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PJ-ABT-792

15/09/2021

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**PRELIMINARY DRAFT
TECHNICAL WORKING PAPERS**

Prepared in support of:

The Malawi Railway Restructuring Project

Prepared by:

Abt Associates, Inc.

Funded by:

USAID/SARP/Zimbabwe

Funded via:

**The Privatization and Development Project
(Prime Contractor: Price Waterhouse)**

Foreword

Malawi Railways is presently undergoing a process of restructuring in order to become more efficient, viable and commercially oriented. The railway and Government of Malawi have requested technical and financial assistance from a multi-donor group, led by the World Bank, to assist with continued restructuring of Malawi Railways.

In advance of a final joint donor appraisal mission, expected to occur in April 1994, a consulting team fielded by Abt Associates Inc. was requested to undertake a number of technical analyses in support of project preparation and appraisal.

The consulting team was funded by USAID/Malawi through the Privatization and Development Project, in which Price Waterhouse is the prime contractor and Abt Associates is a subcontractor. Technical direction was provided to the team by USAID/Zimbabwe (specifically, SARP -- the Southern Africa Regional Program) and the World Bank's Task Manager, in addition to USAID/Malawi. The in-country work was carried out during March, 1994.

The consulting team consisted of: Mr. Anthony Davis, Team Leader (Abt Staff); Ms. Noreen McCarthy, Legal Expert (Abt Consultant); Ms. Jill Murdoch, Human Resources/Institutional Expert (Abt Consultant, on loan from Transmark); Mr. George Howson, Procurement Expert (Abt Consultant); Ms. Ellen Bobronnikov, MIS Expert (Abt Staff); Dr. Gregory Michaels, Environment Expert (Abt Staff); and, Mr. Samir Zaman, Social/Impact Specialist (Abt Staff).

Preliminary drafts of the Technical Working Papers which resulted from the above analyses are contained in this volume. They are presented in the following order:

1. **Legal Review and Assessment;**
2. **Human Resources Development Report;**
3. **Procurement Report;**
4. **Management Information Systems Development and Training;**
5. **Environment Assessment; and**
6. **Beneficiary Impact Assessment.**

TECHNICAL WORKING PAPER
LEGAL REVIEW AND DRAFT AGREEMENTS

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TECHNICAL WORKING PAPER

LEGAL REVIEW AND DRAFT AGREEMENTS

I. INTRODUCTION

In support of project design and appraisal of the Malawi Railways Restructuring Project, a Consultant Team fielded by Abt Associates, Inc. was asked to prepare selected technical working papers. One of the papers requested involved an appraisal of the legal aspects of restructuring the railway. This report outlines the findings of that appraisal.

II. SCOPE OF WORK

The main tasks of the legal component of the studies included consideration of three areas of review. The first concern was appraisal and revision of the railway's present corporate structure, with a view toward removing it as a statutory body and preparing it future private sector participation. The second was a Memorandum of Understanding between the Government of Malawi and the railway regarding the operation of the railway as a commercial enterprise. The third task involved a bi-lateral agreement between Malawi and Mozambique concerning cooperative operation of the two railways.

III. METHODOLOGY

To prepare this appraisal, Noreen McCarthy, a Senior Legal Expert, worked on the project in Malawi for a two-week period, following an initial preparation period in Washington, D.C. During the time period in Malawi, Ms. McCarthy worked closely with Mr. Savjani, counsel to the railway and expert on Malawi corporate law. The legal review task was conducted under the direction of the Team Leader, Anthony Davis of Abt Associates.

As part of the analysis, a range of interviews were conducted with railway management, government officials from the related agencies, and one representative from another statutory body in the transportation sector, Air Malawi (See, Appendix C: List of contacts). In addition, a comprehensive review of relevant laws was undertaken to ascertain the present legal environment and to evaluate the necessity for legislative amendments, if any (See, Appendix B: Bibliography).

Each of the three areas of appraisal are discussed in detail below.

IV. CORPORATE STRUCTURE

Malawi Railways has the objective of becoming commercially viable and a self-supporting enterprise on core railway operations. To facilitate this, the railway is considering amending its corporate structure to allow for greater autonomy and efficiency, and to provide the basis for eventual private sector participation. In this respect, corporate structure refers to the legal status of the company, its articles of association, its decision-making powers and legal reporting obligations, and the overall legal environment in which it operates. Accordingly, the Consultant Team has reviewed the corporate structure and relevant laws as they currently exist and evaluated possible alternatives which may be more conducive to achieving the company's goals.

A. Present Structure

Malawi Railway Limited is currently a private limited company incorporated in the United Kingdom, and a wholly owned subsidiary of the Malawi Railway Holdings Company, a corporate body created in Malawi by statute. The holding company holds virtually all of the shares of Malawi Railways Limited (417,675) on behalf of the Government of Malawi. Nominees hold an insignificant amount.

Virtually all of the shares of the holding company are in turn owned by the Government of Malawi, as expressly provided in the Malawi Railway Holdings Company Act.

Malawi Railway Limited wholly owns the Central Africa Railway Company Limited, which is a separate legal entity incorporated in the U.K. and is effectively dormant. This company owns only a short section of the track within Malawi that is south of Nsanje and is no longer operating as separate company.

The fact that Malawi Railway Limited is incorporated as a private company limited by shares means that it may restrict the right to transfer its shares, that the maximum number of its members (shareholders) excluding employees is 50, and that it may not make a public invitation to purchase shares. In addition, liability of the members is limited to the amount of unpaid shares.

Malawi Railway Limited is also a statutory company under the jurisdiction of the Department of Statutory Bodies. Although Malawi Railways Limited was not created by statute, it was declared to be a statutory body by the Department of Statutory Bodies in the Audit and Finance Act (Cap. 37:01). In practice, it is treated as a statutory body and heavily controlled by the Government.

With respect to its reporting requirements, the management at the railway report to the Board of Directors. The Board of Directors report to the Department of Statutory Bodies, and the Department of Statutory Bodies in general reports to the Office of the Cabinet and the President. Some issues, such as the sale of land or assets, are customarily decided at the level of the Office of the President.

With respect to its financial status, Malawi Railways Limited is currently insolvent, but has not declared bankruptcy or received any court order to liquidate.

Implications of the Present Structure

Under the present legal structure and statutory framework, the railway is owned and controlled by the Government of Malawi and limited in its ability to operate as an independent commercial entity. Decisions with respect to day-to-day operations and long-term development plans are primarily made by the Government or must be approved by the Government.

This is by virtue of the fact that all of the shares of the railway are held on behalf of the Government through a statutorily created holding company which gives significant control to the Government. This statute effectively acts as the legal instrument for defining the Articles of Association and gives details on who the Directors shall be and what their obligations are. Government is also involved in the decisions of the company by the fact that Malawi Railways Limited was declared a "statutory body" under the direct jurisdiction of the Department of Statutory Bodies and is heavily regulated by that Department.

The following identifies the specific laws which directly affect the railway's ability to operate commercially.

(i) Malawi Railway Holdings Company Act.

Through this statute, Parliament instructed the Government to transfer all of its present and future shares in Malawi Railway Limited to Malawi Railway Holdings Company. It contains numerous provisions regarding incorporation and management of the company. Notably, the Chairman and Board of Directors are to be appointed by the "Minister" and the Board must include at least three Government representatives. (The "Minister" is not defined in this statute, however the Audit and Finance Act defines it as the person "charged by the President"). The Board is specifically required to perform its functions "subject to the special or general directions of the Minister" and is precluded from exercising any borrowing powers without prior written consent of the Minister.

(ii) Audit and Finance Act.

Malawi Railway Limited is specifically declared to be a statutory body under this law. The Act defines a statutory body as any corporate body declared to be one by the Minister. Special financial reporting is required under the law such as bi-annual reports of profit and loss,

as well as major expenditures. Government funding is provided to the railway through this act, and any surplus funds are returned to the Government.

Because Malawi Railways Limited is a statutory body, the Department of Statutory Bodies determines the members of the Board of Directors, the tariffs to be charged (although as of last year this was relaxed), the routes and schedules, whether it provides passenger or freight services, who its management will be, how much they will be paid and what pay scale will be employed by the company for all employees. With respect to senior staff at the railway, the Board of Directors must first receive approval of the Department before it can extend an employment offer.

(iii) Statutory Bodies (Control of Contracts).

This law deals with Government control of commercial contracts involving statutory bodies. Malawi Railways Limited is included on the schedule of statutory bodies attached to this law. The statute states that any company, whether incorporated in Malawi or not, may be identified as a statutory body.

This law prohibits the railway from entering into any commercial contract which the Minister has deemed to be "in the public interest" to control, without prior written approval of the Minister. The only standard for disapproval is that the Minister determines that the contract would not be "in the public interest." Even with respect to those contracts which are approved, the Minister may attach any conditions concerning the parties or the terms as he deems to be "in the public interest."

There are criminal penalties (MK2,000 or two years in prison) for any company officer who enters into a contract without prior written approval of the Minister. The contract is void with respect to the other party and cannot be enforced.

Evaluation

The current structure facilitates Government subsidization of railway's activity and its ability to raise capital and assume debt. However, it also provides ample scope for the railway to be run on non-commercial basis at the discretion of the Government and enables the Government to make many of the railway's business decisions on a non-commercial basis. As noted above, for example, the standard used for approval of commercial contracts is stated as "in the public interest." The Board of Directors, and consequently the management, are required to act in accordance with the Minister's direction, regardless of the commercial consequences. The railway's first obligation could be interpreted as being to provide a public service as directed by the Government, and not to operate as a commercial enterprise.

In particular, the railway's corporate structure and the relevant legal/regulatory framework in which it operates affect several key areas of the railway's operation. These include the freedom to pay competitively, the freedom to charge based on a cost recovery basis,

and the freedom to choose profit-making routes.

With respect to labor, for example, most of the work force is subject to the Government pay scale and regulated by the Minister. Flexibility for providing remunerative incentives to maintain and attract a skilled work force is absent. Broader discretion with respect to financial incentives, such as merit-based pay and profit sharing, would enable the railway to make decisions which may better attract and maintain a qualified and efficient work force.

Another important aspect which is heavily regulated by Government under the current structure concerns the rates and services provided by the railway. While historically the Government has controlled the tariffs charged by the railway, the Government has recently lifted its control according to railway management, and now permits the railway to establish its own rates. Any corporate restructuring should ensure this is maintained.

With respect to routes, under the present structure the Government determines the routes and schedules of the railway. The railway does not have the ability to concentrate on profit-making routes or to provide only those services which make commercial sense, to the exclusion of unprofitable or "social good" services. A corporate structure which gave the railway discretion over its routes, and compensated the railway for any loss specifically related to providing services at the Government's direction, would be more conducive to operating in a commercially viable manner.

Other important areas of autonomy not realized by the present structure include decision making-power over the selection of the Chairman, members of the Board of Directors, top and mid-level management, long-term investment plans and other financial issues.

B. Options for Alternative Corporate Structure

In the section, four alternative corporate structures are identified and evaluated.

Option One -- Reincorporate and Vest the Assets

The first option for the corporate structure is to dissolve the current entities (Malawi Railway Limited and Malawi Railway Holdings Company), incorporate a single new private corporation in Malawi and vest all of the U.K. company's assets in the new corporation by Act of Parliament. All of the shares would still be owned by the Government.

Advantages

There are several advantages to this proposal. It eliminates the statutory holding company and the railway would no longer be directly subject to the requirements of that statute. The company would be incorporated in Malawi and its connection to the U.K. is severed. The assets of the old company would be simply vested in the new company by an Act of Parliament

which declares them to be transferred, eliminating the need for numerous conveyance documents for the many parcels of land and other assets owned by the railway through freehold, leasehold or possession. Finally, it gives the appearance of starting over with a clean slate, and may act as a catalyst for undertaking significant financial restructuring earlier than might otherwise be the case.

Disadvantages

There are several disadvantages to this option. All shares of the company would be directly owned by the Government, instead of through a holding company, giving the appearance at least of "nationalizing" what had technically been a private company.

Severing connections with the U.K. has nominal legal significance. At present the railway simply files fairly straightforward returns. However, there are strong feelings in the Government and the railway that it should be a domestic concern and reincorporation in Malawi would accomplish this.

Since Malawi Railways Limited is an "external" company under the Companies's Act, 1984, it must declare solvency before it can be dissolved. In essence, all of its creditors must be paid before it can go out of business. Thus, simply vesting the assets in a newly created company does not address the railway's financial problems. Vesting the assets also does not provide a tax benefit since the railway would in any case be exempt from taxes in accordance with both the Stamp Act and the Railway Act. In addition, transfer taxes and other outstanding taxes could simply be waived since the property belongs to the Government.

Significantly, the company would still be a statutory body and subject to regulation under the Railway Act. Thus, the main issues as outlined in the previous section concerning extensive Government control would still exist, and this restructuring would not ensure that the railway would operate in a commercial way or provide a basis for private sector participation. The only new autonomy gained would be from the Memorandum of Understanding (Section V).

The Case of Air Malawi

A review of Air Malawi's corporate structure indicates that the same approach (ie, Option One) was taken when it was restructured and the results may be instructive here. A new company was formed, the assets were vested by Act of Parliament, and the Government owned 100 percent of the shares in the new company.

The results to date are not very encouraging. While the stated original intent was to create a more autonomous, commercial entity, that goal has not largely been achieved in practice. The airline is Government owned and controlled today and still considered a statutory body. It does not set its own rates or appoint its own directors, and it is not a profit-making company. Only one of its directors is a business person, the others are Government representatives or non-business private persons.

However, the airline has a better chance to operate commercially than other statutory bodies because it must comply with stringent international regulations and compete for skilled labor in the international market. Consequently, it is allowed to pay competitively and is given ample funds from the Government to purchase expensive up-to-date equipment. These elements may not be present in the case of the railway.

Evaluation

The proposal to incorporate a new company in Malawi and vest the assets does not assure that the railway will operate commercially or efficiently. It also does not move the company closer to privatization or incorporate elements of privatization. If anything, the relationship to Government is closer in that they own the shares outright and more directly instead of through a holding company. Ownership of land and other assets is not clarified because all assets are transferred without conveyance deeds. The cost and time to reincorporate and enact vesting legislation is likely to be significant under current political conditions. The company would still be a statutory body and subject to extensive control by the Government. The Board of Directors and management will still be appointed by the Government. Except to the extent agreed upon in the Memorandum of Understanding, no additional autonomy is given the railway. Finally, a specter is raised that once restructured in this way, commitments to operating as a private company in the near term may be diminished.

Option Two -- Reincorporate in Malawi and Railway Holds Its Own Shares

A second option is to establish a new company in Malawi and have the company hold its own shares until it can be sold to a private person/concern or the shares made available to the public. The assets could be transferred by conveyance or by Act of Parliament. Conveyance might be preferable to ensure proper and clear title exists, thereby making the property more attractive to a private purchaser. The Government would no longer own the shares outright. However, some arrangement for equity in the new company may be appropriate, particularly as Government may want to convert debt to equity.¹ The company would be declared to no longer be a statutory body, subject only to safety regulations under the Railways Act.

This is the most progressive alternative but may not readily meet with Government approval. There seemed to be strong opposition in Government that it should ever relinquish more than 49 percent of the shares in the railway. However, it is also the structure most likely to ensure continuation of the company's momentum towards privatization. Railway management are likely to be favorably disposed to this option.

¹/ The Consultant Team was informed that Government already has the intention of converting debt to equity. However, an exact time table has not been established nor the exact amount of debt to be converted determined.

Advantages

There are many advantages to this proposal. It provides a structure most conducive to operating a commercial enterprise. The railway would have the freedom to pay competitively, charge based on cost, choose profitable routes, determine its own investments, and conduct a competitive and efficient operation. Arrangements could be made to provide services at the direction of the Government and to be compensated for resultant losses. The Board of Directors need not be predominantly Government representatives, but instead private well-established business persons, and could maintain true executive powers to make decisions and appoint other members of the Board and senior level employees.

It also is the most consistent with Government's stated commitment to commercial development in the Investment Development Act, and may enable the company to take advantage of changes from the new Capital Markets Act. It would provide the railway with time to find a competitive and appropriate buyer, perhaps attract a foreign partner for a joint venture (as generally encouraged by the Investment Development Act), or sell stock on the open market. Thus, it should be consistent with the spirit of the Government's stated policies regarding private sector development more generally.

Disadvantages

The primary disadvantage is that it may be hard to convince the Government of this alternative. As noted earlier, it would mean relinquishing more than 51 percent of the shares, and there appears to be strong opposition to doing this.

It may also require legislative amendment, since under the current law a company may not own its own stock. However, Article 73 of the Companies Act, 1984, provides that a company may own its own shares for up to twelve months when it acquires the shares of another company. While subject to interpretation, this provision indicates that self-ownership is not strictly ruled out. Furthermore, in this respect, Malawi law is considered out-dated. The U.K. and the U.S. already have amended their laws to allow a company to hold its own shares. Thus, it would be a progressive move in a positive direction and enhance the overall investment climate in Malawi. Any delays resulting from legislative amendment, therefore, may be worth it in this case.

Finally, the exact mechanism by which the railway holds its own shares needs to be given careful consideration. Initial outright ownership of the shares by management and/or workers is not advisable or practical. In the first instance, an arrangement should be sought whereby the shares are held in escrow, or as private Treasury stock, or a similar instrument.

Option Three -- Dissolve the Holding Company; U.K. Company Holds Shares

The third alternative is to dissolve the holding company and transfer the shares back to Malawi Railways Limited. Again, the Government could be compensated by an equity arrangement. This would remove the restrictions of the holding statute and Government ownership. To be fully effective, Malawi Railways Limited would also have to no longer be a statutory body.

Advantages

This achieves some of the same benefits as Option Two. The company is given autonomy and freedom to operate in a commercial manner. It has an additional benefit of not requiring amendment of legislation, since under U.K. law a company may own its own shares.

Disadvantages

The strongest disadvantage is that it still is not a Malawi company. Given the strong sentiment in favor of domestic incorporation, it may not be worth the trade-off to reincorporate in the U.K., simply in order to avoid changing the Malawi law which prohibits a company to hold its own shares.

Option Four -- Restructure without Reincorporation

A final option is to pursue the railway restructuring plan without reincorporating the company in Malawi or dissolving the holding company. This would be appropriate if a private sale is the end goal and restructuring is viewed only as temporary, in any event. Since the Memorandum of Understanding is intended to allow the Company to operate commercially, cosmetic restructuring (which would result under one of the other three options if the railway is not in fact given more autonomy but simply reincorporated) accomplishes little and is likely to be costly and time-consuming.

In addition, as a survey has been concluded which largely determines what property belongs to the railway and its value², further assurance in this respect for a private buyer may be unnecessary. Also, a sale to a private buyer would most likely include a plan to form a new corporation which would make reincorporation at the current time somewhat redundant.

²/ The survey addresses a significant share of the railway's real estate assets. However, some further work will be needed to build consensus for the basis of valuations, to include all assets, and to conclude unresolved issues (e.g., compensation for properties transferred to the Port Authority.)

Advantages

The advantage is that this option saves time and money which, if changes through another option are cosmetic only, is a practicable approach. It also eliminates the need for vesting assets through an Act of Parliament and retains at least the appearance of some distance between Government and Malawi Railways Limited, i.e. it does not look like the company and its assets were nationalized.

Disadvantages

The disadvantages are that it does not eliminate Government control or involvement and does not move the company towards privatization, except insofar as restructuring will make the railway more attractive to a prospective purchaser. It also does not satisfy the sentiment that the railway should finally be a Malawi company incorporated domestically. It should at best be considered a temporary solution.

C. Competition Concern

To the extent that tariff control is lifted under corporate restructuring, the railway is likely to have a significant amount of monopoly power on certain routes and with respect to certain services. At present, Malawi has no competition commission and no law which prohibits abuse of monopoly power. Thus, except insofar as other modes of transportation serve to provide competition and to keep the railway's tariffs competitive, the railway will be free to charge whatever tariffs it chooses without any limitation.

Addressing this concern will not be simple. The railway should be encouraged to operate in a way that maximizes profits and responds to market forces. This is especially true at the beginning stages of its recovery. The railway's own history is evidence of how stifled a company's incentive to be efficient can become if its potential to maximize profits is curtailed. Thus, any attempts to dictate tariffs should be avoided.

Nevertheless, it may be appropriate to come to some agreement as to a rate formula, such as cost plus a maximum stated rate of return, in those areas in which it is unavoidable and practicable to have a natural monopoly. As quid pro quo for the monopoly power, the railway should agree not abuse such power in its rating policy.³

^{3/} A similar formula should be used for services provided at the Government's direction -- the railway is compensated for its losses up to the cost of providing the services plus a rate of return necessary to cover general operating expenses. See, Memorandum of Understanding, Paragraph 6. Tariffs for services provided under a natural monopoly situation are addressed in Paragraph 7 of the Memorandum of Understanding.

Further attention needs to be given this issue. It may not be resolved until the restructuring is underway and the exact nature and structure of the markets in which the railway will operate are known. At present, it is an issue that needs to be raised and kept in mind throughout the process.

D. Conclusion

The present corporate structure may facilitate distribution of government funds to the railway, but falls short of providing an appropriate framework for restructuring and participation by the private sector. Under this structure, Malawi Railways Limited is owned, directed and controlled by the Government of Malawi, as a statutory body and as a wholly owned subsidiary of a statutorily created holding company.

All of the options presented have advantages and disadvantages. In terms of moving in a positive direction toward private sector participation, **Option Two** may provide the best basis in the long-run. It would establish a new private company in Malawi whose shares were not held by the Government, but rather by the company itself, and available for private sector purchase at any time. Although it may require legislative amendment, it would be a progressive change which would provide a means of facilitating other parastatal companies in the future to move in the direction of privatization. The disadvantage is that Government may not readily approve of this option. In any event, further development of this possibility would be valuable.

