is party to a number of important international agreements and treaties relating to international transport, particularly that relating to its membership of SADC. They cover civil aviation, maritime transport, road transport and telecommunications. Some, like the PTA agreement, cover a number of sectors, including road transport. The government clearly needs to monitor compliance with these agreements, review their effectiveness and be in a position to suggest amendments, or new agreements to safeguard its own national interests.
- (iii) **Coordination: Domestic.** There is need to coordinate the investment plans of the different transport agencies, to ensure they are consistent with the overall requirements of the government's development budget. This activity would include seeking agreement on an aggregate program which fits within the government's resource envelope, is consistent with its strategy on inflation and that loans are within the absorptive capacity of the domestic capital market (domestic) or the government's foreign exchange policy (foreign).
- (iv) **Regulation.** There will still be a need to regulate in the interest of safety (with regard to all transport modes, not only road safety) and in the interests of environment. This activity will involve setting standards and regulations (including regulations covering vehicle weights and dimensions, driver's licenses, etc.) and liaising with other ministries with regard to enforcement (e.g., Home Affairs).
- (v) **Monitoring.** There is a clear need to monitor performance of the transport sector to ensure government is aware of emerging trends, potential problems and issues which might require government intervention. This is particularly important in the case of international transit traffic where the government needs to make sure that its own transport industry (especially road transport) is not facing "unfair" competition from transporters in other countries.

2. Scope of the Studies

Each study will be expected, among other things, to produce a short-term plan to improve coordination and cooperation during the interim period before the civil aviation and roads are made autonomous and the government divests itself of the RETCOs and UDA. Following completion of the various studies, and endorsement of their recommendations by the IMSC, the separate studies would be consolidated and expanded to produce a long-term restructuring plan.

Short-Term Plans.

It is proposed that preparation of short-term plans should include, but not be limited to, the following four studies:

- A. Regulation and management of parastatal and other autonomous transport agencies.
- B. Strategic transport planning.
- C. Transport policy formulation and transport regulation.
- D. Regulation and monitoring of transport safety.
- E. Environmental management.

Each study would be expected to cover the following ground:

- (i) What are present arrangements for performing the above functions?
- (ii) Which other agencies does the activity involve and are there adequate arrangements for coordinating MCT's interventions with these other agencies?
- (iii) What capacity does MCT have to carry out the above functions?
- (iv) What is needed, if anything, to improve MCT's capacity to effectively discharge this function (including coordination with other agencies) and what does it require in terms of incentives, training and technical assistance?
- (v) Turn the above suggestions into a time-bound Action Plan aimed at improving MCT's capacity in the short-term to effectively discharge these functions.

Long-Term Plan

The long-term plan will consolidate the results of the short-term plans and will also consider more radical solutions to the systemic problems facing MCT. The long-term plan will therefore be expected to address the following issues:

- (i) Which tasks currently undertaken by MCT could be more effectively performed by another ministry and *vice versa*. For example, should telecommunications (which is an integral part of modern transport logistics systems) be transferred to the Ministry of Broadcasting and Information and, if so, what comparative advantage would this offer in terms of the long-term development of the telecommunications sector?
- (ii) What scope is there, if any, for creating more autonomous agencies to handle revenue-earning tasks performed by MCT on a more commercial basis (e.g., vehicle licensing).