Option One may encounter the least resistance from Government and be a viable alternative. However, it also runs the risk of being no more than a cosmetic change if it is viewed as permanent and not merely a holding position during restructuring, in which case it is questionable whether time and money should be spent doing it. If cosmetic only, it may be more practicable to maintain the status quo, as discussed in **Option 4**. Either option would still provide the mechanism for facilitating financial support from Government and/or donors.

Regardless of the technical structure adopted, the key qualifications of any plan are to remove the company as a statutory body and allow it the freedom to determine the level of tariffs, choose the services and routes offered, attract and maintain skilled workers and qualified management through competitive pay and other financial incentives, and implement an executive board of directors with responsibility and incentive to operate on an efficient and commercial basis. A corporate structure which embodies these factors will make a more competitive enterprise and be more attractive to private investors.

V. MEMORANDUM OF UNDERSTANDING

The objective of the Malawi Government and the railway is to establish an "arms-length" relationship which better enables the railway to operate on an independent and commercial basis. The Memorandum of Understanding (MOU) will set forth the nature of this relationship and affirm each party's commitment to it. A draft Memorandum is attached as Appendix A.

In particular, the Memorandum will set forth the following essential elements.

Railway Obligations:

- i. To provide services on an efficient and cost-effective manner.
- ii. To meet stated operational targets and stated rates of return.
- iii. To implement a revised corporate organizational structure, revised capital structure and manpower reduction plan.
- iv. To determine its rates on a cost based formula and not discriminate with respect to users.
- v. To provide certain services at the direction of the Government with the understanding that the Government will compensate the railway for resultant losses as agreed upon.
- vi. To not abuse monopoly power or purposely engage in anticompetitive conduct.
- vii. To take reasonable measures to comply with international agreements to which the Government is a party.
- viii. To file progress reports with the Government on a periodic basis, reflecting financial and performance conditions.

Government Obligations:

- i. To provide support facilities and other resources as needed by the railway to carry out its revised corporate organizational structure and capital structure.
- ii. To allow the railway sole discretion with respect to tariffs, routes, types of services, schedules, terms and conditions of providing rail transport, and compensation to employees and selection of staff.

- iii. To compensate the railway for losses incurred in providing services at the direction of the Government for passenger services on the core routes, and for staff on routes West of Lilongwe and south of Limbe.
- iv. To compensate the railway for losses incurred as the result of providing services at the direction of the Government and in accordance with bilateral agreement with Mozambique.
- v. To allow the railway freedom to undertake investments in support of its operations.
- vi. To assure access to import licenses necessary to maintain its operations.
- vii. To allow the railway to freely enter into commercial contracts as necessary for the operation of the railway, notwithstanding the provisions of the Statutory Bodies (Control of Contracts) Acts, Cap. 37:01.

The Memorandum of Understanding takes on an even greater significance in light of the fact that few options for altering the railway's corporate structure (see Section IV) are promising with regarding to engendering greater autonomy or commercialism at the railway or providing a strong basis for private sector participation.

Selected technical details in the MOU will require further specification, especially with regard to the operational performance set for the railway and the measurement of profitability or return on capital employed.

VI. REVIEW OF BI-LATERAL AGREEMENT PROVISIONS

In this section, the agreement between Malawi Railways Limited (MR) and the Direccao Nacional dos Portos E Caminhos de Ferro (CFM) of Mozambique are reviewed with respect to cooperation on inter-rail services between Malawi and Mozambique along the Nacala and Beira corridors. The objective of the two parties is to establish a cooperative agreement and to achieve efficiency of operation with respect to rail transportation between the two countries.

Present Agreement

There is presently in force an "AGREEMENT OF COOPERATION ENTERED INTO BETWEEN THE DIRECCAO NACIONAL DOS PORTOS E CAMINHOS DE FERRO AND THE MALAWI RAILWAYS LIMITED", which was dated and signed by the two parties on October 22, 1984, in Limbe. This agreement is fairly comprehensive in nature and contains numerous provisions regarding cooperation and mutual assistance, finances, rates, use and maintenance of equipment and vehicles, accounting procedures, liability, and railway personnel.

The execution of this agreement has not been fully successful in achieving the cooperative relationship envisaged. Two significant issues arose with respect to its implementation. The first issue involved retention by CFM of vehicles owned by MR. MR suffered financial loss as a result. This was primarily due to the civil war in Mozambique and may be an easily avoided problem in the future.

The second issue arose from the collection of joint tariffs. MR was responsible for collection of tariffs for services provided jointly by CFM and MR. However, MR did not fully remit to CFM its full share of the collected tariffs. The reason for this seems to be a combination of seeking compensation for the losses from the retention of vehicles noted above, and later, an inability to pay because of MR's own financial problems. This second issue has been exacerbated by the fact that MR must settle the amount owed in US dollars, while the tariffs were collected in Kwacha. The amount due has substantially increased due to the devaluation of the Kwacha against the dollar since the tariffs were collected. MR now owes interest and must spend substantially more Kwachas to pay the amount owed in dollars. ⁴

Suggested Improvements to Future Bi-Lateral Agreements

An improved agreement among the two companies would provide for a seamless transfer of rail services at the border and, to the extent possible, door-to-door service for the carriage of goods between Mozambique and Malawi, as well as to destinations in third countries to which cargo is being shipped. The door-to-door service should incorporate all forms of intermodal transport as a single service to shippers. These objectives would have a substantial impact on the efficiency and competitiveness of the services provided by the railway system.

With respect to CFM, it seems essential for their agreement that MR be operating as a commercially viable enterprise with significant elements of privatization. This condition is understandable given MR's history and current condition. A commitment to operating as a private enterprise would provide CFM assurance that the success of a joint effort would not be hindered by Government interference or lack of incentive on MR's part to be profitable. An arrangement which gave each party a direct share in the profits from an efficiently run joint effort would also provide incentive to operate efficiently and to not obstruct the other party's schedule or delay return of vehicles.

With respect to the financial operations, an arrangement providing for collection of a joint tariff by either party in a neutral, hard currency, and immediate transferral of the funds to a mutual account from which the respective payments can be drawn should be considered. This would resolve some of the previous accounting and reimbursement problems. Logistically, either party could collect the amount from the liable party (shipper, receiver or passenger, as

⁴ At the time of writing this report, the Consultant Team was informed that a settlement had been reached with regard to accounts due, and the Government of Malawi agreed to fund the settlement in installments on behalf of MR.

the case may be) in dollars and immediately deposit it in an account in a major bank in Malawi/Mozambique. At the end of the month, an independent auditor/accountant would justify the amount owed against shipping receipts (or other applicable document) and pay MR and CFM separately.⁵ A similar arrangement is currently being successfully used by Mozambique and Zimbabwe.

Details of this financial arrangement would of course still have to be worked out and may prove difficult to get off the ground initially. In addition, a similar proposal had been suggested some time ago, but ran into strong objection from shippers and buyers due to a prepayment requirement. Shippers claimed that normally the buyer paid upon receipt of the goods and that they (the shipper did not want to be out-of-pocket. The buyers, on the other hand, did not want to pay for the transportation costs until the goods had arrived. This might be remedied by MR and CFM each initially depositing a certain amount into the account to serve as a base until payments could be made by the responsible party (shipper or buyer.)

To facilitate cooperation, a percentage of the tariff deposited into the account should be attributed to joint expenses, including administration of the account and joint investments in maintenance and acquisition of vehicles and other equipment. This would provide financial incentive to both parties to operate cooperatively, and it would be a positive step in the direction of operating both railways as one endeavor to the extent possible.

Finally, a forum for dispute resolution must be readily available and binding on the parties, and enforceable sanctions imposed for non-compliance with respect to financial or operating provisions.

In sum, an agreement between MR and CFM should contain provisions concerning the need for (1) a seamless transfer of carriage of goods or cargo; (2) door-to-door service; (3) intermodal transport elements efficiently and as a commercially viable enterprise with significant elements of privatization; (5) collecting joint tariffs and depositing them into a joint fund for appropriate distribution and investment; and (6) providing a procedure for dispute resolutions and imposition of sanctions.

⁵ An alternative proposal suggested is to have CFM collect tariffs owed on ascending traffic (imports) in dollars, and for MR to collect tariffs on descending traffic quoted in dollars but collected in Kwacha and accounted for at the official Reserve Bank exchange rate. A similar mechanism used for remittances to the other party, as is currently followed in theory, would be used. However, under this proposal, no one party would have exposure to the other for the full amount of tariffs, irrespective of the direction of traffic. The process would be even further simplified when Malawian firms can, in practical terms, hold dollar denominated accounts domestically.

Proposed Provisions of the Agreement

The following paragraphs reflect the parties' commitment to operating on a commercial/private basis and also address suggested provisions for joint tariff collection and establishment of a mutual fund. The remaining agreement as it stands will need to be updated and simplified to facilitate easy compliance and to address the other concerns noted above.

1. Preamble The following commitments should be included in the preamble.

WHEREAS the Governments of the Republic of Malawi and the People's Republic of Mozambique desire to promote and facilitate international rail services by and between their two countries on an efficient and commercial basis;

WHEREAS the Governments of the Republic of Malawi and the People's Republic of Mozambique have affirmed their commitment to promoting maximum cooperation between the DIRECCAO NACIONAL DOS PORTOS E CAMINHOS DE FERRO (CFM) of the People's Republic of Mozambique and MALAWI RAILWAYS LIMITED (MR) of the Republic of Malawi;

WHEREAS the Government of the Republic of Malawi has entered into an agreement with MR to recognize it as an autonomous, commercially operated enterprise in accordance with THE AGREEMENT BETWEEN THE GOVERNMENT OF THE REPUBLIC OF MALAWI AND MALAWI RAILWAYS LIMITED, and MR and the Government of the Republic of Malawi have agreed to otherwise fulfill their respective obligations in accordance with such agreement;

AND

WHEREAS the parties hereby affirm their commitment to the above objectives and recognize the expediency of promoting and establishing cooperative rail service on traffic between the two countries;

WHEREAS the parties hereby affirm their commitment to operating their respective railways, particularly with regard to through-traffic, on an efficient and commercial basis, and in the manner of a private enterprise;

WHEREAS the parties hereby affirm their commitment to establish an arrangement whereby rail service between the two countries will operate as a joint enterprise to the extent necessary and practicable in order to achieve efficiency and improve competitiveness of both companies in the transportation sector;

The DIRECCAO NACIONAL DOS PORTOS E CAMINHOS DE FERRO (CFM) of the People's Republic of Mozambique and MALAWI RAILWAYS LIMITED (MR) of the Republic of Malawi hereby agree to the following: [provisions of agreement....]

2. Joint Tariff Collection and Fund The following paragraphs should be included in a section concerning financial cooperation and rates. The tariff formula could be amended to provide more discretion to either party but should ensure that rates will be competitive.

2.1 Joint Tariff Schedule - The parties agree to establish a Joint Tariff Schedule reflecting the sum of the amount that each party has separately determined to represent the cost of providing transportation services within its borders, plus a reasonable rate of return based on a commercially justified and customarily accepted standard. The amounts in the Schedule shall also reflect a 5% surcharge in excess of the full tariff in order to cover the cost of administering the fund and auditing the accounts on an independent basis as set forth below, as well as joint investments to facilitate through-traffic.

2.2 Joint Bank Account Fund - The parties hereby agree to establish a joint bank fund in the National Bank of Malawi/Mozambique. Each party agrees to initially deposit into this account an amount equal to \$ X. When either party contracts with a passenger or shipper of goods to provide cross-boarder transportation services, i.e., from Mozambique to Malawi along the Nacala or Beira Corridor or vice versa, such party shall collect the applicable tariff, as set forth in the attached Appendix A (appendix to the bi-lateral agreement would be the Joint Tariff Schedule), from the passenger or shipper with whom it has contracted. The party will deposit within three days the full amount collected into the fund. At the end of each month an independent accountant shall determine the amount due each party based on invoices received from the parties and in accordance with the tariff schedule.

APPENDIX A

MEMORANDUM OF UNDERSTANDING

Preliminary Draft¹

MEMORANDUM OF UNDERSTANDING, dated. _____ 1994
BETWEEN
THE GOVERNMENT AND REPUBLIC OF MALAWI
THROUGH
THE MINISTRY OF TRANSPORT AND COMMUNICATIONS (MTC)
AND
MALAWI RAILWAYS LIMITED (MR)

1. The Government, consistent with the Railways Act 69.03, is desirous that MR provide rail, freight and passenger services on an efficient and commercial basis.
2. In conformity with this, MR will undertake all necessary actions within its powers, inter alia, to:
 - (a) closely plan its level and pattern of services to meet the changing needs of its customers; and
 - (b) manage its operations so that services are provided efficiently and in a cost-effective manner.
3. MR will carry on its operations and conduct its affairs in accordance with sound administrative, financial and operations management, assisted by competent staff in adequate numbers. To that end, MR will implement:
 - (a) the revised corporate strategy, organizational structure, and operational improvement plan; and
 - (b) the manpower restructuring program.
4. The Government shall ensure that MR's revised capital structure is implemented.
5. In carrying out its operations and financial affairs, MR will use its best efforts to achieve stated operational targets and stated rates of return on total capital employed. It is understood that such performance shall be subject to review and to amendment pursuant to the provisions

¹ This is a very preliminary draft (draft date: 18 March, 1994). Once the railway restructuring program is defined with more precision, and performance targets and measurement of profitability established, then a substantive revision of this document should be undertaken prior to negotiations.

of Paragraph 15 of this memorandum. Further, it is understood that the stated rates of return on capital employed shall be subject to amendment, to take account of the revaluation of fixed assets to be undertaken as may be required by law. For purposes of this Memorandum, capital employed means the sum of capital, provisions, long-term and short-term debt, accumulated profits and losses and any other terms deemed appropriate. Profits to be taken into account in determining the rate of return shall be profits before interest on debt and before loss from depreciation due to foreign exchange.

6. The Government shall support and provide all the facilities and other resources required by MR in the implementation of the revised corporate organization and capital structure referred to in Paragraph 4. To ensure that MR can implement its restructuring plan, MR may accordingly sell or dispose of any assets it currently owns, including any land subject to approval of the Ministry of Lands, equipment and subsidiary companies as necessary for efficiency and commercial purposes. Likewise, to ensure that MR can continue to adapt its manpower levels to changing commercial conditions, MR may reduce its staff complement as necessary for efficiency and commercial purposes. Accordingly, MR shall implement the manpower restructuring program referred to in Paragraph 3 above, which may be revised following a manpower reduction study. Any plan to reduce staff levels will be in accordance with an agreed upon retrenchment plan.

7. Notwithstanding any existing law, rule or regulation to the contrary, including those contained in or adopted pursuant to the Railways Act 69.03, MR shall be solely responsible for determining the cost of its services, including any usual and customary terms and conditions relating to its services, and its schedule and routes of transit, except as set forth in Paragraph 8. MR hereby affirms that in costing its services or determining terms, conditions, schedule and routes of transit, it will not discriminate with respect to users, except to the extent that such discrimination shall be commercially justified. To the extent that the Government directs MR to provide certain services or to operate on certain routes, in particular for passenger services on core routes, and for staff on routes west of Lilongwe and south of Limbe, the Government shall cover losses incurred by MR in accordance with Paragraph 10 below.

8. Where conditions exist which make it unavoidable or practicable for MR to enjoy natural monopoly power, and MR is essentially free from competition from other transport suppliers in that market, MR railway affirms that it will not abuse such monopoly power and will not cost its services in excess of the amount reasonably believed necessary to meet its targeted rate of return on its investment. MR further affirms that it will not engage in any other conduct, whether individually or in collusion with others, with the aim of distorting or restricting competition in the field of domestic and international transport of passengers and freight, including those services provided via air, shipping or road transportation, or any sub-market thereof, unless commercially or economically justified or directed to do so by the Government in accordance with other paragraphs of this Memorandum.

9. MR hereby affirms that at the direction of the Government it will use all reasonable means to fulfill the obligations of the Government in accordance with the AGREEMENT ENTERED INTO BETWEEN THE GOVERNMENT OF THE REPUBLIC OF MALAWI AND THE GOVERNMENT OF THE PEOPLE'S REPUBLIC OF MOZAMBIQUE IN RESPECT OF THE ROUTING OF RAIL TRAFFIC THROUGH THE PORTS OF NACALA [AND BEIRA] AND THE PAYMENT FOR RAIL TRANSPORT SERVICES, and any future amendments to or revisions of that agreement. To the extent that MR provides services in accordance with this agreement, the Government shall cover respective losses incurred by MR in accordance with Paragraph 10 below.
10. The Government hereby affirms the principle that MR in costing its services shall make full provision for the earning of a rate of return on its fixed assets, as periodically revalued, (or as its surrogate, an agreed definition of capital employed) sufficient to cover its financing charges on existing assets and ensure that its cash flow generation will be sufficient to cover the financing charges related to the cost of replacing its fixed assets. Efficient operating conditions means that MR shall be in compliance with its stated performance targets.
11. Losses incurred by MR when providing services at the direction of the Government will be determined on a three monthly basis by MR and presented to the Ministry of Finance. Payments to MR to make good such losses will be made to MR pursuant to the appropriate Government budgetary procedures as decided by the Ministry of Finance. The Government hereby undertakes that such payments will be subject to audit and that adjustment will be made on the basis of such audits. No other losses incurred by MR in its operations shall be reimbursed by the Government.
12. The Government hereby permits MR to undertake investments in support of its commercial operations subject only to:
- (a) the agreed upon debt to capital employed limitation; and
 - (b) submission to MTC, as part of the railway's annual capital budgeting process, technical, economic and financial evaluation of any investment exceeding US \$1 million, which the railway proposes to undertake outside of the planned program of investments under the proposed Railways Restructuring Plan. It is understood that this latter figure will be subject to review on an annual basis, taking into account changes in the prices of major classes of transport services assets.
13. The Government assures the availability of any necessary import licenses with respect to items required by the railway for maintenance of equipment and assets.
14. The Government hereby permits MR to enter into commercial contracts as necessary for the operation of the railway, notwithstanding the provisions of the Statutory Bodies (Control of Contract) Act.

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15. In order to assist Government to determine progress made in meeting its obligations under this Memorandum, MR shall prepare promptly at the end of each six months during its financial year, but in any event, not later than 45 days thereafter, and furnish to MTC, a report setting forth, inter alia:

- (a) its performance as against stated operating targets;
- (b) its profit and loss and cash flows for the six month period, cumulative statement of profit and loss and cash flows for the year to date and, if relevant, revised projections for the financial year as a whole;
- (c) statement of progress on key capital projects under implementation and compared to those contemplated in its capital budget by MTC; and
- (d) any actions which it proposes to take to remedy any major deviations which have been identified in the report.

16. Promptly at the end of each of MR's financial years and in any event not later than six months after such year end, MR shall prepare and furnish to MTC a report on its performance, an independently audited statement of its financial position, and a narrative report on the causes of deviations of actual performance from the agreed performance.

17. The Government and MR shall cooperate fully to assure that the objectives of this Memorandum are accomplished. To that end, the Government or MR, as the case may be, will promptly inform the other of any condition which interferes with the achievement of the objects of this Memorandum.

18. The Government and MR agree to use their best efforts to amicably resolve any disputes which may arise in the performance of each party's obligations under the Memorandum. In the event that any dispute cannot be amicably resolved, the parties shall apply to an Arbitration Tribunal for resolution of the dispute. The Arbitration Tribunal shall consist of one or more arbitrators selected from a panel nominated by or on behalf of the railway, and an equal number of arbitrators selected from a panel nominated by the Minister. The Chairman of the tribunal will be appointed by **[an independent arbitration association in Malawi]**. The tribunal's conclusions shall be final and binding upon both parties.

19. In the event that MR violates the prohibition against abuse of monopoly power or collusive behavior set forth in Paragraph 8 of this Memorandum, MR will be liable to pay to the Government any amount charged in excess of the cost of providing such services. In addition, the railway will be liable to pay a fine of not more than KW2,000 for each such offense. A determination that MR has violated the prohibition will be determined by the Ministry of Transportation **[or Justice?]** and will be final.

A

20. This Memorandum shall become effective on the date on which it is signed by the parties thereto and shall remain in effect for a period of five years.

21. Any amendment to this Memorandum or the Schedules thereto shall be effected by mutual agreement of the parties through an exchange of letters.

On behalf of the Government
of Malawi

On behalf of the Railway

Dated: _____ 1994

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APPENDIX B

BIBLIOGRAPHY AND SUMMARY OF SELECTED RELEVANT LAWS

This bibliography contains a list of the laws which relate to establishing and operating a business in Malawi. Those laws which are especially pertinent to the railway and the circumstances of this case are discussed in relevant part.

1. **The Railways Act, 1907 as amended through 1975.**¹ Cap 69:03

The Railways Act regulates the construction, control, management and operation of railways in Malawi. It presently applies to Malawi Railways Limited and would apply to any newly formed corporation operating the railway, regardless of who is the owner. It also applies to the Lake Services to the extent that it is used for railway traffic and belongs to or is hired by the railway. Section 2.

The Act prohibits a railway from giving undue or unreasonable preference or disadvantage to any particular person or traffic. This would apply regardless of whether the railway is a private or government enterprise. Section 25 (1).

The Act prohibits a court from executing a decree to attach any of the railway's rolling stock, machinery, plant, tools, fittings, materials or effects used in operation of the railway. Section 33 (1). However, the earnings of the railway may be attached. Section 33 (2). This seems to apply when creditors attempt to attach property of the railway in settlement of debt owed.

2. **The Companies Act, 1984 and Subsidiary Legislation, 1986**

Except those companies created by Parliament, any new company incorporated in Malawi would be incorporated under the Companies Act, 1984. The existing Malawi Railways Limited, although incorporated in the U.K., is subject to the provisions of Part XIII of the Companies Act, 1984, which relates to "external companies" (see below.)

Private v. Public Company: A private company restricts the right to transfer shares, limits the number of members (shareholders) to fifty not including employees, and prohibits public invitations to acquire shares or debentures. All other companies are public companies. Sections 5(2) - 5(5).

¹/ Not published in the Railway Act are rules and regulations made by the Railway Administration under the Railway Act that relate solely to the internal management of the railway and charges and tariffs.

Limited v. Unlimited: Either a private company or a public company may limit the liability of its members to an amount unpaid by the shares ("limited by shares") or to an amount the members respectively undertake to contribute to the assets in the event of its being wound up ("limited by guarantee"). There may also be no limit to the liability of the members ("an unlimited company").

The type of company can be changed (i.e., from a limited to an unlimited company) after incorporation in accordance with Sections 24-28. However, there seems to be no provision allowing for the conversion of a company limited by guarantee to a company limited by shares.

Nothing in the law seems to preclude joint ventures.

Share ownership: The law prohibits a company with a share capital from acquiring or holding "any interest in its own shares, either directly or indirectly through nominees or otherwise." Section 73. However, a company may hold shares of another company in which it has acquired a controlling interest, for twelve months from the date the company acquired or held such interest. The second sentence is subject to interpretation as to whether this might include Malawi Railway Limited from receiving its shares back from The Malawi Railway Holding Company and holding them for twelve months (as opposed to being held by the government.)

External Company: Malawi Railway Limited is an "external company," which is defined under the law as "a body corporate formed outside Malawi which establishes or maintains an established place of business in Malawi." Section 306(2).

To hold land - An "external company" has the same powers to hold land in Malawi as if it were a company incorporated under the Companies Act, 1984.

To wind up - An "external company" may be wound up in Malawi whether or not it has dissolved or ceased to exist in its country of origin, and is subject to all of the provisions of Part XII which sets forth the conditions for winding up a company incorporated under The Companies Act, 1984. Section 319.

A further condition with respect to external companies is that they may only be wound up "on a petition to the court." A court may wind up a company when it is being dissolved or wound up in its country of incorporation, when it has ceased to do business in Malawi, when it is unable to pay its debts, and inter alia, when the court is of the opinion that it is just and equitable that the company should be wound up. Section 319. For winding up purposes, an external company will be treated as if it were incorporated under the Companies Act and only the assets and liabilities situate in Malawi shall be considered the company's assets and liabilities.

Winding Up Provisions - Chapter XII

A company is prohibited from transferring shares once winding up has commenced. Section 247 (2).

The Directors must make a declaration of solvency and state that they will be able to pay their debts and liabilities within twelve months after commencement of the winding up.

If the winding up is ordered by a court, a liquidator is appointed and the court may vest the company's assets in the liquidator. Section 227. The liquidator may sell all real and personal property and resolve any debts and liabilities to creditors or others with justified claims. Section 230.

Statutory Bodies - winding up: a body corporate created by law is not subject to the winding up provisions if the law under which it was created makes specific provisions for winding up.

3. **Malawi Railway Holdings Company Act, 1968 - Cap 69:04**

The Malawi Railway Holdings Company Act incorporates the Malawi Railway Holdings Company by Act of Parliament, creating a statutory body in the true sense of the word. Liability of the Company is limited to the amount of unpaid shares. The principal object of the Company is to hold shares on behalf of the Government of Malawi in any company engaged in railway or other transportation operations (including by air and water.) Section 4(1)(a). Its purpose is not restricted to the U.K. company Malawi Railway Limited, but presumably could hold the shares of any subsequent or similar company.

Transfer of Shares - This Act instructed the Government of Malawi to transfer all of its shares in Malawi Railways Limited in the Malawi Railway Holding Company. This transfer included shares which were held by Lonhro and which would be bought by the Government. Section 5 and 6(3).

Board of Directors - The Act provides that the Chairman and the Board of Directors shall be appointed by the "Minister" (which is not defined here, but is defined in the Statutory Bodies Act as the Minister "charged by the President"), and shall include at least three Government representatives - one from each of the following: the Ministry of Finance, the Malawi Development Corporation, and the Agricultural Development and Marketing Corporation. Section 8 (2).

The Board is specifically required to perform its functions "subject to the special or general directions of the Minister."

Borrowing Powers - The Board is precluded from exercising any borrowing powers without prior written consent of the Minister.

Taxation - The Company is not subject to any stamp, income or other tax in Malawi. Section 15.

4. **Statutory Bodies**, including 14-12-90 amendment notice, 1966 - 18:07

The law allows the appropriate Minister to control all commercial contracts made by a statutory body by requiring prior written approval of the Minister of any contract the Minister deems it to be "in the public interest" to control. Sections 3 and 4. The only standard for approval is "in the public interest." Even with respect to those contracts which are approved, the Minister may attach any conditions concerning the parties or the terms as he deems to be "in the public interest." Section 5.

Penalty - There are criminal penalties (K2,000 or two years in prison) for any company officer who enters into a contract for which he should have received prior written approval. The contract is void with respect to the other party and can not be enforced. Section 7.

Statutory Body - This includes "every corporation ... incorporated within or outside Malawi" and specified in the "schedule" (attached to the act). Section 2 (1). The Schedule includes "Malawi Railways Limited."

5. **Investment Promotion Act, 1991** - No. 28 of 1991, Published January 31, 1992.

This Act begins with a statement regarding investment policies and procedures.

The Act creates the Malawi Investment Promotion Agency - a body corporate. The principal objective is to give practical and prompt effect to the Government's stated commitment regarding investment in Malawi. Section 5.

One of its functions is to identify partners in or outside Malawi for joint venture business opportunities in Malawi. Section 8.

One of the stated Government policies is deregulate the private sector, including divestiture of state-owned companies. It notes that steps have been taken to rectify the external transport situation. Schedule, Paragraph 3.

Freedom to Invest - Domestic and foreign investors may invest in any sector of the economy, with no restriction on ownership, size of investment, or source of funds. Joint ventures between domestic and foreign investors are encouraged. Schedule, Paragraph 5

Company Formation - Investors will only be required to provide the Registrar of Companies with basic information on proposed business activities. Schedule, Paragraph 6.

Railway specific - Government is taking initiative to develop the Northern Corridor route to the port of Dar-es-Salaam in Tanzania and the rehabilitation of the Nacala Railway Line to the port of Nacala in Mozambique. This is noted in the Act as recognition of the railway's role in supporting private sector development. Schedule, Paragraph 9.

Investment Protection - "The Malawi Constitution and existing laws and regulations provide further assurance that investors' assets are protected." Schedule, Paragraph 17.

6. **Capital Markets Act, 1990 - Cap 46:06**

This Act provides the framework for developing a capital market and sets forth the conditions for a self-regulatory organization (like a securities exchange commission.)

7. **Treaties and Conventions Publication, 1984 - Cap 16:02**

This law enables the publication by the Minister of the bilateral agreement with Mozambique.

8. **Conveyancing and Lands Acquisition Act, 1952 and 1957**
Cap 58:03 and 58:04, especially Sections 9,10 & 11.

9. **Land (property law), 1965 - Cap 57:01, pages 1-16.**
Specific areas of land are addressed in the subsidiary legislation.

10. **Open General Import License, 1967 - Cap 18:18**

11. **Labour related laws:**

Labour Legislation (Misc. Provisions), 1964 - Cap 56:01

Employment, 1964 and 1939 - Cap 55:02 and 55:04

Trade Unions, 1959 - Cap 54:01

Trade Disputes (Arbitration and Settlement), 1952 - Cap 54:02

Regulations of Minimum Wage and Conditions, 1958 - Cap 55:01, pages 1-13 only

Workmen's Compensation, 1946 - Cap 55:03

12. **Stamp Duties, 1969 - Cap 43:01**

Section 88 of this Act expressly exempts Government from payment of the tax.

13. **Environmental Laws - none found.**

14. National Airline Act, 1967 - Cap 70:03, pp 1-4

Section 5 of this Act vest the assets of the Corporation of Malawi in Air Malawi.

15. Malawi Road Transporters Authority, 1970 - Cap 69:05

This Act vested assets of limited company in the authority created by this statute. The Authority is now defunct.

16. Bankruptcy Act - Cap 11:01

17. Deeds of Arrangement - Cap 11:02

18. Factories Act - Cap 55:07

This Act contains safety provisions only.

APPENDIX C

LIST OF CONTACTS

In preparation of the legal aspect of the restructuring project, meetings and/or interviews were conducted with the following individuals.

1. Mr. Savjani, Counsel for Malawi Railways, Savjani and Co., Blantyre, Malawi.
2. James G. Naphambo, Company Secretary, Air Malawi, Blantyre, Malawi.
3. B.Y.M. Makwinja, Deputy General Manager, Malawi Railways, Limbe, Malawi.
4. Enoch R. Limbe, Deputy General Manager, Malawi Railways, Limbe, Malawi.
5. Robin Foster-Brown, Finance Manager, Malawi Railways, Limbe, Malawi.
6. E.C. Nkhoma, Company Secretary, Malawi Railways, Limbe, Malawi.
7. Mr. Markham, General Manager, Malawi Railways, Limbe, Malawi.
8. Chris Morgan, Financial Management Advisor, Department of Statutory Bodies, Office of the President and Cabinet, Lilongwe, Malawi.
9. Mr. M. Chitimbe, Chief Transport Officer, Ministry of Transport, Lilongwe, Malawi.
10. Mr. Magalasi, Treasury Department, Lilongwe, Malawi.
11. Frank Kippax, Commercial Officer, British High Commission, Lilongwe, Malawi.
12. E. Bousfield, First Secretary, British High Commission, Lilongwe, Malawi.
13. Ben Lyster-Binns, Third Secretary, British High Commission, Lilongwe, Malawi.
14. Peter K. Pohland, Deputy Resident Representative, World Bank Mission in Malawi.

APPENDIX D

CORPORATE DOCUMENTS OF MALAWI RAILWAY

This appendix sets forth the Articles of Incorporation and Memorandum of Association, to the extent available, of the following companies: (1) Malawi Railways Limited, (2) Nyasaland Railways Limited (the original company), and (3) The Central Africa Railway, Limited, a wholly owned subsidiary of Malawi Railways Limited. It also contains other pertinent corporate documents such as Special Resolutions by the Board of Directors and important agreements to which the company is a party.

I. Malawi Railways Limited

A. Memorandum of Association

As adopted by Special Resolutions passed December 28, 1950 and August 11, 1966. The objects of the Company are "to acquire not less than 90 per cent of the issued share capital of Central Africa Railway Company, Limited and to acquire the undertaking and assets and to take over and discharge or satisfy the debts and liabilities of Shire Highlands Railway, Nyasaland, Limited...."

B. Special Resolution regarding the qualifications of Directors.

C. Special Resolution regarding the power of Directors to borrow money, and to mortgage or charge its undertaking property and uncalled capital.

D. Special Resolution regarding the qualifications of Directors (Passed June 25, 1968), and Special Resolution to extend business into manufacturing.

E. Lease Agreement between Malawi Railways Limited and Tanzania Zambia Railway Authority.

F. Agreement between the Government of the Republic of Malawi and the Government of the People's Republic of Mozambique. Unsigned (1983 approximately). Passed August 11, 1966.

G. Form 288 indicates that Mr. John Edward Smith of Lonrho (Malawi) Limited is the Company Director.

Schedule to Form 363s indicates the following Members (Shareholders): Malawi Railway Holdings Company holds 417,675 shares; Secretary to the Treasury holds 400 shares; Christopher Barrow, Naming Lomba [?] Tea Estates holds 100 shares; and Harry Thindwe holds 100 shares.

II. **Nyasaland Railways, Limited** (Original company)

A. Certificate of Incorporation. October 3, 1930
Memorandum of Association, as altered by Special Resolution passed on December 28, 1950.

B. Special Resolution changing the name to "Malawi Railways Limited." Passed September 17, 1964.

III. **The Central Africa Railway, Limited**

A. Memorandum of Association and Articles of Incorporation
Adopted by Special Resolution April 27, 1931.

B. Share Capital - 525,000 Ordinary Shares authorized and issued. "All held by Malawi Railways Limited" (1968, approximately)

C. Special Resolution regarding Director qualifications.
Passed June 25, 1968.

D. Special Resolution allowing for pensions for employees.
Passed December 28, 1950.

E. Memorandum from F.W. Markham, General Manager, regarding the filing of Notice of Change of Directors pursuant to Section 288 of the U.K. Companies Act 1985 (sic). Document indicates that The Central Africa Railway Company Limited is a wholly owned subsidiary of Malawi Railway Limited and incorporated in the U.K. The company owns only a short section of the track within Malawi that is south of Nsanje and is no longer operating as a separate company and is "effectively dormant."

Markham indicates that it still is a separate legal entity with some assets, including debentures in Malawi Railway. Therefore it must still hold a Directors' Meeting at least once a year.

Director: The "288 Forms" indicate that Mr. John Edward Smith of Lonrho (Malawi) Limited is the Corporate Director (as of 9/23/93).

Members (Shareholders): Sun Insurance Limited (London) holds 524,800 shares; Christopher Barrow, Naming Lombe (?) Tea Estates holds 100 shares; Enoch Raphael Limbe holds 50 shares; and Harry Thindwa of Limbe holds 50 shares.

IV. **Roadmarc Limited** (unclear of relationship)

Memorandum and Articles of Association

TECHNICAL WORKING PAPER
HUMAN RESOURCES DEVELOPMENT REPORT

Prepared in support of:

The Malawi Railway Restructuring Project

Prepared by:

Abt Associates, Inc.

Funded by:

USAID/SARP/Zimbabwe

Funded via:

The Privatization and Development Project
(Prime Contractor: Price Waterhouse)

TECHNICAL WORKING PAPER
HUMAN RESOURCES DEVELOPMENT REPORT

1 INTRODUCTION

1.1 Background

Malawi Railways (MR) is in the process of restructuring and has requested donor assistance. A Project Appraisal Mission, with joint representation from the World Bank, USAID and the ODA, is scheduled to visit MR in April 1994. In preparation for this Mission, USAID funded a consultant team to draft various technical working papers on a number of issues related to a possible project.

1.2 Scope of Work

The present paper covers the human resource aspects of the MR restructuring. The main issues identified in the Scope of Work include: (i) an assessment of the effect of the proposed project on the workforce of MR; and (ii) a review of how the effects of retrenchment can be mitigated.

1.3 Methodology

Information was collected from: managers of MR through discussion with them and from documents produced by MR; consultants' reports written for MR; personnel managers in other industries in Malawi; and representatives of various government departments.

1.4 Structure of Report

This report first looks at the retrenchment exercise that took place in MR between November 1993 and April 1994. It then assesses the effects of the program as well as possibilities for improvement in the future retrenchment exercise. This is followed by an analysis of the prospects confronting redundant staff and proposals for ways in which donors could assist.

The report continues with a brief discussion of the other aspects of MR's restructuring exercise, including: the management of change process; organizational change; the employment package; and training needs. The report concludes with a summary of recommendations made.

2 THE RETRENCHMENT PROGRAM

2.1 Background

One of the findings in the Transmark Report¹ was that productivity was extremely low. Largely as a result of the closure of the Nacala line (due to the war in Mozambique), operational activity was minimal and staff numbers were high as staff had been retained in anticipation of a re-opening of the line. Under the circumstances, the consultants recommended a reduction from the 1990 figure of 3,998 employees to 2,500.

2.2 Staffing Requirements

At the commencement of the current fiscal year (1993/94) there were 3,019 employees in railway service. A determined policy of retrenchment that commenced in November 1993 has reduced staff by 1,100. The expressed intention was that by 1st April 1994 there would be 2,152 people in employment with MR. In fact, there will still be 2,382².

The draft Corporate Plan (February 1994) assumes further reductions through natural wastage, or retrenchment if necessary, of between 100 and 200 each year until by 1998/99 there will be 1,460 staff left on the books. In the first breakeven year (1996/7), there will be 1,800 staff still in employment.

Two alternative scenarios of the scale of MR's operations was put together by the General Manager at the request of the World Bank. These give, respectively, a slightly less optimistic view of railway performance (the "Middle" scenario) and a much less optimistic view (known as the "Doomwatch" scenario). Lower freight traffic volumes have been assumed than those anticipated in the Corporate Plan and in the Doomwatch scenario all passenger services have been closed leaving only the "core railway". In the first the breakeven year is, again, 1996/7 and the General Manager estimates that staff required to implement that scenario will be 1,602. In the Doomwatch scenario, the breakeven year is 1995/6 at which time it is estimated that 1,110 staff will be required.

¹ Report on Malawi Railways commissioned by ODA from Transmark, UK in 1990/91.

² It will already be seen that staffing figures do not always tally. Such discrepancies remain unexplained. Detailed information on staffing matters is available but it is not systematically collated or presented.

There are, therefore, three different possibilities for staff requirements envisaged over the next few financial years:

	<u>1994/5</u> (Target)	<u>1995/6</u>	<u>1996/7</u>	<u>1997/8</u>
Corporate plan	2152	2000	1800	1660
Middle scenario	2152		1602	
Doomwatch scenario	2152	1110		

The Scope of Work did not require the consultant to make an independent assessment of staffing needs. Projections by MR have therefore been accepted as given.

2.3 The Severance Exercise

2.3.1 Selection of Staff

The recent retrenchment exercise was a straightforward shedding of staff and not conducted as a coherent and systematic reflection of other restructuring activities. Some of the employees retrenched worked on the passenger service between Salima and Mchinji, which has been closed. Others came into one of four categories:

- retirement because they were over 60 (the official retirement age);
- early retirement for "non-key" staff who were over 55;
- less than 5 years service with no special experience or training;
- poor disciplinary or health record.

The retrenchment has been undertaken in 6 phases between October 31st 1993 and March 31st 1994. (In practice, Phase 6 was split into Phases 6a and 6b.)

2.3.2 Profile of Redundant Staff

Details of staff retrenched by department, by age, by skill level or by salary were not readily available at the time of the analysis, but the following information was obtained:

- 897 staff were shed up to and including Phase 6a of the retrenchment program.
- Of these:
- 255 people were retired as over 60 years of age;
 - 40 people between the ages of 55 and 60 were given early retirement;

- 602 were made redundant.
- the majority of redundant staff are said to have been unskilled workers from the permanent way (Civil Engineer's Department);
- ages of the 897 staff retrenched in the first six phases ranged between 26 and 60;
- years of service ranged between 3 and 41 years;
- the majority of staff were relatively junior. Salaries ranged between MKw197 per month and MKw1,539 per month, the average salary of those dismissed being MKw600;
- 278 were classified as skilled staff; and
- 135 were displaced from urban centres (Blantyre, Lilongwe and Salima) with the remainder based at rural stations or depots.

2.3.3 The Severance Package

Redundant Staff. It is specified in the MR Conditions of Service that redundant staff receive a lump sum which is equivalent to two weeks' wages for each year of service that they have completed with MR. In the present exercise the MR management found that the redundancy terms for government employees were slightly more generous in certain circumstances than the MR formula. The government scheme offers 3% of the annual wage to employees with less than 5 years service per year of service, paid as a lump sum; 5% to those with 5 - 9 years service; and 6% to those with over 9 years service. The most generous of the two schemes was applied on a case by case basis.

Pension contributions, which are paid by staff at 5% of salary, are returned as a lump sum. Senior staff with long service can, at management's discretion, receive the employer's share of the contribution as well (between 8% and 12%).

Redundant employees also receive a relocation allowance which is the amount considered necessary to move the employee, his/her family and their household goods back to their "home" village. This allowance is given whether or not the employee plans to move location and can be received in kind (MR has taken out a contract with a trucking company to provide the removals service), or in cash if the employee prefers. If a retrenched employee decides not to relocate, they must at least vacate their house which, in most cases, is supplied by MR.

All of the costs of the retrenchment exercise to date have been borne by government. This amounts to an approximate total of MKw5.7 million (about US\$1 million, depending on exchange rate used).

The Railway Workers' Union of Malawi has asked that the severance package be doubled to one month's salary for each completed year of service. This has been rejected by management and the Union has appealed to the Ministry of Labour, which is currently considering the proposition.

Retired Staff. Retired staff receive a pension which amounts to approximately one third of their salary. This pension ceases when the employee's contributions to the scheme have been used up. It is not, therefore, a generous pension scheme and it is also adversely affected by inflation.

Staff who were retired early had their pension made up as if full contributions had been made until the age of 60. All retired staff also receive the relocation allowance.

Many staff who were retired early were unhappy with being given a pension and made requests to be treated as redundant rather than retired so that they could have the lump sum of money rather than the meagre pension. The Trade Union supports this request on the grounds that such workers are being denied their expected earnings for a number of years. A textile company in Malawi, David Whitehead & Co. Ltd., did, in fact, make this provision when they laid off a number of workers in 1992.

2.3.4 Effects of Retrenchment

Retrenched Employees. Those employees who are made redundant lose not only their job but also their homes, health care (MR owns and operates clinics in Limbe, Lilongwe and Salima), free travel on the railway network as well as certain other services (subsidized canteen, etc.). Staff who are retired retain health care.

This affects not only themselves but all members of their family who are considered to be dependent on them. The Trade Union estimates that, if 1,000 people are made redundant, a total of 4,000 people are directly affected and effectively lose their livelihood. This is considered by the consultant to be a conservative estimate.

Staff Continuing in Employment. The protracted nature of the retrenchment exercise has had a deleterious effect on morale of remaining employees who now see their "job for life" as being potentially insecure. There has been little communication effort to explain that the retrenchment is part of an on-going process to which they can contribute and which will, in the long term, make their jobs more secure. What is more, despite an "implied" increased workload, they are receiving no additional reward.

It is recommended that any future retrenchment only be undertaken as part of a structured plan to reshape railway operations.