- (iii) Based on the results of the short-term plans, prepare a detailed description of the main functions which MCT will be expected to perform in the long-term (i.e., after the transport sector has been restructured).
- (iv) Given the evolving role of MCT, is the present departmental structure still appropriate? In particular, given the growing importance of safety and environmental concerns, should there be a new Safety and Environment Directorate?
- (v) Examine how current functions are carried out at the regional level and indicate what arrangements, if any, might be required to ensure that the new MCT has an adequate regional focus.
- (vi) Does MCT have the capacity to discharge the above functions (e.g., those related to implementation of the MARPOL convention and other international agreements relating to sound environmental management practices)?
- (vii) Is the present incentive structure, including terms and conditions of service, sufficiently attractive to enable MCT to recruit and retain experienced technically-qualified staff? If not, what can be done to improve matters? Is there a role for long-term training and technical assistance in dealing with these staffing problems, including the need to second local consultants to occupy key technical positions in MCT?
- (viii) Outline areas where discharge of the above functions inter-faces with other ministries/agencies and what long-term arrangements are needed to coordinate interventions by different ministries/agencies.
- (ix) Based on the above analysis, recommend any changes in departmental/divisional organization, coordination arrangements, staffing levels, skill mix and command structure needed to improve MCT's capacity to effectively coordinate, regulate and formulate policies for the transport sector.
- (x) Prepare any necessary training and staff development plans to establish and strengthen the capacity of MCT staff to carry out the above tasks.

3. Reporting Arrangements

Summarize the above investigations in the form of short reports (in the case of short-term plans) and in the form of a consolidated report (for the long-term plan). The long-term plan should include an executive summary not exceeding 8 single-typed pages and an executive overview presenting key issues requiring ministerial decision in no more than 1 1/2 pages.

4. Estimated Costs

It is expected that there would be about 6 short-term studies, all would be done by local consultants and that each would on average require 6 wks of senior consultant time. The required budget for short-term studies would thus be \$45,000 (6 * \$7,500). The long-term study would require a further 6 months of senior consultant time amounting to a further \$30,000. The total costs of these short and long-term studies would thus amount to \$75,000.

2. Review of the Road Sector in selected Countries

Terms of Reference for a Review of the Road Sector in the SATCC Region

Introduction

SATCC, which is supported by the Nordic countries, is the transport and communications secretariat for the Southern Africa Development Community. Among other things, it shares experience between its member countries and promotes policy reforms which facilitate regional integration and more effective transport services. For some time, SATCC has been concerned about the poor state of the road network in the region. Many roads are in poor condition (i.e., they need to be rehabilitated) and most maintenance programs are under-funded and ineffective.

In this context, SATCC has taken a great interest in the Road Maintenance Initiative (RMI), financed by a coalition of donors (including Norway) and administered by the Africa Technical Department. The RMI has been working with nine target countries in an attempt to find ways of putting road maintenance on a sustainable long-term basis. The program is widely considered a success and has evolved the concept of *commercializing* roads by putting them on a *fee-for-service* basis and managing them like any other business enterprise. This concept was presented to SATCC Ministers at a recent meeting in Maseru and they have now requested the SATCC Technical Unit to: (i) prepare a paper reviewing the state of the road sector in SATCC countries; and (ii) request the RMI Unit to prepare a regional dissemination seminar to enable all SATCC countries to share in the *RMI message*.

This Terms of Reference deals with the initial review of the state of the road sector in the SATCC region.

Scope of Work

The consultants will be expected to undertake the following tasks:

- (i) Prepare basic statistics on the road sector in each SATCC country summarizing the following types of information: road lengths (trunk, rural, unclassified), condition (good, fair, poor), required annual maintenance, actual maintenance allocations, new investment, etc. The figures should be prepared for a target year (e.g., 1993) and, where feasible, should be compared with figures available for 1988 (i.e., from the Road Deterioration Paper and RMI Phase I Conference Proceedings).
- (ii) Summarize the institutional arrangements for managing the road network, including the role of central/local government, current staffing situation (as per the SATCC report on Technical Manpower Requirements), use of consultants/contractors, role of labor-based work methods, status of government plant pools, etc.