2.4 Future Retrenchment

Natural wastage is running at approximately 10% per year. Once that is taken into account on a staffing figure of 2,382, the alternative retrenchment programs for the three different scenarios supplied by MR (see 2.2 above), exclusive of natural wastage and including the outstanding need to achieve the 1994/5 target figure of 2,152, would be:

	1994/5	1995/6	1996/7	1997/8
Corporate plan	230	Nil	Nil	Nil
Middle scenario	505	275		
Doomwatch scenario	1272			

Unlike the Corporate Plan, the latter two scenarios do not specify if further retrenchment will be necessary or desirable after breakeven point is reached. Annual retrenchment is similarly not specified for the middle scenario, so 50% of the total reduction required to achieve the breakeven position has been assumed for each year (plus, in the first year, the number required to get to the target start point).

The same proviso regarding acceptance of MR's figures at face value pertains (as in 2.2 above). The actual numbers for retrenchment will not be known until the nature of the restructuring project is defined, including what services are to be kept in-house, what contracted out, hived off, etc.

2.5 Options for Support

It is recommended that support be given to create improvements in the severance package. A question to be answered before decisions can be made on the level of support required for the severance package is whether support is only to be for future retrenchment or whether it is to be retroactive for those who have already been retrenched.

Support for future redundant staff, as well as those already retrenched, is recommended as, by standards in other countries in Africa, two weeks' salary per year of service is very low. A recent USAID project in Mozambique recommended 3 months' salary per two years of service for redundant staff. Salaries of railway employees in Malawi are extremely low, even by Malawi standards, and an average severance payment (of approximately MKw3,000) would not purchase a roof for a house.

Support could be in the following forms.

1. Increased severance payments to staff to be retrenched in the next three years. It is recommended that the formula for calculating payment per year of service be:

Less than 10 years	4 weeks' salary
10 and less than 15	5 weeks' salary
Over 15 years	6 weeks' salary

In the absence of knowledge of grade, etc. of the future retrenched staff, calculation of cost can only be very approximate. Assuming the government and/or donors continue with payments at the current rate, approximate support costs would be:

Corporate plan scenario: over one year.	MKw690,000 US\$130,000
Middle scenario: over two years.	MKw2,340,000 US\$ 435,000
Doomwatch scenario: over one year.	MKw3,820,000 US\$ 710,000

2. Payment of a housing allowance to enable purchase of appropriate materials to build a house. At present costs, MKw6,500 per employee is recommended.

Costs of this support would be:

Corporate plan scenario:	MKw1,500,000 US\$ 280,000
Middle scenario:	MKw5,000,000 US\$ 940,000
Doomwatch scenario:	MKw8,270,000 US\$1,500,000

3. Retroactive support to those staff already retrenched.

Severance payment addition:	MKw3,500,000 US\$ 650,000
Housing allowance:	MKw6,700,000 US\$1,240,000

3 MITIGATION OF EFFECTS OF RETRENCHMENT

3.1 Housing

It has already been recommended that staff who are retrenched be paid a housing allowance to enable them to purchase construction materials for a house in the area to which they move with their families after leaving the railway's employ.

An alternative form of assistance with housing would be to set up a low interest credit fund to assist those employees who do not wish to move from their railway house to purchase that house from MR.

MR would like to keep a number of houses for key employees (as yet undefined) but has expressed a wish to divest itself of considerable numbers of its houses and has already offered some to other government departments. MR's own parlous financial state means that the houses cannot be given free to long serving employees but a suitable credit scheme made available to ex-employees could assist both the railway's financial position and the displaced employees.

A recent Valuation Report commissioned by MR puts a nominal average value of MKw18,000 (US\$3,300) on railway houses. A credit fund could be established and held by MR such that MR has the houses removed from its books and receives compensation for them while the employees pay back the money on long-term loans at advantageous rates of interest.

It is recommended that the houses be sold off to ex-employees at a discounted rate for a number of reasons.

- (a) The nominal values quoted are probably above actual market price.
- (b) It would be an additional advantage to staff losing their job.
- (c) Some of the houses are likely to be located in areas that would not make them readily saleable to other people.
- (d) The railway would incur administrative (and perhaps transaction) costs if it had to sell the houses on the open market.

Assuming 25% of those made redundant might wish to take advantage of this opportunity and assuming a discounted sale price of 60% of nominal value, the approximate total cost of the initial credit fund would be:

Corporate plan scenario:	MKw630,000
	US\$116,000
Relocation savings:	MKw 35,000
	US\$ 6,500

Middle scenario:	MKw2,106,000
	US\$ 390,000
Relocation savings:	MKw120,000
	US\$ 22,200
Doomwatch scenario:	MKw3,435,000
	US\$ 640,000
Relocation savings:	MKw195,500
	US\$ 36,200

Retroactive establishment of the fund to benefit those who have already been made redundant (where that might still be of some benefit to ex-employees who have not yet been able to relocate) would involve the following approximate cost, assuming take-up rate of 15% of those laid off:

Fund requirements:	MKw1,670,000
	US\$ 310,400
Relocation savings:	MKw95,000
	US\$17,500

3.2 Employment Prospects

MR's assumption at this point in time is that most retrenched personnel will return to their "home" village where they will take up subsistence farming either on family land or on land that the village Chief assigns. This represents a distinct reduction in standard of living.

Other employment prospects are bleak in Malawi at present. Several parastatals and private companies have recently laid off workers (for example, Air Malawi, Admarc). The unemployment rate is clearly very high but it is impossible to put an accurate figure on it as there is no clear assessment of the labour force participation rate. The job base in the formal sector is around 169,000, so few opportunities are likely to arise.

It is said that there is a shortage of technicians in the country. With some additional research this could be confirmed and specified. If the shortage is a reality then support should be given in terms of funding for training in the appropriate skill for suitable candidates selected from those displaced from the railway. Until recently little reputable adult vocational training existed in Malawi but this sector is now receiving donor support, notably from the United Nations and the German government, so suitable training may be available.

The amount of support would depend on the type of skills needed, the suitability for retraining of those people made redundant, and the nature of the training facilities. This cannot be specified until the detailed retrenchment program is available.

In certain circumstances the railway's training school may be suitable to provide skills training

facilities using visiting specialist trainers.

Where suitable candidates are identified consideration should also be given to the provision of scholarships to enable ex-employees to follow studies of their choice for which they did not have the opportunity prior to their railway career.

3.3 Small Business Development

The most promising hope for future employment is for assistance to be given to retrenched employees who wish to develop small businesses.

Clearly this is not an option that will appeal to a majority of staff, although the "entrepreneurial spirit" is present in Malawi as in many African countries. It is, moreover, government policy to encourage small business development which is seen as potentially making a long-term contribution to growth. However, research in other countries in Africa has shown that microenterprises have only a small role to play in the generation of employment.

Those retrenched staff who want to invest their severance pay in a business enterprise or who wish to develop some activities they or their families may already be pursuing in the informal sector, will require assistance both in terms of finance and advice.

3.3.1 Available Resources

The structures already exist in Malawi to administer such assistance. Several small agencies, established by the government but largely donor supported, exist with the express role of supporting small and medium size enterprises.

The most appropriate agencies to be used by this project seem to be SEDOM (Small Enterprise Development of Malawi), DEMATT (Development of Malawi Traders Trust) and MEDI (Malawi Entrepreneurship Development Institute).

SEDOM holds a fund (when donors' money is available) and assesses small business schemes and makes loans to appropriate projects at interest rates that are well below bank rate. Bank rate is currently 26%. SEDOM loans money at 18% for urban projects and at a slightly lower rate (16%) for rural projects as it is government policy to encourage rural development. In Blantyre, SEDOM run an "industrial hive" where small workshops can be used by nascent industrial businesses.

DEMATT gives advice to anyone who is interested in establishing a business venture. They are able to give both business management and technical advice and they help with the development of a Business Plan and with market analysis.

DEMATT also arranges training in business management skills either under their own auspices or by using other agencies like MEDI (Malawi Entrepreneurship Development Institute) which runs 3 month business management courses and tailor-made courses, as appropriate. USAID

has supported DEMATT for a number of years.

3.3.2 Opportunities for Small Businesses

It is impossible to anticipate what business ideas may be forthcoming but some possibilities seem to be particularly feasible.

Industrial. Craftsmen and skilled artisans could receive support in the opening of small workshops and in marketing their craft either as individuals or in groups.

Groups may wish to pool resources and purchase redundant workshops or other facilities from the railway, once MR has determined what facilities it wishes to divest. The motor vehicle workshop, the foundry and the canteen are possible examples of this.

Agricultural. Rather than remaining in subsistence farming, there may be some retrenched employees who, as individuals or in groups (where, for example, they have worked together in the same rural depot), may wish to develop some form of agri-business.

In some areas the railway has exceptionally wide reserves alongside the track. The Valuation Report assessed there to be in the region of 3,800 hectares of spare land. MR appears to have no legal title to this land but it may be possible to make some of it available to agricultural enterprises. Loans could be made for the construction of animal sheds, the purchase of irrigation equipment, etc.

3.3.3 Assistance and Institutional Arrangements

i) It is recommended that donor assistance be given in the form of a (revolving) credit fund, to be administered by SEDOM, which is geared solely towards retrenched railway workers. A member of the Railway Workers' Union should be invited to sit on the SEDOM loans committee to have an input to the equitable and secure distribution of loan.

ii) Further assistance should be given to DEMATT to enable them to provide advice and all necessary training, commencing with outreach work with redundant railway workers before they actually leave MR's employ.

GTZ (the German aid agency) has pioneered 4-week courses for redundant workers which enable identification of those candidates who demonstrate some entrepreneurial flair. This may be considered useful in the circumstances of MR.

DEMATT could be contracted to undertake overall direction of the advice and training aspect of the project.

iii) Surplus railway assets that are sold to employees should be sold at nominal sums and on the guarantee that sufficient credit will be available to invest in upgraded facilities. Where

workers invest their severance pay in the purchase and development of the business, a fund should be established to underwrite their investment such that if the business fails within the lifetime of the project they receive a certain percentage of their severance pay back (perhaps 60%).

iv) The railway should be willing to give preferential contracts to workers who either take over and operate railway facilities or who go into appropriate businesses -- such as the manufacture of components and spare parts, or the supplying of food to the canteen, etc.

v) Where surplus assets are sold off to outside investors, guarantees should be received that those investors are willing to: (a) make the investments necessary to ensure that the business becomes a viable concern; (b) retain all or most of the current staff; and (c) guarantee training for staff.

4 RESTRUCTURING ACTIVITIES

The reorientation of the enterprise from one which has operated in a heavily regulated, bureaucratic environment, with corresponding low demand on individual responsibility and accountability, to one which is a business led commercial enterprise will require the development of a new management culture which will need to permeate the organization.

4.1 The Management of Change

In order to achieve the desired changes in MR the management team at MR has a number of tasks:

- they must draw up detailed organization charts which serve the organizational goals as expressed in the draft corporate plan³. The new organization, as well as the goals, must remain "owned" by the managers and staff of MR and must not appear to be imposed by donors or other external bodies. New relationships must be developed in a structured way;
- a work analysis must be undertaken throughout the new organization to determine exactly what jobs are required and where;
- a job evaluation exercise must be carried out to assess accurately the rewards appropriate to the responsibility levels in each job;
- a new grading structure and remuneration package must be designed and made available; and
- a massive training exercise must be undertaken which involves all interested parties: government, management, staff at all levels and locations, major users. The purpose of this training will be to change attitudes and gain commitment of all those who can affect the running of the railway to the new orientation.

This change activity must be completed as soon as possible for two main reasons: (a) the parlous state of MR; and (b) in order to capitalize on the huge retrenchment exercise that has already taken place. Ideally it should start immediately and be complete by the end of the 1994/5 financial year.

4.2 The Employment Package

Staff in MR are very poorly paid. At senior levels it has become near impossible to recruit and retain qualified staff at the salary ranges offered. At lower levels, the security of employment

³ Further work on this document is required to better define the overall strategy, mission and top level goals of the restructured railway.

went a long way towards compensating for the low pay, but that is no longer the case. Staff have lost that security, they are aware that one third of the salary bill has been saved, their workload has, in some cases, increased but they have received no net incremental compensation.

An entirely new employment structure is required. At present there are over 200 grades, each of which has a range of salary points. There should be no need for more than 6 - 10 grades below management level and a similar number within management. Each grade should have a fairly narrow salary range associated with it. The money saved from the retrenchment exercise should be redistributed such that an appreciative raising of salaries can take place. Such a change to grade and salary structures, whilst untypical in a parastatal company, should not cause any legal problems as MR is technically a private company registered in the UK.

It has been suggested that senior managers should be placed on a contract basis so that qualified Malawians can be recruited at the same pay scales as the current ex-patriate managers. Other parastatals (for example Malawi Housing Corporation, Admarc) already use this system for General Managers or accountants.

It would be unfortunate to have to resort to this method of remunerating senior staff as it reduces the cohesion of the workforce and may set up resentments at the next layer down of management. As a strictly temporary measure, contracting senior staff may resolve some immediate problems but it should be possible to establish a pay structure that is able to adequately reward all staff. Such a structure would need support initially from government and, almost certainly, from donors as well.

It has been suggested that an Employee Share Ownership Plan might be appropriate in MR. However, it is considered that, while this may be an option in a future privatized railway, it would have little or no relevance at present.

4.3 Retrenchment and Recruitment

While natural wastage will take care of much of the numerical reductions required in the workforce (see 2.4 above), it will not necessarily remove the right people from the right places whilst at the same time it will remove some people who are crucial to the railway's functioning.

Future retrenchment must, therefore, be selective and a recruitment plan should be drawn up. There has been an effective ban on recruitment for a number of years now, with the result that there are no employees under the age of 20 in MR. This will cause problems in the near future with skills shortages, especially taking into account the high natural wastage in MR, unless recruitment at key entry grades is recommenced.

4.4 Skills Training

An important part of the retrenchment and restructuring exercise should be the reskilling and refresher training of the remaining workforce. Some staff must be performing additional duties in the slimmed down establishment or will require new skills in the restructured organization. Railway operations, for example, have been performed less than at full efficiency for some time and many of the traditional operating skills have gone into abeyance or have been lost with retirements.

An exhaustive skills training package should be drawn up and implemented by the railway training center. This would operate as a motivational tool as well as having practical use. It must be remembered, in retrenchment activities, that it can sometimes be useful to retain some of the better older supervisors as trainers, either in the classroom or on-the-job, as such people are often the last repository of traditional railway skills.

4.5 Training for Change

An integrated plan for changing the direction of the railway, the attitudes within it and the "culture" of it must be drawn up.

This will involve a program of seminars, workshops and training sessions which commence with government and senior management and which spread throughout the organization. This program must be designed to enable participants to define the problems and design the solutions. It will be an on-going program over a period of 2 - 3 years.

4.6 Donor Assistance

4.6.1 Financial

Until the railway starts to break even (1996/7 in the draft corporate plan), some assistance may be needed with salary payments if a new structure is implemented as recommended. The amount of this assistance depends on a number of factors (salary levels, continued government

subvention, etc.), but could be approximately MKw1.5 million (US\$250,000) per month. Over a period of 2 years this would amount to US\$6 million.

4.6.2 Technical Assistance

It is not recommended that ex-patriates be retained in line manager positions after the termination of the current donor supported contracts (the General Manager, the Assistant General Manager (Finance) and (yet to be appointed) the Marketing Manager). During the remaining time on their contracts the ex-patriates should do everything possible to train counterparts and to build future sustainability of the restructured organization.

Technical assistance will be required to assist with development of the new employment package, the work analysis and the job evaluation exercise. It is recommended that this consist of an initial input of 3 months followed by up to 3 further visits of up to one month each during the lifetime of the project to ensure smooth and sustained implementation. This advisor should also assist with developing an appropriate training program.

Assistance will also be required with the change management process, including the development of the new organization. It is recommended that 2 advisors at senior level be appointed, working as counterparts to the General Manager (after the departure of the present ex-patriate General Manager in January 1995) and to the Commercial Manager. Both advisors should have experience of managing change and of the commercialization process in a railway. They should be appointed for an initial period of 6 months with up to 3 follow-up visits of up to 3 months each during the duration of the project⁴.

The MR management should have access to a specialist in the management of change on whom they can call for development and delivery of workshops, specialist advice, etc.

A practical railway operations specialist should be appointed as advisor to the Chief Traffic Manager for a period of one year with the specific remit to re-introduce efficient operating practices throughout the railway network.

⁴ This should be taken as an indicative level of effort. The timing of the TA may be more sporadic, depending on the exact nature of how the assistance is designed.

5 SUMMARY OF RECOMMENDATIONS

A summary of the key recommendations made in the various sections of the report above are as follows.

1 Severance package

b Financial support to be given to increase severance payments.

-- Requires input from donors and may depend on continued support at current level from Malawi government.

2 Housing allowance

b Payment of a housing allowance to enable retrenched staff to purchase building materials for a new house.

-- Requires input from donors.

3 Housing purchase

b Establishment of a credit fund to enable retrenched staff to purchase their railway house at a discount and at low interest rates.

-- Requires financial input from donors and agreement from Government of Malawi that railway houses can be sold and that they can be sold at a discount to staff.

4 Retraining for retrenched staff

b Provision of training costs and living allowance for retrenched staff who can be retrained in an area of skills shortage.

b Provision of scholarships to retrenched staff who wish to develop their education.

-- Requires financial input from donors and commitment from Government of Malawi to provide training places for appropriate candidates.

5 Small business development

b Support to retrenched workers who wish to establish a small business.

-- Requires establishment of a (revolving) credit fund with SEDOM and financial support to DEMATT for provision of assistance, and requires Government of Malawi to make facilities of SEDOM and DEMATT available.

6 Purchase of surplus railway assets

b Financial assistance to groups of workers who wish to purchase redundant assets (once defined), probably through same mechanism as above.

-- Requires Government of Malawi and MR to define surplus assets and to agree to sell them at a discount to retrenched railway staff.

7 Release of railway land

b Development of spare and unused railway land as agricultural and agri-business sites.

-- Requires agreement of Government of Malawi to use of railway land in this manner.

8 Technical Assistance

b Provision of 5 technical assistants to work as advisors.

-- Requires provision of personnel by donors and commitment from Government of Malawi to the process of change in MR.

Advisor to General Manager	6 months + 3 x 3 months
Advisor to Commercial Manager	6 months + 3 x 3 months
Human Resource Specialist	3 months + 3 x 1 month
Advisor to Chief Traffic Manager	12 months
Change Management Specialist(s)	Total of 3 months

BIBLIOGRAPHY

"Lessons from Mozambique's Adjustment Process", Fion de Vletter, 1992.

"Draft Corporate Plan", Malawi Railways Limited, 1994.

"Mozambique National Railroad Restructuring Project: Analysis for Project Amendment", MSI, 1992.

"Investment Analysis for Malawi Railways", Transmark, 1991.

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TECHNICAL WORKING PAPER

PROCUREMENT REPORT

Prepared in support of:

The Malawi Railway Restructuring Project

Prepared by:

Abt Associates, Inc.

Funded by:

USAID/SARP/Zimbabwe

Funded via:

**The Privatization and Development Project
(Prime Contractor: Price Waterhouse)**

Technical Working Paper

Procurement Report

I. Introduction

Malawi Railways (MR) is presently undergoing a process of restructuring in order to achieve a more commercially viable rail transportation system. A multi-donor group, led by the World Bank, is presently formulating a proposed project to assist MR with the anticipated restructuring process.

In advance of a final joint World Bank - USAID - ODA appraisal mission, a consulting team was contracted to undertake a number of technical analyses. These analyses were designed to provide the basis of project appraisal and preparation.

This report presents the consultants findings, conclusions and recommendations with regard to selected aspects of procurement. The consultant team's specific tasks in this area were to:

1. Assist the Malawi Railway in the preparation of a procurement plan on the various components of the project.
2. Advise the Malawi Railway on the following procurement aspects:
 - a) establishing a basis of the procurements;
 - b) determining the exact number of procurement packages and lots;
 - c) establishing standards and special conditions of procurement; and
 - d) developing a time-table for monitoring the procurements.

In addition to assisting MR to prepare a procurement plan and procedures for the donor-funded project, the consultant team also assessed the railway's institutional capacity to perform the overall procurement function. This broader analysis was deemed appropriate because: (i) preparation of procurement plans for the donor-funded project should not be developed in isolation of the overall institutional context; and (ii) the railway should use the donor-funded project as a "building block" for enhancing procurement functions more generally as part of the restructuring effort.

The remainder of this paper is organized as follows. Section II describes the overall methodology and approach used to gather data, conduct the analysis, and begin to build consensus at the railway. In Section III, selected aspects of the proposed procurement plan are

presented and discussed. An overall assessment of the railway's institutional capacity to perform the procurement function is provided in Section IV. Finally, in Section V, recommendations are presented. In addition, the paper contains a number of Appendices which provide further details on organizational needs and proposed procurement plans.

II. Methodology and Approach

The team was briefed in Washington, D.C. by the Task Manager at the World Bank and again by the USAID Mission in Malawi. A comprehensive background to the project was provided and an initial list of people to meet was discussed.

The team then met with representatives of the Malawi Railway in Blantyre and was briefed on the various aspects of the project by the Deputy General Manager. Counterparts were assigned to work with the various team members. The procurement consultant was introduced to his primary contact, the Supplies Manager.

The procurement consultant visited and interviewed the following with respect to operational conditions at the railway: (i) Supplies Manager; (ii) Chief Civil Engineer; (iii) Chief Mechanical Engineer; (iv) Chief Telecommunications Engineer; and (v) USAID Technical Advisor.

The same interview format was followed throughout. Persons interviewed were asked to describe their present operational methodologies and identify the areas that they felt needed improving and how they felt improvements could best be addressed.

In addition to interviews and data collection activities, a series of seminars were conducted at the railway on procurement and related topics. This was undertaken to better surface key issues and to build consensus among key managers with regards to procurement needs and procedures. These efforts were conducted in coordination with a Senior Procurement Specialist from the staff of the World Bank. This specialist's visit was aimed at orienting and training railway staff in Bank procurement practices and procedures.

World Bank Seminar: A two-day seminar was conducted by the World Bank representative on March 8th and 9th. The seminar described in detail the World Bank procurement procedures and policies. The seminar format was open and conducted in a manner that allowed for participant interaction, and was structured so that questions were not only encouraged but were generated as a natural part of the informational process.

The following topics were discussed: (i) World Bank Organization; (ii) Introduction to World Bank Policy Guidelines; (iii) World Bank Tender Documents; (iv) World Bank Contract Documents; and (v) Special Conditions of Contract.

Each of the above subjects were covered in detail and the methodologies for document modification were discussed and explained in detail by the World Bank representative. Aspects

of Special Conditions of Contract were addressed as they related to the specific needs of the Malawi Railway.

Copies of all documentation discussed and presented were left with Malawi Railways, with information and documentation provided in both a printed format and on diskette. Additional items left were the seminar work sheets in transparency format so that additional seminars could be provided to additional staff members.

The following people were in attendance of the seminars.

Mr. Dick Msyani	Supplies Manager
Mr. Mike Kuntiya	Senior Telecommunications Engineer
Mr. Elton Kuyenda	Financial Accounts/Acting Chief Accountant
Mr. Kendrick Chenjerani	Chief Mechanical Engineer
Mr. Stowell Mponera	Expenditure Accountant
Mr. Evans K. Shaba	Cost Accountant
Mr. Stephen L. Takomana	Corporate Planning Manager
Mr. George J. Kavwenje	Chief Civil Engineer
Mr. Boyd Baviani	Data Processing Manager
Mr. S.L. Mponela	Expenditure Accountant
Mr. Gracewell Chimphamba	Revenue Accounts

The seminar attained a high degree of participation. There were a number of questions posed. Most were directed at what MR's new role would be and the degree of control that MR would be permitted to exert in the procurement process. Initial impressions were that the World Bank would give them a set of documents and that they would be required to adhere to them in detail. The concept that the documents were to be used as guidelines, with certain key elements being required, and that Malawi Railways would be constructing their own procurement documents based on these guidelines was something that they clearly did not expect.

The fact that MR would be left to their own devices and that if improperly modified procurement documents were written procurement would be delayed or even worse not approved was cause for some concern. In response to these concerns, it was stated that the possibility of assistance existed and that documents, policy and procedure would be reviewed by the World Bank for acceptability and once approved these documents would provide the basis for all procurement.

It was further explained that a fully operational procurement process must be in place within the organization, setting policy, procedures and standards which would be followed throughout the organization. A system of audit and control must be re-instituted and full accountability must be instituted across all departments. A system of reporting, inventory control and department accountability must be in place. Further the World Bank policies and procedures could and should serve as the basis for all international procurement and these policies and procedures

could be modified to the specific needs of Malawi Railways for international and domestic procurement.

Working Group Seminar: The World Bank seminar was followed by a working group seminar conducted by the consultant team's procurement specialist on the 10th of March to discuss the World Bank policies and procedures and how they could be modified to meet the particular procurement needs of MR. Additionally, the criteria for defining the initial and subsequent procurement in light of railway restructuring was discussed. The session was chaired by the procurement specialist with the assistance of the World Bank representative.

Issues addressed included: (i) base line documents; (ii) modification of base line documents for Malawi Railway use; (iii) international procurement; (iv) special conditions of contract; and (v) modification of base line documents for domestic procurement.

Other institutional and procedural aspects of procurement were discussed, including: (i) inventory control; (ii) procurement process; (iii) audit and control procedures; and (iv) departmental communications and interaction.

Again it was noted that there was overall apprehension in addressing these tasks independently. The concept that MR would be the defining authority in how their policies and procedures were implemented was alien in some respects. While MR was enthusiastic about the prospect of exerting more independent control over their operations, the idea that they would be the responsible agents of these activities was cause for mild concern. A repeated question was on of assistance during the transitional phase. Associated with this concern over the need for outside assistance was a strong concern that the assistance provided be of such a nature that the appropriate skills were transferred so that they could carry on independently at the end assistance period.

It was evident throughout that there was a high degree of commitment and dedication to revitalizing the railway. A high level of interest was evidenced in the institutional reforms and capability enhancement possibilities that exist under the envisioned restructuring.

III. Procurement Plan and Procedures: Selected Elements

It is premature to define a specific procurement plan for the Malawi Railway restructuring project, as the precise details of the program have yet to be fully defined and agreed to by all parties concerned. Consequently, in this section, an overall procedure and set of criteria for defining the procurement program is developed. Exact, finalized lists of goods, by lot, will have to be developed at a later stage. Further technical assistance is likely to be needed at that time. Draft terms of reference for the TA are provided in Section V: Recommendations.

A. Establishing a basis for procurements

Initial investigation indicated that a triage method of procurement be initiated as there was no clearly defined project time line. However, if the railway restructuring plan can be fully identified and agreed to by end April 1994 or mid May 1994, then the procurement process can be addressed and provided for on a more reasoned, logical, and rational approach.

Discussions were held with Malawi Railway management personnel to define the rationale for initial and subsequent procurement packages. There was general agreement that the initial procurement would be directed at supporting those activities that the railway is tasked with conducting and providing at the base line level, with subsequent procurement being defined and driven by the overall restructuring plan.

There was some disagreement as to what presently constitutes a base line activity but there is general consensus that these issues can be resolved through a cooperative assessment of the overall needs of the railway as described by the department heads and general management.

In the opinion of the consultant the initial procurement and subsequent procurement packages should be prioritized in the following manner.

Initial procurement

The initial procurement should be dedicated to those items that are critical to the safety and operational aspects of the rail systems ability to conduct identified "core" activities. Associated with this procurement should be items identified as "morale builders". These items should be safety related and be indicative of the changes that will be forthcoming under restructuring. Such items can be identified as protective work clothing, hand tools, fire extinguisher and hand soap, etc.

Items critical to base line operations would be the rehabilitation of track, conversion to roller bearings, and dependable communications.

An initial list of items to be procured was drawn up by top railway management and submitted to the World Bank in January 1994 (see Exhibit 1). Many of the items identified therein are appropriate for early procurement, using the above criteria. Others should be reviewed once specifics details of the restructuring plan are known. In addition, a fuller list should be "screened" against the requirements of the restructuring plan and against the phasing scheme proposed in this section. A fuller list can be readily constructed by incorporating departmental procurement lists (Appendix B) and the capital investment plan of the railway (Appendix A).

Subsequent Procurement

Second level procurement should be driven by railway needs identified under the adopted and approved restructuring plan. These items would complement the initial procurement package

EXHIBIT 1

"Core " Railway: Immediate Procurement Needs

Item	Estimated Cost (Millions of Kwacha)	Comments
Permanent Way		
1. Rehab. of 40km of railway (rail, ballast, sleepers, accessories, labor)	10.92	Three-year prog., starting FY 95/96
2. Two years tamper hire & support	2.40	Austrian aid being sought
3. Replacement of 15,000 wooden sleepers on approaches & bridges	2.80	
4. Remodelling of yards at Blantyre and Mudi	1.40	
5. Rehab. of Salima sleeper plant to produce concrete sleepers	7.50	Essential that MR have sleeper plant?
6. Replace welding equipment		
Telecommunications		
7. Replace Limbe PABX	2.00	
8. Rehab. telecomms route, or provide micro link on Nkaya-Nayuchi	3.20	
9. Telecomms. test equipment	0.750	
Mechanical		
10. Purchase roller bearings to convert 100 brass bearing wagons	3.70	
11. Provision of test equipment	0.342	
12. Re-equipment of mechanical & motor vehicle workshops		
13. Rehab. overfloor wheel lathe	0.720	Rehab vs. replace?
Traffic		
14. Strengthen Rail Tarcker mgmt. equipment	1.30	Being reviewed by USAID
Supplies		
15. Re-establish core-stock levels, including uniforms	3.37	Estimate from draft budget; Feb. 1994
General		
16. General repairs to buildings	1.50	Estimate from draft budget; Feb. 1994
17. Motor vehicle replacement		
TOTAL	41.895	

Source: MR General Manager's letter to World Bank, 17 January, 1994.

and address second level needs under restructuring.

Third level procurement would more fully address the needs of the restructured rail system and move the railway closer to more normalized operations.

Fourth level procurement would bring the railway to identified normal stock levels as defined by the needs of the restructured railway.

B. Defining exact number and composition of procurement packages

At the present time it is difficult to determine exact numbers and items of procurement due to the lack of a definitive restructuring plan. Initial procurement packages can be defined only in general terms as there is still some disagreement within the managerial ranks as to what priorities will drive the procurement process.

C. Establishing standards and special conditions of procurement

Issues relating to this particular term of reference was addressed in the seminar conducted by the World Bank representative and subsequent meetings held with department heads. Further assistance may well be needed in this regard and should be provided at the earliest possible opportunity. This early assistance should be directed at providing an institutional foundation and framework for a professional procurement system.

D. Developing a time table for monitoring procurement

The time frame for procurement should be phased so as to provide the initial procurement at the earliest possible time after notification of loan and project approval. There may well be a need for pre-project assistance in defining procurement packages, developing institutional procurement capabilities, and preparing the initial procurement documents so as to be able to forward them for approval and processing immediately upon notice of loan and project approval.

Generally the consultant, in consultation with the World Bank representative and Malawi Railway management, estimates that a time frame of fifteen months for total procurement through the four phases would not be overly aggressive, with the first two phases of procurement being completed within the first eight to nine months of the project.

Procurement beyond the initial four phases would be minimal and would be activated on a need to resupply basis by Malawi Railway personnel with said personnel independently administering and monitoring the total procurement process.

IV. Procurement: Institutional Assessment

Procurement is a central function at the railway. Almost every aspects of railway operations, be it line, administrative or management, has procurement needs. Any effort aimed at enhancing procurement needs to be cognizant of the overall organizational context. This requirement is of heightened importance when the organization operates under severe financial constraints and is seeking to restructure, as procurement is the "gate-keeper" on expenditures and critical inputs for restructuring.

At Malawi Railways the institutional structure for all operational activities has deteriorated over the years and is now represented by a system that is driven by crisis management methods. The lack of financial resources has hampered the procurement process as well as all supporting activities.

Inspection and maintenance procedures are not well attended due to a basic lack of spare parts and maintenance equipment. This lack of resources has to a great extent caused the normal inspection and maintenance systems to degenerate into a indifferent set of operational procedures. Normal procedures are hindered by the knowledge that spare parts and maintenance items are not available to address noted discrepancies. This is true at both the operational and management levels.

Presented below are some of the key issues related to procurement and supporting activities at Malawi Railways.

A. Procurement

Procurement procedures are informal and are crisis driven. At present most, or all, departments have the ability to procure directly and there is direct supplier contact with the departments in terms of procurement. Departmental accountability is virtually non-existent. The ability to track actual procurement across departments is difficult due to the want of a viable audit and control system. Additionally there is no central procurement office where MR procurements are processed. The Supplies Department acts as a quasi-central control office but is "out of the procurement loop" at times due to the ability of the departments to procure directly.

At present all requisitions exceeding K250 must be approved by the General Manager. These requests do not naturally flow through the supplies office.

B. Inspections

Inspections are carried out on a scheduled basis. However, inspection forms are segmented in their structure and do not provide information on any piece of equipment in a comprehensive manner. The actual inspection process is questionable given the conditions under which inspections are carried out. Inspectors are subject to conduct inspections in a less than attentive manner owing to the fact that they realize that repair and replacement parts are seldom available.

The inspection reporting process does not presently allow for a historical record of repairs to be maintained on any particular piece of equipment. The inspection forms provide information in a fragmented fashion and a comprehensive assessment of equipment condition requires the search of a number of forms in order to compile a complete picture of equipment condition and historical maintenance. Automation of inspection records has not been instituted to date. Records are manually recorded and stored in files in various offices throughout the department.

C. Condition Survey

A general listing of equipment assets serves as a pseudo form of condition survey. This listing classifies equipment by age, normally more than and less than 30 years old. There is no detailed information available on the specific condition of any particular piece of equipment.

D. Requisitions

The requisition process is crisis driven. Again most departments presently have direct access to local suppliers. Necessary equipment and supporting spares are acquired through this direct process. Prices are negotiated directly with suppliers and requisitions requiring the expenditure of more than K250 must be approved by the General Manager.

Supplies is sometimes cut out of the requisition and procurement process and serves to record these activities after the fact.

E. Reporting and Control

Reporting and control procedures have not been formally introduced and there is little communication between departments relative to general operations and how the departments interact in the overall scheme of things. Departments act independently without coordinating their operations with other departments with respect to procurement and maintenance of operational assets. While there is consolidation of organizational information at the upper levels of management, operational managers are severely lacking in their understanding of how their particular operation impacts other departments and MR as a whole.

Individual department managers are often unaware of the financial costs associated with their departments operations. They are painfully aware of the general poor financial condition of the MR in general, but the specifics of departmental costs are not normally viewed in relation to the present financial conditions affecting MR.

F. Audit and Control

Audit and control procedures cannot be effectively implemented under the present organizational structure. Departmental operations are carried out with little or no communication between the departments. The organizational information flow is vertical with little or no corresponding horizontal information flow.

Managers below senior management levels, normally the operational managers, have reported little access to horizontal information.

The present situation does not allow for comprehensive audit and control procedures to be fully and effectively introduced and implemented at operational levels. Restricted information adds to the segmented manner in which operations are conducted and serve to cloud the view of departmental interdependence in MR operations.

G. Financial Conditions

It is evident that MR operational activities are severely curtailed by the poor financial condition that plagues the railway. Access to local markets is all but impossible due to the inability to maintain accounts in a current fashion. Credit within the local domestic markets is non-existent at this point in time. This situation has had a negative impact across a broad range of activities within MR and has adversely affected the general morale of management and operational personnel. International funding has been available but has had little or no impact on day-to-day operational needs.

Substantial funding will be required to correct critical operational deficiencies and move MR towards some sort of normal operational level in terms of operational equipment, support material and stock levels.

H. Computerization

Present hardware and software is reported to be unreliable and unsuitable to the needs of the departments visited. Supplies reported that the system is down approximately 50% of the time and does not provide informational outputs in a format suitable to their needs. The Mechanical Department reports similar conditions and experience with their hardware and software. Inventory control is difficult to maintain due to the format in which the information is structured. Civil Engineering reports little use of its system. Telecommunications reports no system use whatsoever.

Throughout the departments visited, the present hardware and software was reported to be of little use in departmental operations with literally little or no horizontal or vertical information flow.

I. Repairs

Repairs are conducted on the basis of availability of spare parts. Safety related items receive first priority, all other needed repair is conducted based on the availability of parts. If parts are not available to attend to needed repairs then only the repairs for which parts are available are undertaken. In the case where parts are unavailable and the repairs are safety related, then the equipment is sidelined until the safety related parts are available.

Parts are sourced through whatever means possible, with the second hand or used parts market being used extensively. This situation calls into question the suitability and reliability of the repair and overhaul work being conducted. Indeed, there have been cases where repairs have lasted less time than the time required to carry out the initial repair. In one case a locomotive spent days in repair only to have the repair fail in less than 15 kilometers of operation.

A substantial amount of rolling stock and support equipment is idle due to a lack of repair parts, tools and associated shop materials.

I. Workshops

Workshops are in poor condition. Unsafe working conditions exist due to the conditions of the buildings proper, leaking roofs, frayed wiring, poor drainage are but a few of the items that need to be addressed under restructuring. Recently acquired shop machinery is inoperative due to the lack of electrical stabilizers and some of the equipments' automated (computerized) features have been destroyed by electrical surges.

Arc welding is conducted under unsafe conditions caused by leaking roofs and poor drainage. There is a lack of fire fighting equipment within the shops. Mechanics and foundry personnel are required to work without access to protective clothing and safety related items, such as goggles. Eye wash stands were not in evidence nor were first aid kits. Basic safety items did not seem to be present anywhere in working areas.

K. Telecommunications

A substantial amount of the communication system requires rehabilitation in order to restore reliable communications along the permanent way. Of primary concern is the telecommunication route between Nkaya and Nayuchi and the replacement of the Limbe PABX.

Again this department lacks basic test equipment, protective gear for workmen and as expected, repair and replacement parts and equipment.

L. Permanent Way

Civil Engineering reports the need for immediate rehabilitation of 40 kilometers of permanent way and the need for associated work on bridge approaches. Ballast is reported to be in short supply.

Financial concerns are again identified as the main reason for permanent way deterioration.

Trains are presently required to operate at substantially reduced speeds over a large portion of the permanent way due to the deteriorating conditions being experienced over the line.

Permanent way inspection and routine repair has been curtailed due to the unavailability of inspection trolleys. These trolleys are in the workshops at present awaiting repairs and spare parts. There is major concern within the Civil Engineering Department over the inspection and maintenance of track and bridges. Prime to these concerns are safety matters.

There is no automated inspection and maintenance reporting or recording system in place to accurately track and monitor permanent way conditions. Inspection procedures are in place in theory but the actual system is questionable at best. All reporting of track conditions is done by word of mouth.

V. Recommendations

A number of recommendations are made in this section regarding procurement practices, procedures and related issues at Malawi Railways.

A. Professional System of Inspection

First and foremost a professional system of inspection, maintenance, reporting and control should be instituted across all departments. These systems are key to the primary procurement system as they provide information as to what the organizational needs are in terms of the procurement process and also serve to identify the time frames under which the procurement will be made.

A formalized system of condition survey should be designed and followed for each class and type of asset. This condition survey should provide the following information:

- a. Year in which the asset was acquired
- b. Equipment type
- c. Make
- d. Model
- e. Classification of general condition
 1. Excellent: new
 2. Good: available for normal use with substantially no defects
 3. Fair: available for normal use with minor operational defects
 4. Poor: unavailable for emergency use only and having substantial defects
 5. Disposal: asset has passed its economic useful life and/or has substantial major defects making it economically unfeasible to invest in repair or rehabilitation.

The condition survey report should be supported by a comprehensive inspection form outlining in detail the defects of the asset. These inspection forms should be logged into a central filing system, manual or automated, with the original reports being retained by the originating department.

The condition survey and inspection forms should serve as the basis for asset maintenance, rehabilitation, overhaul, and replacement activities. Base line data or original report forms should be retained by the department in charge of the asset in question. Information flowing to the next highest level of management should be transmitted in an automated condensed format, providing only information necessary to clearly determine the general status and condition of the asset. At this point, details of particular defects need not be included as they can be accessed at any time should senior management have such a need.

B. Central Procurement Office

All procurement should pass through a central Procurement Office. Individual departments should not have direct access to suppliers.

The condition survey and inspection forms act as the basis for all organizational procurement activities. These documents provide supporting evidence of need for requested items. They need not be provided when initiating a request, but should be referenced as documents in existence supporting the request.

The procurement process should be centralized and staffed by dedicated personnel who have been trained in approved formal procurement procedures. Such a department could either be part of the existing Supplies Department or structured as a separate department. This decision would be left to MR management to identify the organizational structure of such a unit.

The unit would require a staff level of no more than one senior manager, two support managers and three to four senior and junior clerks. This unit would be supported by staff assigned to other departments but trained in the procurement process.

Each department would have staff knowledgeable in the technical aspects of procurement and what information and format is required to accurately complete the procurement documents. These people would be tasked with providing technical information to the procurement department in the format dictated by the procurement documentation.

Additionally each department would have within their respective departments personnel who have been trained in the monitoring process so that the procurement can be checked for completeness and technical specification compliance.

All of the above procurement activities should be supported by a dedicated Contract Control office whose job it will be to administer the contracts for legal compliance to the terms and conditions. Technical compliance concerns will be addressed by the technical personnel of each department and they shall act as support to the Contract Control office in technical matters.

Procurement Office (Department) 6-10 dedicated staff

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Contract Control Unit 4-6 dedicated staff

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Line Departments:

Administrative Civil Mechanical Telecom Supply Traffic

- Departments Heads - familiar with procurement documents
- 2 Technical writers - familiar with technical requirements of procurement documents (part-time)
- 2 Procurement Monitors - familiar with technical specifications of procurement for monitoring purposes (part-time).

C. Departmental Budgets

Departments should have a defined operating budget set by management and based on actual need as identified by the overall restructuring. Department heads should be required to know and track all department expenditures in light of their departments budget. Budget requests should be based on real anticipated need, they should be developed on a Zero-Based budgeting system.

Every effort should be made to avoid the concept that budgets grow in straight line projections every year. Managers should be assured that adequate funding will be made available for operational activities and that these budgets will be need driven based on actual need. Budgets will sustain peaks and valleys over time and this should be viewed as closer to real organizational need rather than increased expenditures in every department every year. While overall organizational expenditures may increase from year to year, departmental expenditures will fluctuate as assets are moved along to a more normal condition relative to the restructured MR.

D. Technical Support

Technical support may well be needed in the above areas and activities. These institutional capability building support activities should be undertaken at the earliest possible time so that the MR will be positioned to move quickly and efficiently once loan and project approval are authorized.

Technical assistance should be concentrated on re-instituting comprehensive inspection and control systems, identification of assets by condition survey, and the institution of a professional procurement system using the World Bank guidelines for international and domestic procurement.

It is recommended that technical assistance in these areas be started prior to final project and loan approval, as most items needing to be procured are critical to operational activities and most have a direct affect on operational safety. Additionally these are systems and procedures that MR will in general need in order to provide the organization with good procurement, audit and control, and inspection and reporting procedures.

Suggested schedule of technical assistance:

Procurement Advisor - Two person-months
Equipment Specialist - Two person-months

Terms of Reference (abbreviated):

Procurement Advisor:

- a. Institute a formal procurement system based on World Bank policies and procedures.
- b. Assist the MR with inspection and reporting systems.
- c. Assist the MR in the design of inspection and report forms.
- d. Assist the MR in revising inventory control systems.
- e. Assist the MR in the design and implementation of reporting and control systems.
- f. Assist the MR in the design and implementation of audit and control systems.