- (iii) Summarize the arrangements for financing roads, including whether there is a Road Fund (and whether active or not), how it is financed, is financing through "earmarking" or via a road tariff, and how effective are the financing arrangements.
- (iv) How are roads managed. Are they simply administered as a government department, or are there any mechanisms for introducing some form of market discipline (e.g., a Roads Board, or other form of road user involvement). How effective are these arrangements? Are any new initiatives planned in the future?
- (v) The above information will then be analyzed and summarized in the form of Tables and Annexes, giving sources and qualifications.
- (vi) Finally, the consultants will be expected to prepare a report covering the following topics: (a) current state of the road network; (b) an analysis of whether it is improving or getting worse; (c) key problems facing the road sector; (d) what might be done to overcome them and whether any SATCC countries have taken initiatives in this regard and how successful they appear to be; and (e) reforms needed to improve road sector performance and what role, if any, the SATCC Technical Unit might play in promoting these reforms.

Timing and Reports

It is expected that the work would start at the end of October and that an interim report would be submitted to both the Bank and the SATCC Technical Unit by the end of January. Following comments from these organizations, the paper would be revised for presentation at the first regional dissemination seminar in Pretoria at end February. After the seminar the paper would again be revised for publication in the seminar proceedings. The report should be no longer than 25 pages, plus Tables and Annexes, and should have a 1 1/2 page Executive Overview.

Costs

It is expected that the work would be carried out by 2 engineers, assisted by a management specialist. One of the engineers would be a Norwegian (tentatively Mr. Ole Sylte) while the other would be a road engineer from the region (tentatively, Mr. Tyson Ngoma, former Director of Roads, Zambia). The management specialist also comes from the region (tentatively M. S. Ganananada). It is expected that the local engineer would visit most SATCC countries, while the other two consultants would only visit on a selective basis. The report would be largely drafted in the field and discussed with the SATCC Technical Unit in Maputo before being finalized.

The total costs of the consultancy would be \$70,000, comprising fees, \$37,500; travel, \$26,200; and contingencies, \$6,300.

3. Paper for Regional Seminar on Scope for Private Sector Involvement in Toll Roads

Terms of Reference

The Road Maintenance Initiative (RMI), in conjunction with AF4IN, is organizing a regional seminar on the scope for private sector involvement in toll roads and bridges for the Africa region. The objective of the seminar is to inform participants of the conditions under which private sector involvement makes sense and what guarantees/commitments the bankers and concessionaires expect from the government. The expected outcome of the seminar will (hopefully) be a list of bankable toll roads/bridges which can then be come the subject of negotiation between the concerned governments and potential concessionaires.

As part of the preparations for the seminar, the Bank wishes to commission a brief resource paper outlining the concessionaire's point of view. The paper will be presented to the seminar and will also be published as an SSATP Working Paper (Sub-Saharan Africa Transport Program). The concessionaires are the primary deal-makers and the paper will need to cover the following issues:

- (i) What basic parameters does the typical concessionaire look at to establish whether or not a proposed scheme makes sense?
- (ii) What are the most important physical parameters (e.g., traffic volumes, likely diversion from/to other routes, role of the road in the overall network, composition of traffic, potential overloading, etc.)?
- (iii) What are the basic financial parameters in terms of access to domestic capital markets/resources, use of foreign funds, and involvement of IFC or other multilateral lenders?
- (iv) What sort of operating company does the concessionaire aim for and how is it usually structured in terms of local partnerships, involvement of companies with a proven track record of managing toll roads, etc?
- (v) What sort of guarantees does the concessionaire usually look for in terms of repatriation of profits, setting of toll levels, enforcement of traffic regulations, financial structure, permissible maintenance regimes, etc?
- (vi) What sort of concession agreements do the concessionaires favor and what conditions are usually attached to the state of the assets at the time they revert to the government?

The above findings are to be written up into a brief resource paper (25 pages plus Annexes) with a 1 to 2 page Executive Overview.