Equipment Specialist:

- a. Assist the MR in the conduct of a complete asset condition survey.
- b. Assist the MR in the design and implementation of a comprehensive inspection and reporting system for assets.
- c. Assist the MR in the design and implementation of inventory control systems.

E. Local Currency Domestic Procurement Account

A local currency domestic procurement account should be instituted so that MR has ready access to the local markets for locally available parts and supplies. The account should be under the control of the procurement office with specific spending authorization limits being set by senior management.

Appropriate audit and control systems must be in place before the account is authorized and/or funded. Individual department heads should be allocated a portion of the total local currency domestic procurement account and should be held accountable for the expenditures made on behalf of their department through this account.

Monies requested in excess of allocated departmental budgets should be reviewed and approved by senior management utilizing their own selected budgetary guidelines.

Spending limits should be realistically set for all departments. Suggested limits could be K10,000 for department heads, K25,000 for the Procurement office, and amounts in excess of K25,000 would require management review and approval. These levels are obviously subject to review, and may be lower in the first instance while MR is still in a critical financial condition.

The establishment of such an account would substantially enhance the MR ability to procure within the local market thereby providing ready access to a multitude of small items that can be

described as consumable or small items of immediate need, such as hand tools, parts and lubricants, and so on.

Initial funding for such an account would require that present debts be cleared with local suppliers and procedures to reestablish the credit of MR with local suppliers.

With relation to this account, all prospective suppliers would have to be pre-qualified and a price range for all procured items would have to be established. The Procurement Office would not be able to procure an item if it was not from a pre-qualified supplier or if the cost of that item was not within the approved price range.

Procurement of items on an emergency basis not readily available under the above conditions would require management approval.

F. Procurement Levels

Levels of procurement are of prime concern and there are a number of thoughts on what is needed and under which time frame certain procurement should take place. In light of the restructuring process, it is the consultant's opinion that initial procurement should be dedicated to those items central to core rail operations and track safety concerns. Additional consideration should be items relating to worker safety.

Items that may be considered as related to support activities, such as the rehabilitation of the sleeper plant should be given secondary concern and may even be eliminated under restructuring.

Certainly shop repair would be of initial interest and should be attended to in the initial round of procurement. Here access to local contractors would be the preferable method of procurement. While there is some institutional capability to undertake these repairs, it would be best to view MR operations under the planned restructuring which might conceivably spin-off ancillary activities.

Procurement of goods and services should be attended to by outside suppliers to the greatest extent possible with MR concentrating their efforts to core freight services. MR activities should be restricted to inspection and routine maintenance only, with higher levels of maintenance being primarily being undertaken and provided by contract. To be sure there are certain activities that only MR can attend to and these capabilities should be maintained and supported, but any other activities that can be attended to by outside contract should be aggressively moved into the private contract sector.

There is a range of opinion as to what items represent critical procurement needs. Appendix B provides details on items departments deemed as necessary in the near-term. These lists need to be reviewed with top management and made consistent with the specifics of the finally agreed restructuring plan.

APPENDIX A

Malawi Railways Limited Capital Investments (K1000s)			
Investment	1994/ 1995	1995/ 1996	1996/ 1997
Re-establishment of stores core- stock levels	3,368	3,000	
Replacement of 15,000 wood sleepers at approaches to railway bridges	2,100		
Strengthening of RailTracker Wagon Tracking and Management System	650	650	
Replacement of Limbe PABX	1,500	549	
Service Motor vehicle replacement programme	3,120		
Remodelling and extension of Blantyre station yard	370	150	
Remodelling and extension of Mudi station yard	450	450	
Purchase of roller bearing axle boxes for 100 wagons		1,260	1,260
Provision of electric power supply and general facilities to Nkhombwa quarry at Sharpevale	150		
General rehabilitation of buildings and ancillary works	1,500	3,000	3,000
Rehabilitation of Telecomms route between Nkaya and Nayuchi	1,640	1,500	
Provision of equipment to undertake flaw detection in pistons, piston honing and lubrication oil testing	342		
Purchase of power driven track maintenance equipment handheld	600	420	291
Purchase of a new flash-butt equipment	10,500		
Rehabilitation of the sleeper plant	3,750	2,250	1,500
Additions and extensions to the Mechanical workshops at Lumbe: Remodelling and refurbishing of motor vehicle servicing bays	262		
Purchase of additional test equipment for telecomms network	750		
Rental of Tamping Machine	810	810	810
Rehabilitation of overfloor wheel lathe in Mechanical workshops at Lumbe	360	360	
Additions and Extensions to the Mechanical workshops at Lumbe:			
(A) Wagon repair facility shop rehabilitation		600	600
(B) Office Accommodation CME and SM Alterations and extension	150	150	
Permanent-way renewals programme: Northern Section Track rehabilitation including new concrete sleepers Lumbe to Lirangwe	6,000	4,915	
Purchase of four main - line Diesel Electric Locomotives for Replacement	0		
TOTAL CORE RAIL	38,372	20,064	7,461

Source: Malawi Railways Limited Draft Corporate Plan

APPENDIX B

**Departmental Procurement Lists:
Selected Items**

IMPROVEMENT IN TELECOMMUNICATIONS SYSTEM INFRASTRUCTURE

FIRST ORDER PRIORITY:

- Rehabilitation of Telecommunications Route between Nkaya- Nayuchi
- Replacement of Limbe PABX
- Test equipment and tools
- Protective clothing and boots for linemen
- Trolleys for maintenance
- PC's for Office and Engineering work
- Solar power for Nayuchi Carrier terminal
- Inter office fax facilities

SECOND ORDER PRIORITY:

- Replacement of GOR-10 carrier equipment (NE, MR, EE)
- Maintenance Vehicles
- Air Conditioning units
- Renewal of Level Crossing equipment

THIRD ORDER PRIORITY:

- UHF/VHF radio network (Limbe - Nkaya - Nayuchi), with multiplexing equipment, Train to control Radio, and hand portables for maintenance work.

G.49

7 March 1994

THE WORLD BANK MISSION

ATTENTION : Mr George Howson

CHIEF CIVIL ENGINEER'S CAPITAL INVESTMENT CONSIDERATIONS

Following on the discussion you had with the undersigned on Friday, March 4, 1994 on the subject, the two elements that can be included for consideration for capital investment for the CORE RAILWAY in view of the Schedule 'B' of the General Manager's memorandum to the World Bank are, in the order of priority.

- (i) Points and crossings rehabilitation and replacement, estimated at K6 000 000.00.
- (ii) Procurement of power driven track maintenance handheld equipment, estimated at K1 311 000.00.

Both estimates were scheduled for implementation over a three years period and both are included in the 1994-1999 draft corporate plan.

G J Kavwenje
CHIEF CIVIL ENGINEER

CC : General Manager/Deputy General Manager

MALAWI RAILWAYS LIMITED

SUPPLIES DEPARTMENT
P.O. Box 6947
LILONGWE

REF. 111

7th March 1994

Mr. G Howson.

PURCHASING AND STOCK CONTROL

1. TRAINING PROCEDURES

- a) Sufficient stocks of Spare Parts and consumables must be kept in the Warehouses to meet the needs of User Departments.

Minimum and maximum method is used to keep optimum Stock levels. For example we need a minimum of 300 Lube oil filters for the G E Locomotives and a maximum of 500.

- b) A minimum of two or three quotations are required before awarding an Order to the most competitive supplier.

- c) The Supplies Manager is allowed to approve Orders of up to K250,00. Every order in excess of this amount is sent to Management for approval. In addition Management must approve every placed outside the country irrespective of the Order value.

- d) On approval the Order is delivered to the Supplier and materials are collected. A receipt voucher is raised to stock the materials in the Warehouse or they are handed to the User Department if they were specially requested.

2. CURRENT PROCEDURES

- a) Owing to cashflow problem we are unable to keep sufficient stocks of spare parts and consumables. Instead we buy materials whenever the User Departments raise requisitions. We call this system "hand to mouth" purchasing. This is unsatisfactory because it takes time to acquire materials. Meantime the equipment is kept idle.

- b) More often than not Orders sent to Management for approval take longer than they should. This is partly because of the unavailability of funds. For a year now Management directed that "Request Orders" should pass through the requesting Department to Management. In addition to the requisition which the User Department raised on the Supplies Department he should again send the Order to Management with a covering note explaining the reasons for requisitioning the item!

- c) The authority of M250.00 by the Supplies Manager has been in force for over 10 years. I recommend that the authority be increased up to M3000.00 for both Local and foreign Orders.

3. STOCK CONTROL

- a) The User Departments raise requisitions in Stores for their requirements. When Stocks reach minimum levels economic Order quantities are calculated. Thereafter the Orders are raised by the Purchasing Section.
- b) Economic Order quantities are reviewed by the Stock Control Section on a continuous basis for all items. With the introduction of the computerised Stock Control more items are reviewed at any one time.

4. PURCHASING SECTION

- (a) Buying cards containing relevant economic Order quantities (E O Q) are received from the Stock Control Section for ordering. As mentioned above a minimum of some three quotations are identified by letter, telephone, telex, or fax.
- (b) After raising the order on the strength of the E O Q, it is sent to Management for approval where it is not only delayed but at times the quantity is reduced.
- (c) When the Order is approved more often than not, it is handed over to the User Department for collection of materials. This is due to lack of transport in the Supplies Department.
- (d) Many reputable suppliers have closed our Accounts because of long outstanding Accounts.
- (e) When materials are not available locally we source outside the country. Meantime this is a problem not only due to lack of funds but also due to lack of forex.
- (f) Acquisition of the following equipment is recommended:
- (i) One 7 - ton Lorry
 - (ii) One 1.5 - ton pick up
 - (iii) One saloon car
 - (iv) Two motor cycles for Customs documentation at Lilongwe and Limbe
 - (v) Separate small computer with printer for Stock Control only. The present computer has been working half the time since its installation last year.
 - (vi) One additional 5 ton Forklift. This will help fill the gap of retrenched workmen.

will Additional two telephone extensions with direct dialling facilities. These extensions will speed up the placing of orders.

3. DONATED LOCAL ACCOUNT

a As mentioned above materials which are not available locally are sourced outside the Country. The large portion of these materials are locomotive spare parts. According to the records for the past 3 years which are very conservative due to the then limited funds, the amounts are as follows:

	<u>Foreign Purchases</u>	<u>Local Purchases</u>
1989	K2.05m	K5.8m
1990	K2.6m	K5.5m
1991	K3.0m	K5.1m
	-----	-----
	K7.65	K16.4
	-----	-----
Annual amounts =	K3m	K6m
	-----	-----

- (b) The 1994/95 Departmental budgets should also be taken into account to arrive at the final estimates.
- (c) The expenditure of the following User Departments need more attention in respect of accountability:
- (i) The Welfare Account controlled by Personnel Department.
 - (ii) The motor vehicle Maintenance Account controlled by the Chief Mechanical Engineer.
 - (iii) The Locomotive fuel Account controlled by the Chief Traffic Manager.
 - (iv) Motor vehicle fuel Accounts for the Pool vehicles controlled by the Company Secretary.
 - (v) Motor vehicle fuel Accounts controlled by Departmental Heads.
 - (d) Whenever the donated Local Account materializes the User Departments should manage their budgets unlike under the current procedure when all budgets are controlled by Management. The User Department should be able to know the balance of his budget at any time unlike to-day when the User Department is only interested in acquiring the component or service and NOT its cost! In other words the User Department should be accountable for his budget. This will instil some discipline in controlling Railway funds.

- (e) If the User Department exhausts his budget he should apply to Management for some more funds if available or else his Department will not function.
- (f) Depending on the length of the technical assistance User Departments should use the assistance as follows:
- (i) Critical needs like tools in 3 to 6 months.
 - (ii) Immediate materials in 4 to 12 months
 - (iii) Maintenance items in 3 to 18 months.
 - (iv) Stock levels in 18 to 24 months.
- (g) I recommend that whenever foreign purchases are made out of this account letters of credit should be used.

6. WORLD BANK TECHNICAL ASSISTANCE

Technical Assistance is said to be divided into:

- (a) Long term 6 to 12 months
- (b) Short term 3 to 6 months

If we opt for long term it is understood that the Procurement Specialist would work with this Department for 6 to 12 months. During this period he will impart knowledge to us on World Bank Purchasing procedures.

On the other hand the short term option will involve the following programme. A couple of staff from this Department would be attached to Ministry of Agriculture and Ministry of Transport and Communications in Lilongwe. These Ministries are already conversant with the World Bank Buying Procedures. Thereafter a World Bank Procurement Specialist would be attached to this Department in order to monitor and satisfy himself that the knowledge gained at the two Ministries is adequate. He will impart knowledge where he feels it is wanting and he will do this in 3 to 6 months.

After careful consideration I recommend the option of short term. And I have in mind of up to 3 members of staff who should take up the assignment as soon as the programme is in place.



D. P. MOYANI
SUPPLIES MANAGER

CC: General Manager/Deputy General manager

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MARCH 3, 1994

Mr. George Howson

On March 2, 1994, you and I had a discussion on some of the needs of the Malawi Railway Shop. Some of my thoughts and opinions are as follows:-

1. The employees rates of pay is too low for the cost of living. Causing the employees to spend most of their time worrying about how they are going to keep their homes running, not to mention a decent wage is proud of his job and will do more work and better work. He will be proud of what he has done and this will improve productivity.
2. The fact that the railroad has very little credit, causes the price of local purchase items to be inflated in price, due to the time the purchase is made and the bill is paid, the merchants inflate the price to make up for interest on their money. I think funds should be made available to make these local purchases. This would make the time shorter for the purchasing department to issue an L P O number. This would cut down on the down time for shop machinery, road vehicles and locomotives improving productivity and availability of locomotives and vehicles. Adding to the revenue of the Railway making it more self reliant.
3. The Diesel Shop roof is in very poor condition, leaking in many places with water leaking on most of the work areas making it impossible to work in these areas when it is raining, causing low productivity during the rainy season and for days after a rain because of deep pools of water on the floors and in the pits.
4. Cleanliness of the Shop is very poor because of poor drainage of the pits. Also the lack of cleaning materials for the floors.
5. The locomotives are not cleaned before their monthly inspections due to the lack of proper cleaning machine and solutions. This makes a lot of the inspection items hard to see because of the dirt and grime. This could cause failures on the road causing late arrivals of trains which could cause loss of business and revenue.
6. A washing machine of some type should be bought for cleaning. Traction motors and alternators. This machine could be used to wash most components of the locomotives except the trucks and the engine block and these could be washed with the same machine used for washing locomotives. The only washing machine I know of is proceco in Montreal and Jacksonville, Florida.

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7. Training of Supervisors:- Any training.

On the mechanical side of the Canadian Built Locomotives pertaining to the general overhaul or running repairs I can do myself. As for Electrical Supervisors I can't see we are having much of any problem at this time. The Electrical Supervisor has asked me several times why CS&IB does not send him to the U.S.A to train on these locomotives. There is no place in U.S.A or Canada that this type of Excitation is used and hence, so the only training that could be made available would, to bring in a retired expert, who has had experience on type "E" Excitation.

8. Tools. There is a number of tools which is require in the Shop. These tools will improve productivity. Most are a must if the present programme is to be effective. The overhaul of the mainline locomotives is very important this time. Due to the lack of spare parts over the past decade some of the locomotives have not had a general overhaul since they were new in 1980.

I am giving you a list of tools which is critical due to lack of catalogues I can not give you part numbers for many of the tools.

The list is:-

1. 2 welding machine with cables
2. 2 3/4" drive air impact wrenches
3. 3 1/2" drive air impact wrenches
4. 1 1" drive air impact wrench
5. 1 complete set of impact sockets for each size if impact wrench
6. 2 electric angle grinder
7. 2 air grinders 7"
8. 1 000' of 1/2" air hose with fittings
9. 1 crimping tool for traction motor leads
10. 2 3/8" drive drilling machines
11. 2 1/2" drive drilling machines
12. 3 sets of drills from 1/8 to 5/8
13. A number of drills with tapered shank between 3/4" x 2"
14. Straight reamers with tapered shank between 1" and 2"
15. 3 10lb sledge hammers
16. 6 pry bar 36" long
17. 6 sets of open end wrenches from 3/8" to 11/4"
18. 6 sets of box end wrenches from 3/8" to 11/4"
19. 6 sets of 1/2" drive sockets from 3/8" to 15/16"
20. 6 10" 1/2" drive extensions
21. 6 5" 1/2" drive extensions
22. 6 1/2" drive ratches
23. 6 1/2" drive power handles
24. 6 18" pry bars
25. 6 10" screw drivers
26. 6 6" screw drivers
27. 6 3/4" cold chisels
28. 6 sets 8" pliers
29. 6 11lb ball pien hammers
30. 6 19" tool boxes to put above tools in
31. 2 3/4" drive ratchett sets
32. 2 1" drive ratchett sets
33. 4 18" pipe wrenches
34. 2 24" pipe wrenches

- 36. 1 140 volt 50 cycle hyd pump
- 37. 4 screw driver sets for electricians
- 38. 4 nut driver sets
- 39. 1 10 ton press for shop use
- 40. 1 1/2 ton set of chain falls for governor room
- 41. Various chain slings

These tools are found in the Alco Tool Catalogue and can be purchased from GE.

	<u>P/N</u>	<u>DESCRIPTION</u>	<u>QOCH</u>
1	2479504	Wrench generator	2
2	2479505	Wrench generator	2
3	2470169	Jack set	1
4	2470114-1	Engine lifting rig 3 cyc.	1
5	2474532	1 1/2" drive hyd. torque wrench	1
6	2474535	Reaction arm	1
7	2475323	Special socket	1
8	24745347	Locking pin and ring	1
9	24745318	Socket set	1
10	24745339	Spare part kit	1
11	24745358	Torque Gauge	1
12	2474534	Hyd pump unit air operated	1
13	24745326	Hose 20' twin line	1
14	24745355	Spare parts kit	1
15	2157111	Hyd. fluid	3
16	24745357	Filter	6
17	2478005	Indicator with magnetic base	6
18	2470176	Turning plate gen end 3 cyc	1
19	2470175	Turning plate free end 3 cyc	1

9. Tool Crib. It is my opinion a tool room be built and divided in half for mechanics tools on one end and electrical tools on the other. Steel shelving should be made up to place the tools in proper order and an inventory control system set up so the tools will be returned at the end of the work day. Also this room must be well lighted.

10. Spare parts. The orders for spare parts for the general overhaul and maintenance are now arriving, but the rail road has been trying to operate without spare parts for some time causing the locomotives to get into a very run down condition. This also causes the men working on the locomotives to be very laxs when doing their inspections as they know there are no spare parts so why find any thing worn or broken. It is my opinion the Supplies Department have an inventory system set up that has a minimum and maximum system for number of spare parts on the shelves. This would require a constant flow of funds instead of large amounts every 3 or 4 years, also the lead time of the spare parts delivery has to be taken into consideration. It is also my opinion that more of the sub components be repaired and less new subcomponents bought with the new tools. This would be possible. This would help the railroad to come up with a yearly budget for the repair of locomotives and save money in the long term. This would also help the railroad come to a profit making company.

11. Deraillments. The track in most area is in poor condition so every week or so there is a derailment. These derailments are very costly, both in labour and the loss of bussiness. The loss of goods on a derailed train and the time consumed getting the equipment back on track causes the customer to have no faith in the railroad, so they go to road transport which cost more but is more reliable. This puts the cost of goods higher in price which is bad for the economy of the country as a whole.
12. Over floor wheel lath. The present wheel lath is approximately 30 years old and is in bad condition. This lath should be replaced with a new modern lath, as to spend money on this old lath which parts can not be found without a special order is very costly and time consuming, causing long down times for the lath. I am sure a new lath could be purchased for less money than sending the old one back to the builder and having them upgrade it with the high cost of transport and cost of building new parts for an old machine that is no longer being built.
13. Safety clothing and equipment

Funds should be made available to buy protective clothing for the employees working in high risk areas, such as moulders, blacksmiths, and welders. This clothing and equipment would cut down the risk of the employee burning his personal clothing, also injuries to himself by being burned, causing lost time accidents, plus pain and suffering. This should improve the productivity of these employees.
14. Road vehicles:- Many of the road vehicles used to transport parts and personal from one area to another are very old and require a lot of repairs to keep them serviceable with the high cost of parts, and down time while these vehicles are being worked on, it is counterproductive to the railroad.
15. Computers. I think funds should be made available for the supplies to have its own computer system, so it is available at all times instead of 1/3 of the time as it is now. This causes delays in the movement of parts and materials from supplies to the Shops, this slows down the repairs of rolling stock.

A computer or some manual method should be set up to keep records on all locomotives showing the services and repairs done on each locomotive. This would help determine the cost of maintaining each locomotive over certain periods and give some indication as to what should be set up for a yearly budget, to keep the Shop operating on an even flow. This would cut down on emergency funding being required from time to time.

16. Metallurgical laboratory:- The laboratory brought in by UNIDO is missing several pieces of equipment to make this operational. I feel this equipment should be bought and have the laboratory made operational. It is my understanding our lub oil can be tested in this laboratory. If the proper equipment is brought in and an expert to train a local technician. This would save the cost of sending our oil outside the country to be tested. We would have immediate results, therefore the locomotives which show high content of metals in the oil can be checked and repaired before serious damage is caused which can be very costly. This would be a first for the country and possibly outside industry would make use of this oil laboratory. This would create a source of income.

17. Movement of materials within the plant.

A small cushion truck of some sort should be purchased for the movement of spare parts from the Supplies Department to the various locations throughout the Shop. The old home made machine for moving wheels and tires is very old and made up of various parts which are not replaceable. This machine should be replaced.

The above report is all of my own opinions. It is my belief that if the restructuring of the Railway is to be successful, most of the above matters have to be dealt with.

WALTER E HARPER
U S A I D
MALAWI RAILWAYS LIMITED

APPENDIX C

Bibliography

- Draft Corporate Plan, 1994/95 - 1998/99, Malawi Railways Limited, February 1994
- World Bank Memo, Schedule Formats, Malawi Railways Limited, 17 January 1994
- Draft Operating Budget for Year Ending 31 March 1995, Index of Schedules, February 1994
- Register of Locomotive Stock and Motor Trolleys, Malawi Railways, 30 September 1993
- Proposed Basic Salaries and Wages, Malawi Railways Limited, 1 July 1993
- Trolley Availability, 1 March 1994
- Locomotive Power Position, 1 March 1994
- Chief Mechanical Engineers Project Submission to Management, Incorporating Budget Cost Estimates, March 1993
- Malawi Railways Rolling Stock, Summary of Rolling Stock, 30 July 1993
- Rolling Stock Conversion, Memo, 30 October 1990
- Wagon Conversion from Plain Bearing to Roller Bearings, 4 April 1990
- Assets Register Workshop Machinery, Power and Water Plants
- Register of Rolling Stock, Malawi Railways Limited, 30 July 1993
- Audit Fixed Assets (Rolling Stock), 22 May 1990
- Wagon Availability During the Period 1990/91, 29 May 1991
- Spares for Rehabilitation of Rail Wagons, 5 December 1990
- Wagon Repair Programme for the Year 1991, 8 November 1990
- Wagon Availability During the Period 1992/93, 20 May 1993
- Supplies Report, 7 March 1994

Chief Civil Engineers Capital Investment Considerations, 7 March 1994

Improvement in Telecommunications System Infrastructure, March 1994

Shop Report, USAID Technical Advisor, 3 March 1994

TECHNICAL WORKING PAPER

MANAGEMENT INFORMATION SYSTEMS DEVELOPMENT AND TRAINING

Prepared in support of:

The Malawi Railway Restructuring Project

Prepared by:

Abt Associates, Inc.

Funded by:

USAID/SARP/Zimbabwe

Funded via:

**The Privatization and Development Project
(Prime Contractor: Price Waterhouse)**

Technical Working Paper:
Management Information Systems Development and Training

I Introduction

Malawi Railways (MR) is in the process of implementing a major restructuring program in order to improve efficiency and carry out operations on a more commercial basis. The railway and Government of Malawi have sought financial and technical assistance from a multi-donor group led by the World Bank, to support the restructuring efforts.

A multi-donor team is expected to conduct a project appraisal mission in April 1994. However, the donors requested that first a consultant team be contracted to undertake a number of analytical studies, in support of project preparation activities.

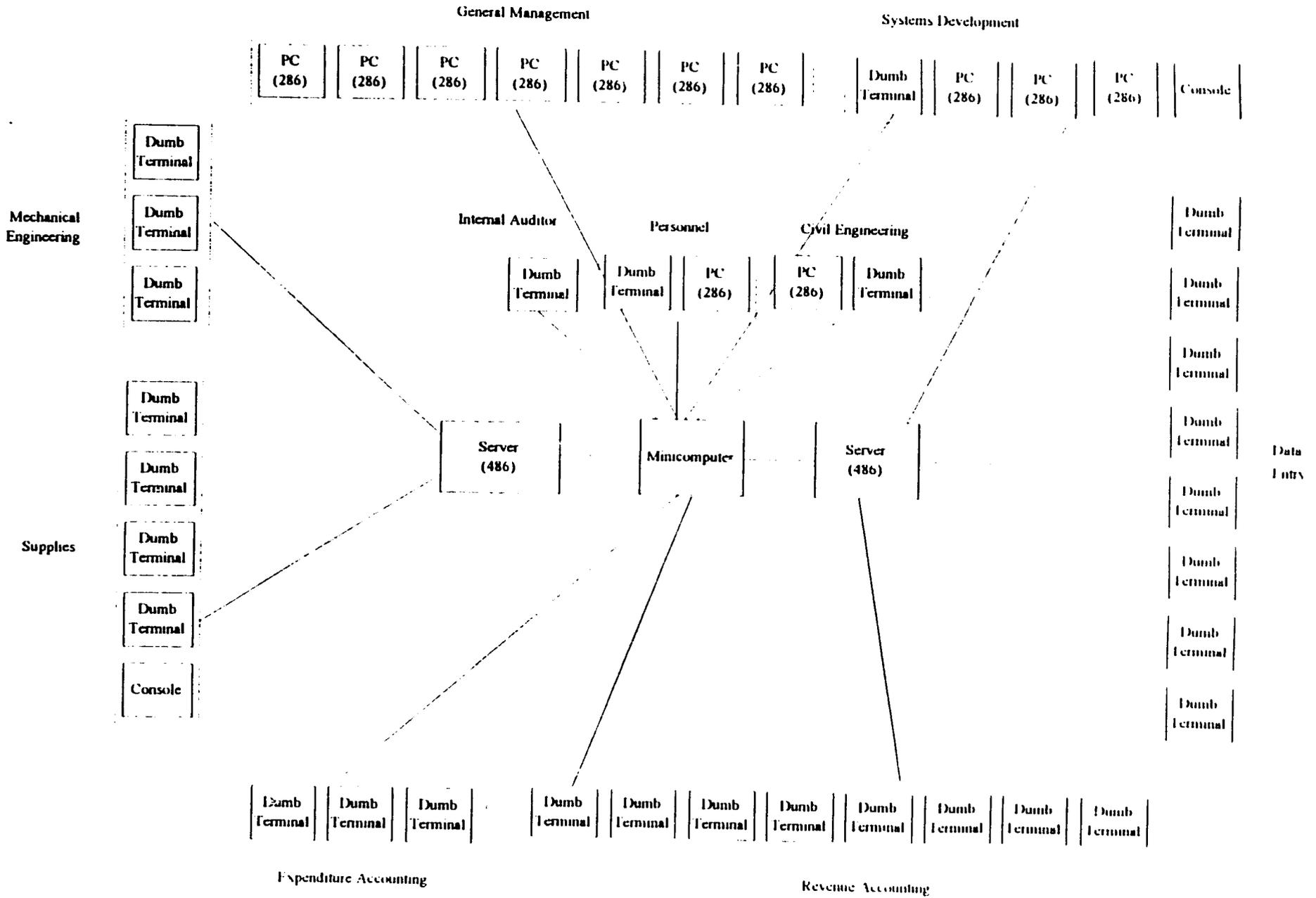
This report comprises one of those studies and addresses an assessment of MR's management information systems (MIS), particularly with respect to the railway's ability to prepare project implementation and monitoring plans. It also provides details on the MIS-related training conducted by the Consulting Team.

The MIS Expert on the Consulting Team was in Malawi for a two-week period, starting February 28th. The MIS-specific scope of work was to:

1. Conduct an assessment of MR's MIS to determine what interventions (software and equipment) are required in order to enhance MR's ability to prepare project implementation and monitoring plans.
2. Assist MR to prepare a project implementation and monitoring plan. This plan shall be in the form of a Gantt chart and shall indicate specific activities, milestones, phasing, time and resource requirements, and critical inputs.
3. Train MR's senior staff in the use of project planning, management and monitoring software such as Microsoft Project (Version 3.0 or later) or Time Line for Windows.

The remainder of this paper is organized as follows. In Section II, an inventory of MR's hardware and software is presented and an assessment of MR's MIS is provided. In Section III, an evaluation is conducted of the ability of the current system to support decision making tools for MR. In Section IV, there is a discussion on the training seminars given on project management and the impacts that they had. In Section V, a preliminary project implementation plan for the Malawi Railway Restructuring project is discussed. Finally, in Section VI, recommendations are provided for improving: (i) the overall system; and (ii) the ability of MR to conduct project management. Included with this report as appendices are: a) an overview of project management; b) the abridged user's guides to Microsoft Windows and MS Project; and c) a preliminary project implementation plan for the MR Restructuring Project.

Exhibit I Malawi Railways Information System



II Assessment of MR Information System

In 1991 the Overseas Development Agency (ODA) purchased a new information system for MR. By June 1994, MR hopes to be fully converted over to this new system. It consists of a Local Area Network with TCP/IP network software, a minicomputer, and two servers connected to both smart and dumb terminals located around the railway (See Exhibit 1). This network is used primarily for accounting, payroll, and personnel functions and for word processing.

The minicomputer is a DRS 6000 with a SPARC processor, 25 MHz, and 48 MB RAM. The servers are each DRS M75 personal computers with a 486 processor, 25 MHz, and 12 MB RAM. One of the servers is located in Data Processing and serves two functions: (i) the development of applications, and (ii) a gateway into the minicomputer. The second server is located in the Supplies Department. Its sole purpose is to function as a gateway into the minicomputer.

This is a very powerful system with significant potential. However, currently there are often problems in accessing information from the network. This may be due to: (i) a lack of understanding of how to maintain and properly use the network; and/or (ii) the system may be inappropriate for the railway. However, it was not in the current team's scope of work to do an exhaustive review of the entire system, but rather to focus on how well the system meets the needs of project management.

Currently the following managers have printers and personal computers (PCs) with 286 processors, 16 MHz, 4 MB RAM, and approximately 40 MB hard drives:

- the General Manager,
- the Deputy General Manager,
- the Assistant General Managers of Finance, Traffic, and Procurement, respectively,
- the Data Processing Manager, and
- the Data Processing Manager Secretary.

In addition, there are three PCs with the same setup in the Software Development area and one in both Personnel and Civil Engineering. They can act as stand-alone PCs as well as workstations in the network. They operate under MS DOS 3.0 and Microsoft Windows 3.0. However, MR staff generally do not take advantage of the user-friendly software available in the Windows environment. Instead, the main applications used are WordStar, an antiquated word processing package, and Lotus 123 for DOS.

Three years ago, when these computers were purchased, they were considered powerful machines and were capable of supporting the software available. However, due to the fast pace of computer technology, these computers are now barely sufficient to support the specifications of modern software.

The remaining workstations in the network are dumb terminals and are situated in the following locations.

- 1 in Systems Development.
- 8 in Data Entry.
- 3 in Mechanical Engineering.
- 1 in Civil Engineering
- 4 in Supplies.
- 1 in Personnel.
- 1 in the Internal Auditor.
- 3 in Expenditure Accounting, and
- 8 in Revenue Accounting.

All of these terminals were purchased in 1991 except for the eight in Revenue Accounting and six from Data Entry, which were purchased much earlier. However, the technology for dumb terminals does not change significantly over time. Thus, these terminals are sufficient for their purpose of accessing the network. Unfortunately, many people, including the telecommunications engineer, have no access to a computer or printer in their own areas. Thus, people are often forced to physically move to the Data Processing department to do their work.

The primary tasks performed at the terminals is word processing on Fenin, the word processing software installed on the network, and routine accounting work with packages developed in COBOL by MR software developers. Currently there are no spreadsheet or graphics packages available on the network. This can be problematic for some of the engineers and accountants who need access to such applications to perform their work effectively. Moreover, there are often difficulties accessing and working with Fenin. To alleviate these problems, Boyd Bvalani, the Data Processing Manager is investigating the possibility of installing Uniplex on the network, a combination of applications including a word processor, a spreadsheet package, a database package, and a graphics package.

III Ability of MR to Conduct Project Management

In order to successfully manage their projects, MR managers need to have the proper tools to plan and organize their activities and to keep track of the progress made on those activities. Furthermore, they must be comfortable in using the tools. They also need easy access to company information kept on the network, for example, personnel or accounting information. Currently, this information is difficult to retrieve and is not provided in convenient formats.

Effecting a change to a system conducive to project management would be relatively simple from a technical (hardware and software) point of view. Each manager would need a computer at his desk which supports user-friendly word processor, spreadsheet, graphics, and project planning packages. This would be compatible with and complementary to the current system. The computers would act as stand-alone PCs as well as workstations in the network.

IV Training Seminars

As part of the MIS task, the consulting team gave three training seminars on project management. The first seminar was conducted in the MR training center. It covered the basic principles of project management, gave an introduction to MS Project, (a project planning and management software package), and provided some examples of exhibits that could be produced using this package (See Appendix A). The attendees at this seminar included the Chief Civil Engineer, the Chief Mechanical Engineer, the Corporate Planner, the Head of Supplies, and the Data Processing Manager.

Several of the attendees commented that this was the type of tool which was acutely needed to help manage their activities and avoid delays. Some of the attendees were already familiar with project management concepts and techniques, while to others, these concepts were new. Many questions were asked about how the software would be applied in specific instances (e.g. How would the software be adjusted to reflect delays in shipments?) These questions showed staff's genuine interest in applying the software to their jobs.

The second and third seminars were conducted in the Data Processing department and were oriented toward actual use of the software. These two seminars included an overview of project management and provided hands-on training in operating a mouse and in using both Microsoft Windows and MS Project. Abridged user's guides to Microsoft Windows and MS Project were distributed (See appendix B) along with the standard documentation provided with the software for MS Project. The attendees included Mackenzie Kachanje, the Data Processing Deputy Manager, Khuma Kadongola, a Senior Analyst Programmer, and Aggrey Kumwima, an Analyst Programmer.

None of the attendees had used Windows or a mouse on a regular basis. However, the three attendees quickly gained a basic proficiency in Windows and the mouse, sufficient to access and perform basic functions in MS Project. By the end of the training, they attained an initial comfort level in using MS Project. At this point, the staff are able to set up a project in the system, including entering tasks and durations, specifying resources, and assigning relationships. Although there was not sufficient time to provide detailed training on managing and updating the projects and on producing various status reports, the trainees' knowledge of the package is such that they will be able to continue training themselves with the aid of the user's guide and of the manuals. It is possible that they will need more training in the future on some of the more advanced features of MS Project.

V Project Implementation Plan

An initial draft of a project implementation plan for the Malawi Railway Restructuring project is presented in a Gantt chart in Appendix C. This is a very preliminary draft and will require several phases of revisions.

1. The first phase should take place after the appraisal mission, when the project is better defined.
2. The second phase must involve MR management. It is vital that they are involved in the Project Definition phase. It was premature for such an activity to occur during the Consultant Team's visit.
3. The third phase will be a gradual one. Over time, as individual project components near the moment of implementation, detailed tasks associated with each of these components will emerge.

By the end of the Appraisal Mission, an assessment should be made of whether MR is in a position to adequately: (i) define and plan the project in a manner consistent with MS Project needs; and (ii) run the software (MS Project). A minimal amount of TA and training may be needed subsequent to this phase.

VI Recommendations

For Improving the Overall System:

In order to effectively use the current information system:

1. Selected MR staff should be trained in how to properly maintain the network and how to simplify information retrieval from the network;
2. All relevant staff should be trained in using the network;
3. Additional software applications including a good word processing system, a spreadsheet, and a graphics package need to be installed on the network. A combination of packages like Uniplex is ideal.
4. More terminals and printers need to be available for the staff. The computers that are currently sitting on the managers' desks could be distributed around the railway, as the managers' systems are upgraded (see below).

For Improving the Ability of MR to conduct Project Management:

Management needs more powerful systems to support tools which would aid them in decision making. All managers should have

- Access to information on the network.
- PCs with mouses and 486 processors.
- 4 or 3 MB RAM.
- Sufficient hard drive space (at least 70 MB).
- Microsoft Windows.
- Windows-based applications and
- Training on Windows and Windows-based applications.

A selected group of managers should also have a project planning and management software package to effectively plan large projects. MS Project is an appropriate package. It meets staff's project planning and management needs, runs well on the system recommended above, and MR staff have had an initial training in MS Project. More training will be necessary. Once the selected staff members become more adept at using the software (either through additional outside training or on their own), they should train other staff, including management, to use MS Project.

An overall audit of the MIS at MR should be conducted once the specifics of a detailed restructuring plan are known. In addition to addressing the network, this study should also identify other software packages (i.e., other than MS Project) to be made available to managers to support decision-making and amortize the investment in their equipment.

Appendix A

An Introduction To Project Management

An Introduction To Project Management

Abt Associates' role in the Management Information Systems phase of this joint World Bank-U.S.AID Project Preparation Mission for the Railway Restructuring Project is to train the Malawi Railways in preparing a project implementation and monitoring plan. In order to achieve this goal, there will be three training sessions. The first session will cover the basic principles of project management; an introduction to Microsoft Project (MS Project), a project planning, management, and monitoring software package; and some examples of exhibits that can be produced using this package. The second session will cover the basic elements of *using* Microsoft Windows and MS Project. And the third session will cover more advanced topics in MS Project.

WHAT IS PROJECT MANAGEMENT?

Definition: Project management is the planning, organizing, and managing of tasks and resources to accomplish a defined objective, given the constraints on time and cost.

- Managers of almost any aspect of business can use project management concepts and tools to manage their work.
- If a project involves more than a few tasks, or if there are several resources to track, one can benefit from using project management.
- Project Management requires a team effort--everyone from managers to engineers to data processors should be involved.

Goal: to achieve a specific objective within a given deadline and budget.

- The objective may be as *simple* as planning and designing a corporate brochure or as *complex* as restructuring a railway.
- In each case, the project must be broken into easily manageable tasks or activities, tasks must be scheduled, and the progress of the work must be tracked.
- Resources such as people and equipment can also be assigned to accomplish these tasks.

Project management can help answer various scheduling, resource, and cost questions, such as:

- How long will the project take?
- If a particular task is delayed, will it cause the entire project to be delayed?

- Which tasks are critical to meeting the schedule?
- Are there enough resources to complete the project as scheduled?
- What are the costs of the resource for the project?

WHAT ARE THE PHASES OF PROJECT MANAGEMENT?

Defining the project: Before any work on the project itself begins.

- 1) the objective of the project must be identified;
- 2) the constraints must be specified; and
- 3) the resources available must be defined;

Planning the project: This is the most important phase of project management.

- It includes:
- 1) defining the tasks and their durations,
 - 2) setting up relationships among the tasks, and
 - 3) assigning resources to the tasks.

All of the project's later work is directly based on the information provided when the project is created.

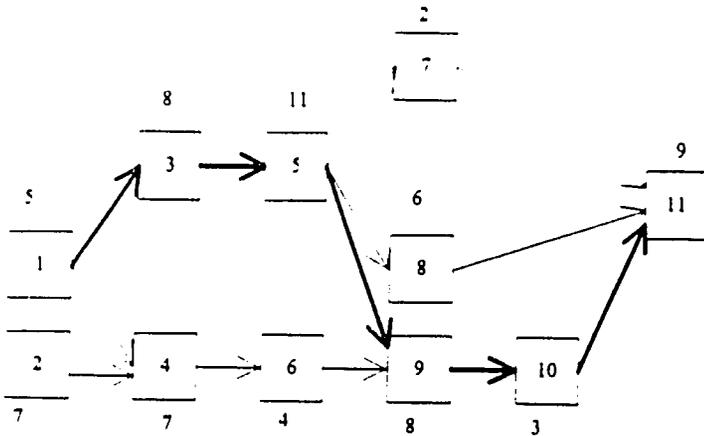
Managing the project: This phase of project management is an ongoing process that begins when the project is created and ends when it is complete.

- It includes:
- 1) periodically updating the project to reflect the current status,
 - 2) providing status reports to keep everyone informed,
 - 3) tracking the progress against the existing plan, and
 - 4) adjusting the project to reflect major unforeseen changes.

Thus, accurately *defining the project* is the first phase of project management. The management should define the project objective, constraints, and resources. *Planning the project* is the second phase. It involves a team effort to define all of the tasks involved, their durations, and their interrelationships. This information serves as the inputs for the project management software, MS Project. The third and final phase is *managing the project*. This, like the second phase, involves a team effort. The Data Processing department should keep the software up-to-date based on information from the entire team and produce status reports; management should keep track of the progress to aid in decision making and adjust the project when necessary to achieve the objective.

USING THE CRITICAL PATH METHOD IN PLANNING A PROJECT

The Critical Path Method (CPM) is a way of calculating the total duration of a project based on individual task durations and task dependencies. This model is the fundamental scheduling method used in project management.



SLACK TIME is the difference between the time available for a task to be completed and the duration of the task.

FREE SLACK TIME is the amount of time a task can slip without affecting another task.

For example, Task 1 has 2 days free slack time.

TOTAL SLACK TIME is the amount of time a task can slip without affecting the project completion time.

The **CRITICAL PATH** is the series of tasks that must occur as scheduled for the project completion date to be met, i.e. none of the tasks in its path can be delayed without delaying the entire project (all tasks have 0 total slack time).