Restructuring and Privatizing Transport Enterprises{PRIVATE }

1. Sector-Wide Restructuring and Privatization

Terms of Reference for Restructuring and Widening Ownership of Transport Enterprises

A. Introduction

The Ministry of Communications and Transport (MC&T) is responsible for regulating and over-seeing the performance of a number of transport enterprises, including Zambia Airways Corporation (ZA), National Airports Corporation Ltd. (NACL), Contract Haulage Ltd. (CHL), United Bus Company of Zambia (UBZ) and Engineering Services Corporation (ESCO). The aggregate book value of these enterprises was K10.6 billion in 1990/91 (roughly \$212 million) and their replacement costs were probably two to three times this amount. These enterprises, together with Zambia Railways and the TANZAM Railway, constitute the backbone of the country's international and domestic transport system. The recent World Bank Transport Sector Public Expenditure Review nevertheless showed that most of these agencies are inefficient, are not serving the country's transport needs effectively and are imposing a serious drain on the government's overall fiscal revenues. In FY91 the drain amounted to K2,386 million (roughly \$48 million) and was almost entirely attributable to losses incurred by ZA.

B. Background

ZA is currently in a critical financial condition. It incurred a loss of K2,112 million (\$73 million) in 1990/91 and has only managed to keep afloat by running up large overdrafts and short-term debts. In 1990/91 these amounted to K1,384 million (\$48 million). The main reasons for poor performance are an unsuitable route structure, lack of a cost-effective sales organization, an unprofitable air freight business and low aircraft utilization. To survive ZA needs to be radically restructured and the British ODA is currently providing technical assistance to prepare an emergency rescue plan for the airline. It is expected that the rescue plan will have been agreed and under implementation before the consulting services described in these Terms of Reference begin.

NACL includes Lusaka international, Ndola, Livingstone and Mfuwe airports. These four airports handle over 30,000 aircraft movements per year (about two thirds being commercial flights), over 800,000 passengers and nearly 15,000 tonnes of freight. About 70 percent of the passengers are handled at Lusaka, 25 percent at Ndola and the remaining 5 percent at Livingstone and Mfuwe. NACL assets were valued at roughly K1,417 million in 1990 (roughly \$49 million), although their replacement costs are thought to be over \$100 million (the value of the assets and the terms of their transfer have not yet been agreed with the government). Buildings and civil works were valued at K1,146 million, navigational aids and telecommunication facilities at K120 million and motor vehicles and other equipment at K150 million. Many of the assets are in a

deteriorated condition and it is estimated that it will take nearly \$16 million (including \$14 million in foreign exchange) to rehabilitate them. There is also a need to spend a further \$11 million on modernization and extension of facilities, particularly to improve telecommunications and navigational aids.

NACL tariffs are relatively high and the airports they manage are classified as high-cost airports. Total revenues increased from K79 million (\$6.1 million) in 1989/90 to K243 million (\$8.4 million) in 1990/91 and produced net profits of K21 million and K51 million respectively, although accounts receivable and accounts payable are uncomfortable high. The rate of return on total assets in 1990/91 was 5 percent, up from an estimated 2 percent in 1989/90. The revenues consisted almost entirely of aircraft and passenger fees (landing, take-off, parking, navigation and passenger service departure fees). In 1990/91, a mere 16 percent came from other sources (i.e., from car parking fees). Furthermore, although revenues grew by a factor of three between 1989/90 and 1990/91, operating expenditures increased by a factor of five and administrative expenditures by a factor of four.

At the end of 1991 CHL had 206 trucks with an average payload of 30 tonnes. Many vehicles are old and only 155 are operational (i.e., fleet utilization is 75 percent). The corporation provides general haulage services in both domestic and international markets (Namibia, South Africa, Botswana, Tanzania and Malawi). About a third of their business is done on behalf of other public corporations, while the other two thirds is for private sector clients. Vehicle utilization is about 50,000 km per vehicle p.a., which is about average for heavy trucks in Africa (50,000 to 60,000 km p.a.) and in 1989/90 the tonnage per vehicle was 2,154 tonnes (down from 2,389 tonnes in 1988/89), which also appears reasonable. On the other hand, the number of staff per vehicle was 5.8 in 1988/89 and this rose to 6.4 in 1989/90. This is far too high and the corporation has already set itself a target to reduce this to 3.5 staff per vehicle.

CHL operates in a reasonably competitive environment. The corporation is in reasonable financial health, although debtors are becoming a problem. Profit before tax increased from K9 million in 1986/87 (\$1.3 million) on a turnover of K52 million to K72 million (\$5.6) in 1989/90 on a turnover of K241 million (\$18.7 million). Rate of return on total assets likewise increased from 19 percent in 1987/88 to 41 percent in 1989/90. Fixed assets are revalued on a cyclical basis and are revalued at least every three years. Total fixed assets increased from K70 million (\$9.6 million) in 1986/87 to K206 million (\$16.0 million) in 1989/90. Most new investments were financed from internally generated funds, with internal financing increasing from 45 percent in 1986/87 to 80 percent in 1989/90. Depreciation provisions appear adequate (the ratio of depreciation to fixed assets is about 10 percent), although they have fallen slightly in recent years. Depreciation provisions are sufficient to finance 10 to 20 new vehicles per year and, since the corporation's debt to equity ratio is still quite low, there is scope for financing additional vehicles through borrowing.

UBZ operates inter-city and peri-urban bus services. It currently has about 440 vehicles (250 are operational and 165 in service). About 80 vehicles operate inter-city services with route lengths of up to 800 km, while the remainder operate peri-urban services with route lengths of between 300 and 400 km. Fleet utilization is about 66 percent which is low. Low utilization

appears to be related to lack of standardization and poor maintenance. The corporation is also over-staffed, although less so than in the recent past. In 1987/88 it employed 26 staff per vehicle in service and this has now been reduced to 12 per vehicle. Vehicle utilization has also fallen. The number of vehicle km per vehicle per day fell from 440 in 1987/88 to 393 in 1990/91, while the number of passengers per vehicle per day fell more sharply from 571 in 1988/89 to 272 in 1990/91.

The corporation was restructured in 1988 and this had a dramatic effect on performance. In 1989/90 (after aggregate fare increases of nearly 200 percent) the corporation turned in a net profit of K72 million (\$5.2 million) on a turnover of K378 million (\$27 million). The corporation also earned 30 percent rate of return on total assets. Since then, however, performance has again declined with net profits falling to K41 million (\$1.4 million) in 1990/91 and they made a net loss of K78 million (\$1.6 million) in 1991/92. This decline occurred in spite of further fare increases. The rate of return on assets likewise fell from 30 percent in 1989/90 through 19 percent in 1990/91 and was negative in 1991/92. Other indications of the corporation's worsening financial condition include an increase in creditors and increased reliance on short-term loans to finance fixed assets.

ESCO was established in December 1989 to take over the responsibilities of the former Mechanical Services Department. These responsibilities included procurement of government vehicles, maintenance of government plant and equipment, and repair and maintenance of vehicles. ESCO inherited 2,500 staff (now reduced to 900) and assets, valued at the end of 1988, of K205 million (about \$20 million). The assets consisted of vehicles, some plant and equipment, workshops and a large stock of spare parts. There are nine main regional workshops and each has several district workshops under its control. Most work is concentrated in Lusaka, Livingstone and Kitwe. ESCO continues to procure government plant and equipment and provides four main types of service including: (i) repair and maintenance of plant and equipment; (ii) hire of plant and equipment (cranes, fork-lift trucks, compressors, etc.); (iii) operation of machine shops and metal fabrication facilities; and (iv) installation, maintenance and rehabilitation of air-conditioning equipment. About 70 percent of their revenues still come from government departments.

ESCOs financial position is precarious and government had to provide grants in FY91 and FY92 to keep the corporation solvent. Although the corporation has been in business for over two years, it is still in the process of getting auditors to produce a Statement of Affairs covering the first 15 months of operation (December 1989 - March 1991). Indications are that turnover for this period was about K90 million. However, this includes a large element of arrears (mainly attributable to insolvent government departments) and many of these commitments are likely to become bad debts. The corporation is also seriously short of cash and it has had to start selling spare parts to finance current operations. The corporation has also run up an overdraft of K80 million on which they are paying 46 percent interest. The financial position seems to be improving (unverified estimates are that losses were down to K60 million during the first quarter of 1991/92 and down to K7 million during the second quarter).

C. Objectives of Consulting Services

An emergency restructuring plan is already being prepared for ZA under assistance provided by the British government. Short-term restructuring plans still need to be prepared for the remaining transport enterprises (NACL, CHL, UBZ and ESCO). Once restructuring plans have been completed and are under implementation, the government wishes to diversify ownership of these enterprises and requires preliminary advice how to do this.

D. Scope of Consulting Services

There is an urgent need to improve the performance of the above transport enterprises to reduce the drain on the government's overall fiscal revenues. The government also wishes to redefine the boundary between the public and private sectors to increase opportunities for local participation in the ownership and management of public sector enterprises. The proposed consulting services are therefore expected to: (i) outline short-term options for restructuring NACL, CHL, UBZ and ESCO to prepare them for diversification of ownership; (ii) provide advice on the best ways of diversifying ownership of these enterprises; and (iii) evaluate the feasibility of the various options and recommend an action plan to put them into effect.

D.1 Short-Term Restructuring Options

The consultants will be expected to prepare short-term restructuring plans for each of the above four corporations. The plans must be prepared in conjunction with the management of each corporation and should, among other things, deal with the following issues:

National Airports Corporation

- (i) What would be involved in separating responsibility for management of runways and navigational aids from management of airport terminals, land and other related airport facilities?
- (ii) How should ownership of airport terminals, land and other related airport facilities be transferred to NACL (i.e., at what value, under which procedures and with what arrangements for rehabilitating deteriorated assets)?
- (iii) On the assumption that ownership of runways and navigational aids remains with the Department of Civil Aviation (DCA), what sort of management contract might be negotiated with NACL (or any other private sector entity) to cover management of these assets on behalf of DCA? The management contract should deal explicitly with arrangements for setting the tariff for use of these facilities, rehabilitating and investing in these assets, and administering the contract provisions.
- (iv) What steps might be taken to reduce debtors, diversify the corporation's revenue base, control costs and raise the rate of return on assets to about 10 percent.

Contract Haulage Ltd.

- (i) Review the existing program for reducing surplus staff, suggest ways in which it might be improved and agree on a time-table for introducing it.
- (ii) Recommend ways in which fleet utilization could be improved and recommend any actions needed to implement these recommendations (including introduction of staff incentive schemes, sale of over-aged vehicles, etc.).
- (iii) Recommend ways to improve control of spare parts, fuel and other supplies to ensure they are properly accounted for.
- (iv) Recommend any other actions needed (including reduction of debtors) to improve the corporation's financial performance.

United Bus Company of Zambia

- (i) Recommend ways to raise fleet utilization from 66 percent to more adequate levels, e.g., 80 percent, to increase vehicle utilization to about 450 km per day and increase vehicle load factors to between 500 and 600 passengers per day.
- (ii) Prepare a plan to lower staffing levels to fewer than 10 per vehicle and recommend ways to implement the plan over a reasonable time-frame.
- (iii) Recommend ways to reduce debtors and to convert the corporation's short-term loans into long-term debt (if necessary with government guarantees).
- (iv) Examine the corporation's workshops and advise on whether they should be operated under a management contract, or privatized. In the latter case, should the corporation use the privatized workshops on a contractual basis, or should it lease vehicles from a third part who would be responsible for maintenance and major overhaul of vehicles?
- (v) Recommend any other actions needed to improve the corporation's financial performance.

Engineering Services Corporation

- (i) Examine all possible ways of restructuring ESCO, including: (a) the feasibility of concentrating ESCO operations in the three main centers at Lusaka, Livingstone and Kitwe (the remaining activities either being leased to other users, or sold to the private sector); or (b) dividing it into separate business centers (e.g., procurement, plant hire, workshops and metal work), concentrating on those which are profitable and selling off or closing those which are unprofitable.
- (ii) In relation to the workshops under option (b) above, examine the feasibility of disposing of all workshops in large centers (where they compete with the private sector) and only retaining (government-owned) workshops in centers where no other services are available.
- (iii) Based on the above analysis, and bearing in mind the government's desire to preserve some capacity to maintain government equipment in remote rural areas, recommend which of the above options appears most desirable and outline an action plan to put the restructuring plan into effect.

D.2 Options for Diversifying Ownership

The consultants next task will be to outline the options available for diversifying ownership of the above enterprises, together with an achievable time-scale for doing so. The options should include Business-As-Usual (the base case), limited sale or issue of shares to existing employees to strengthen incentives, operation under a private sector management contract, operation under a franchise arrangement (the private sector entrepreneur leasing the assets), inviting a management and/or staff buy-out, or privatizing the corporations through outright sale. The time-scale for diversifying ownership should furthermore reflect the time needed to get the corporations into a sound financial condition and _ in the case of sales to domestic buyers _ should be consistent with the absorptive capacity of the domestic capital market.

Some of the specific questions to be addressed by the consultants include:

- (i) Valuation of the above corporations for purposes of diversifying ownership. This must take account of the state of their assets, their debt obligations and the state of their pension funds and other financial obligations.
- (ii) In the case of ZA, if it has been determined that the government would welcome an association with a foreign airline (this would offer opportunities to buy into an established international and regional route network), the consulting services should advise on; (a) desirable terms for such an arrangements (including amount of equity to be sold and the prospects for combining this with staff equity participation); and (b) the sort of airlines which might offer a suitable partnership (e.g., a European airline, Ethiopian Airlines, or South African Airlines).
- (iii) In the case of NACL, CHL and UBZ, to assist the government to determine whether its preference is for a management and/or staff buy-out, or sale to local financial interests, the consultants should explore the feasibility of these options and spell out the need to: (a) provide any loan guarantees; (b) issue shares as bonuses to reduce equity requirements for a staff buy-out; or (c) provide other forms of financial assistance to management or staff.
- (iv) In the case of ESCO, the government wishes to preserve the capacity to maintain government equipment in remote rural areas. Taking this into account, the range of options for diversifying ownership should be assessed and specific arrangements identified, including purchase by foreign buyers.

D.3 Feasibility and Action Plan

Any proposal for diversifying ownership of transport enterprises needs to consider the feasibility of negotiating a satisfactory management contract, franchise arrangement, or arranging a partial or complete sale. It also needs an action plan setting down the decisions and time-table required to implement the diversification of ownership. The consultants will therefore be expected to:

- (i) Recommend which of the above options appears most feasible and would also be financially attractive to the government.
- (ii) Prepare a time-table setting down the actions which need to be taken to implement the recommended options.
- (iii) Outline what impact the above options are likely to have on the domestic capital market.
- (iv) Indicate what the overall impact of diversification of ownership is likely to have on the government's budget and on overall corporate performance.

E. Timing and Implementation Schedule

from an inception report, due after one month, the consultants are expected to submit three reports. The first, dealing with the restructuring of the above corporations, should be completed by the end of month 5, followed by a report outlining the options for diversifying ownership 2 months later and the 3rd report dealing with the feasibility of these options and presenting the Action Plan another 2 months later (i.e., at the end of month 9).

F. Services to be Provided by the Government

The consultants will report to the Ministry of Communications and Transport (MC&T) and will liaise with the Corporate Finance Division of ZIMCO which is handling the government's overall privatization program. MC&T will provide one counterpart staff to assist the consultants with their work and to help arrange appointments with the corporations being studied and with other organizations as required. The government will not provide office space, vehicles, or any other support services to the consultants.

G. Staff Requirements

It is expected that the above work would require about 25 man-months of consulting services, including the services of a Project Manager to manage the studies and liaise with interested parties. The bulk of the consultants are expected to be accountants and financial specialists with knowledge of local accounting practices and the local capital market.