Possible Paths:

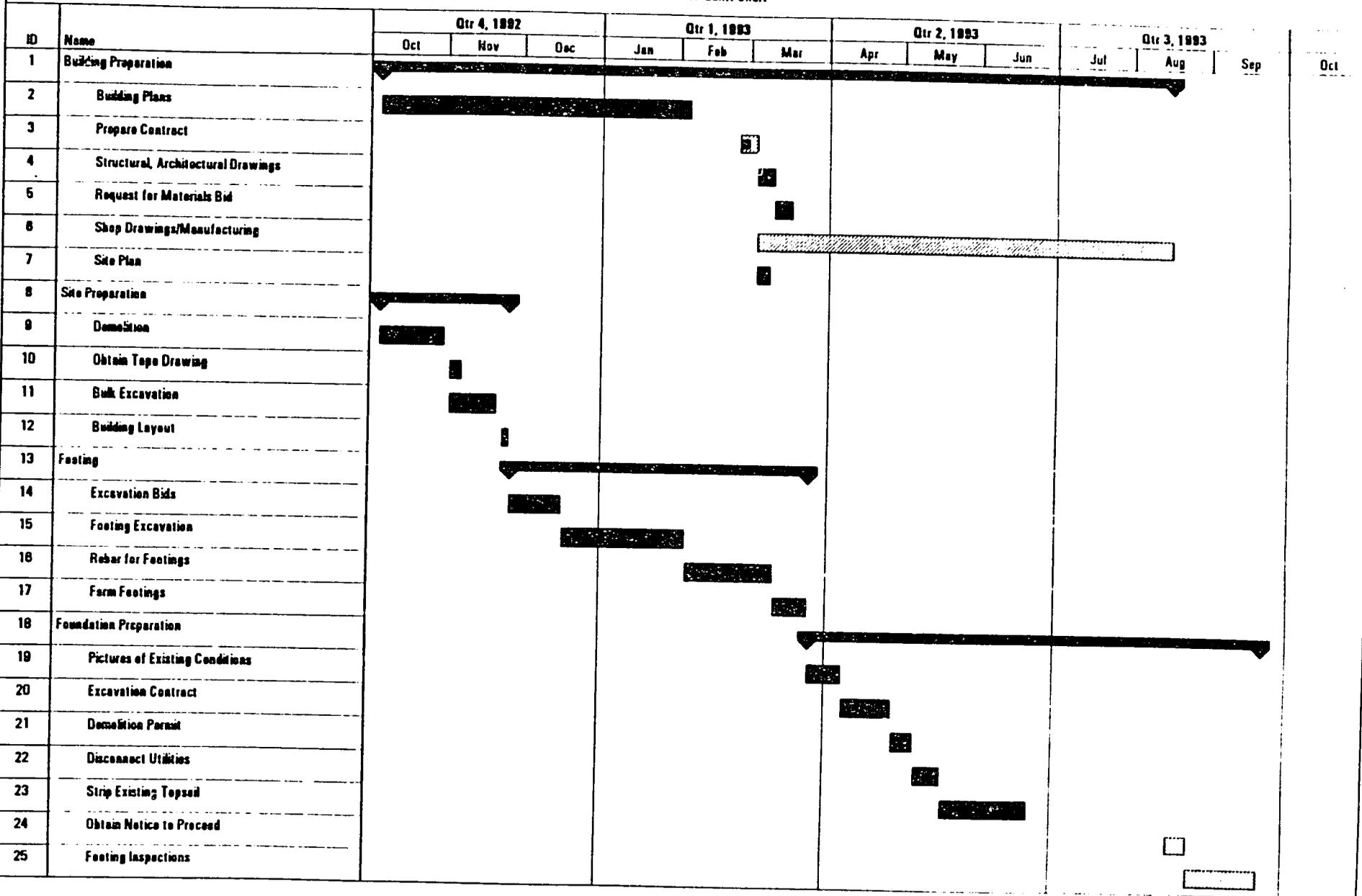
1-3-5-7-11	$(5+8+11+2+9) = 35$
1-3-5-8-11	$(5+8+11+6+9) = 39$
1-3-5-9-10-11	$(5+8+11+8+3+9) = 44$ ← Critical Path
1-4-6-9-10-11	$(5+7+4+8+3+9) = 36$
2-4-6-9-10-11	$(7+7+4+8+3+9) = 38$

MS PROJECT EXHIBITS

MS Project produces a variety of exhibits which are useful tools for project management. The following exhibits are included here:

- Exhibit 1: Gantt Chart - a bar chart which shows task durations and start and finish dates;
- Exhibit 2: Delay Gantt Chart - a Gantt chart which shows resources and delays;
- Exhibit 3: PERT Chart - a diagram of the project schedule that shows dependencies among tasks;
- Exhibit 4: Resource Graph - a graphical representation of resource information over time;
- Exhibit 5: Project Summary - a summary which tracks the progress against the existing plan;
- Exhibit 6: Weekly Resource - a list of each resource's tasks by week; and
- Exhibit 7: Monthly Calendar - a Monthly Calendar showing when tasks are scheduled during the month.

Exhibit 1: Gantt Chart

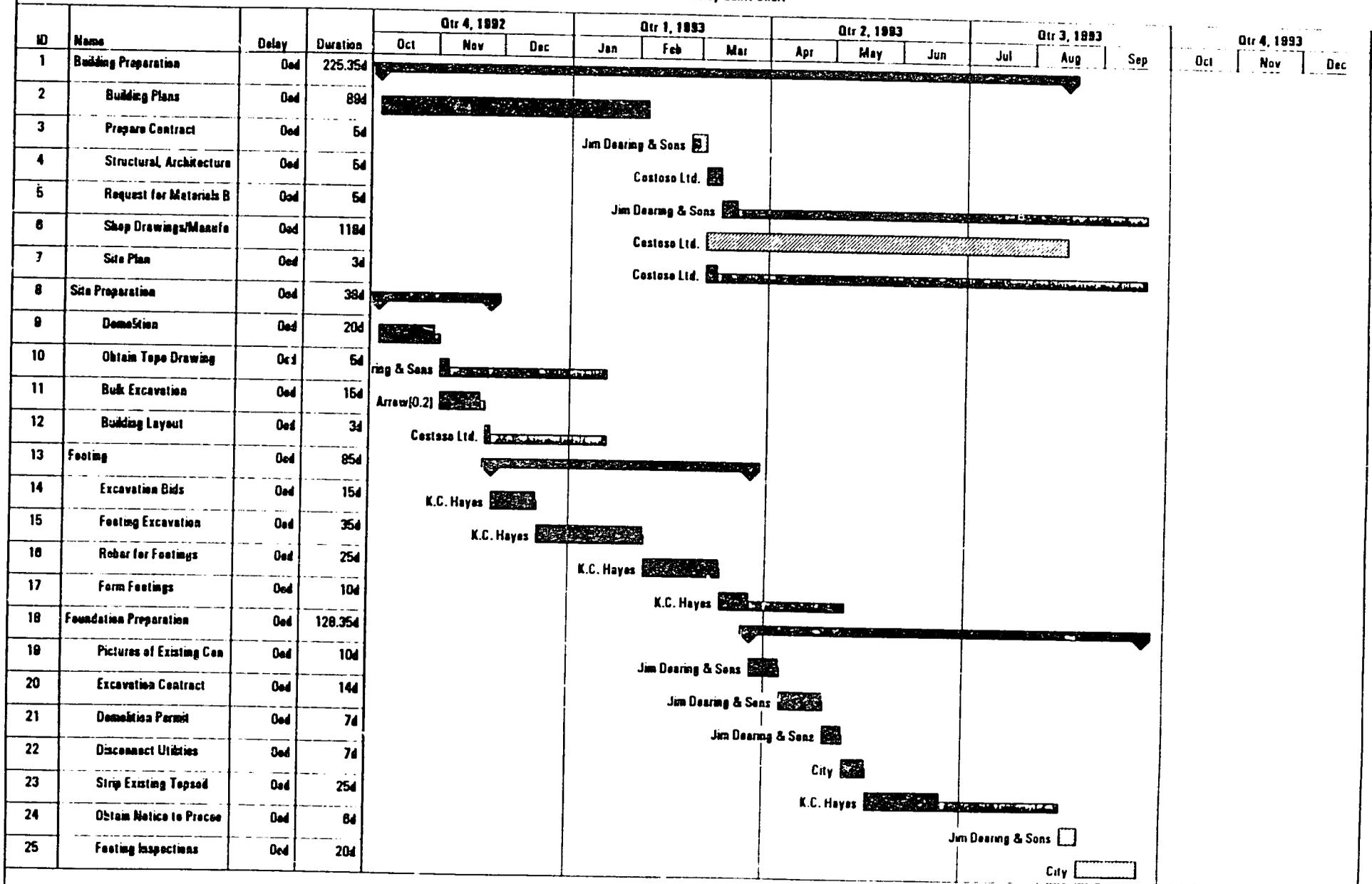


BEST AVAILABLE DOCUMENT

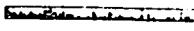
100

100

Exhibit 2: Delay Gantt Chart



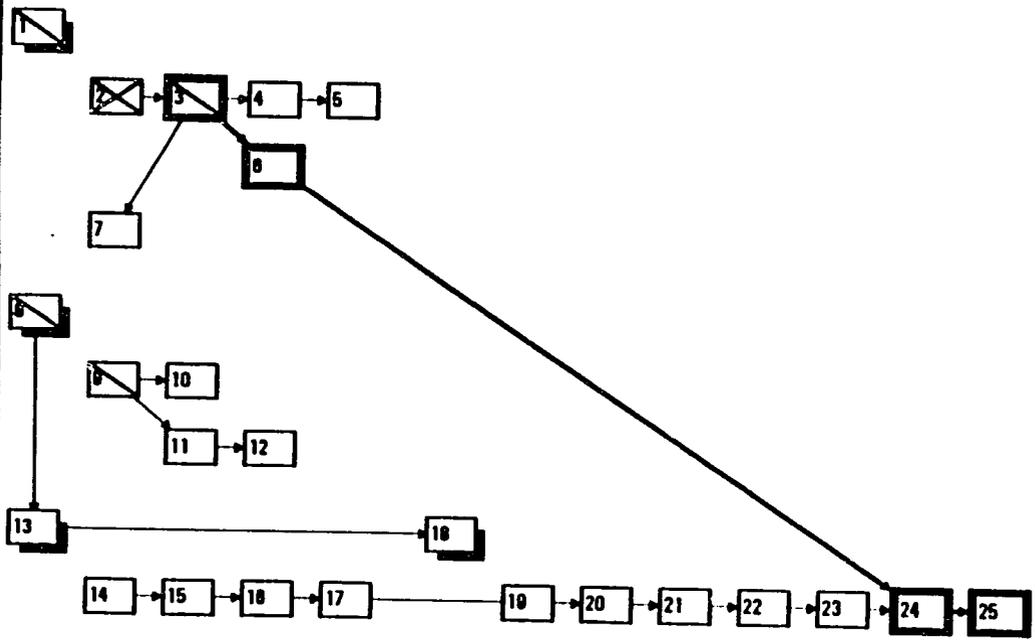
Project:
Date: 3/24/84

Critical  Milestone  Delay 
 Noncritical  Summary  Slack 
 Progress  Rolled Up 

101

101

Exhibit 3: PERT Chart



Project:
Date: 3/24/84

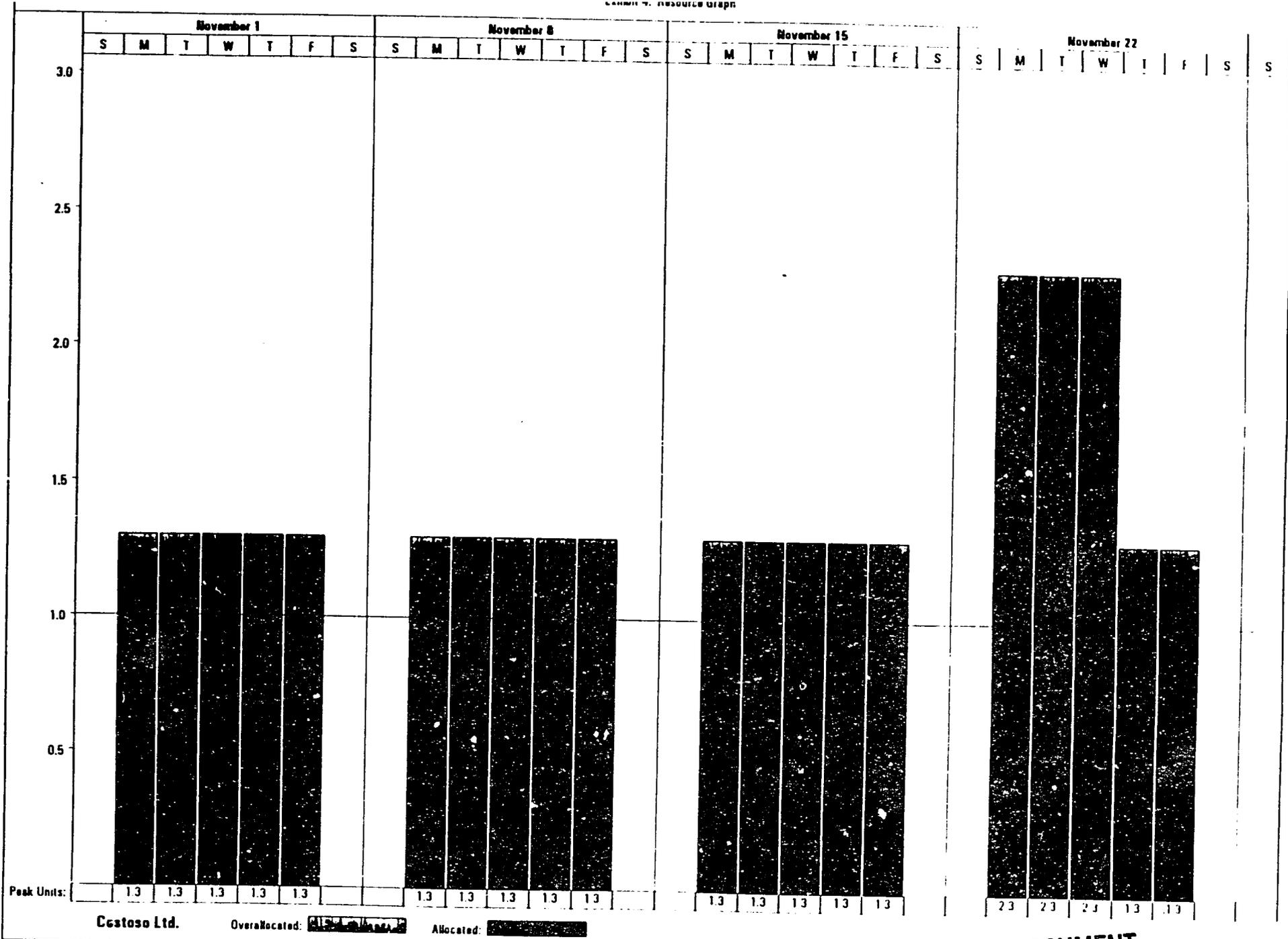
ID	Critical	Milestone	Subproject
	Noncritical	Summary	Marked

BEST AVAILABLE DOCUMENT

101

102

Figure 7. Resource Graph



BEST AVAILABLE DOCUMENT

103

1173

Exhibit 5 Project Summary

as of 3/24/94 8:00am

Dates

Scheduled Start:	10/3/82 8:00am	Scheduled Finish:	9/21/93 10:48am
Planned Start:	9/8/82 8:00am	Planned Finish:	5/21/93 5:00am
Actual Start:	10/5/82 8:00am	Actual Finish:	NA
Start Variance:	18d	Finish Variance:	96.35d

Duration

Scheduled:	251.35d	Remaining:	198.77d
Planned:	183d	Actual:	51.58d
Variance:	68.35d	Percent Complete:	21%

Work

Scheduled:	3702.4h	Remaining:	2772h
Planned:	3084h	Actual:	930.4h
Variance:	638.4h	Percent Complete:	25%

Costs

Scheduled:	\$178,184.00	Remaining:	\$131,000.00
Planned:	\$150,560.00	Actual:	\$47,184.00
Variance:	\$27,624.00		

Task Status

Tasks not yet started:	20
Tasks in progress:	4
Tasks completed:	1
Total Tasks:	25

Resource Status

Resources:	14
Overallocated Resources:	1
Total Resources:	15

Exhibit 6: Weekly Resources

ID	Name	Initials	Group	Max. Units	Std. Rate	Ovr. Rate	Cost/Use
----	------	----------	-------	------------	-----------	-----------	----------

Week of November 1, continued

12	Jim Deering & Sons	J		1	\$50.00/h	\$0.00/h	\$0.00
----	--------------------	---	--	---	-----------	----------	--------

ID	Task Name	Units	Work	Delay	Scheduled Start	Scheduled Finish
10	Obtain Topo Drawing	1	5d	0d	11/2/92 8:00am	11/8/92 5:00pm

13	Fabrkam & Sons	F		1	\$100.00/h	\$0.00/h	\$0.00
----	----------------	---	--	---	------------	----------	--------

ID	Task Name	Units	Work	Delay	Scheduled Start	Scheduled Finish
11	Bulk Excavation	1	15d	0d	11/2/92 8:00am	11/20/92 5:00pm

Week of November 8

1	Donald Arrow	DNA		1	\$10.00/h	\$0.00/h	\$0.00
---	--------------	-----	--	---	-----------	----------	--------

ID	Task Name	Units	Work	Delay	Scheduled Start	Scheduled Finish
11	Bulk Excavation	0.2	3d	0d	11/2/92 8:00am	11/20/92 5:00pm

2	Fred Fernster	FF		1	\$10.00/h	\$0.00/h	\$0.00
---	---------------	----	--	---	-----------	----------	--------

ID	Task Name	Units	Work	Delay	Scheduled Start	Scheduled Finish
2	Building Plans	0.2	17.8d	0d	10/5/92 8:00am	2/4/93 5:00pm

11	Costoso Ltd.	C		1	\$55.00/h	\$0.00/h	\$0.00
----	--------------	---	--	---	-----------	----------	--------

ID	Task Name	Units	Work	Delay	Scheduled Start	Scheduled Finish
2	Building Plans	1.3	88d	0d	10/5/92 8:00am	1/7/93 11:42am

13	Fabrkam & Sons	F		1	\$100.00/h	\$0.00/h	\$0.00
----	----------------	---	--	---	------------	----------	--------

ID	Task Name	Units	Work	Delay	Scheduled Start	Scheduled Finish
11	Bulk Excavation	1	15d	0d	11/2/92 8:00am	11/20/92 5:00pm

Week of November 15

1	Donald Arrow	DNA		1	\$10.00/h	\$0.00/h	\$0.00
---	--------------	-----	--	---	-----------	----------	--------

ID	Task Name	Units	Work	Delay	Scheduled Start	Scheduled Finish
11	Bulk Excavation	0.2	3d	0d	11/2/92 8:00am	11/20/92 5:00pm

2	Fred Fernster	FF		1	\$10.00/h	\$0.00/h	\$0.00
---	---------------	----	--	---	-----------	----------	--------

ID	Task Name	Units	Work	Delay	Scheduled Start	Scheduled Finish
2	Building Plans	0.2	17.8d	0d	10/5/92 8:00am	2/4/93 5:00pm

11	Costoso Ltd.	C		1	\$55.00/h	\$0.00/h	\$0.00
----	--------------	---	--	---	-----------	----------	--------

ID	Task Name	Units	Work	Delay	Scheduled Start	Scheduled Finish
2	Building Plans	1.3	88d	0d	10/5/92 8:00am	1/7/93 11:42am

13	Fabrkam & Sons	F		1	\$100.00/h	\$0.00/h	\$0.00
----	----------------	---	--	---	------------	----------	--------

ID	Task Name	Units	Work	Delay	Scheduled Start	Scheduled Finish
11	Bulk Excavation	1	15d	0d	11/2/92 8:00am	11/20/92 5:00pm

Week of November 22

2	Fred Fernster	FF		1	\$10.00/h	\$0.00/h	\$0.00
---	---------------	----	--	---	-----------	----------	--------

ID	Task Name	Units	Work	Delay	Scheduled Start	Scheduled Finish
2	Building Plans	0.2	17.8d	0d	10/5/92 8:00am	2/4/93 5:00pm

11	Costoso Ltd.	C		1	\$55.00/h	\$0.00/h	\$0.00
----	--------------	---	--	---	-----------	----------	--------

ID	Task Name	Units	Work	Delay	Scheduled Start	Scheduled Finish
2	Building Plans	1.3	88d	0d	10/5/92 8:00am	1/7/93 11:42am
12	Building Layout	1	3d	0d	11/23/92 8:00am	11/25/92 5:00pm

14	K.C. Hayes	K		1	\$30.00/h	\$0.00/h	\$0.00
----	------------	---	--	---	-----------	----------	--------

ID	Task Name	Units	Work	Delay	Scheduled Start	Scheduled Finish
14	Excavation Bids	1	15d	0d	11/20/92 8:00am	12/18/92 5:00pm

Week of November 29

2	Fred Fernster	FF		1	\$10.00/h	\$0.00/h	\$0.00
---	---------------	----	--	---	-----------	----------	--------

ID	Task Name	Units	Work	Delay	Scheduled Start	Scheduled Finish
2	Building Plans	0.2	17.8d	0d	10/5/92 8:00am	2/4/93 5:00pm

11	Costoso Ltd.	C		1	\$55.00/h	\$0.00/h	\$0.00
----	--------------	---	--	---	-----------	----------	--------

ID	Task Name	Units	Work	Delay	Scheduled Start	Scheduled Finish
2	Building Plans	1.3	88d	0d	10/5/92 8:00am	1/7/93 11:42am

Exhibit 7: Monthly Calendar

November 1992

Sun	Mon	Tue	Wed	Thu	Fri	Sat
1	2	3	4	5	6	7
Obtain Topo Drawing, 5d						
Bulk Excavation, 15d						
Site Preparation, 38d						
Building Plans, 89d						
Building Preparation, 225, 35d						
8	9	10	11	12	13	14
Bulk Excavation, 15d						
Site Preparation, 38d						
Building Plans, 89d						
Building Preparation, 225, 35d						
15	16	17	18	19	20	21
Bulk Excavation, 15d						
Site Preparation, 38d						
Building Plans, 89d						
Building Preparation, 225, 35d						
22	23	24	25	26	27	28
Building Layout, 3d			Excavation Bids, 15d			
Site Preparation, 38d			Footings, 85d			
Building Plans, 89d						
Building Preparation, 225, 35d						
28	29					
Excavation Bids, 15d						
Footings, 85d						
Building Plans, 89d						
Building Preparation, 225, 35d						

Appendix B

An Abridged Guide to Using Microsoft Windows

AN ABRIDGED GUIDE TO USING MICROSOFT WINDOWS (PREPARED FOR MALAWI RAILWAYS)

Introduction

This guide is intended to provide guidance to Malawi Railways (MR) on how to operate a mouse and how to use Microsoft Windows, a user-friendly, point-and-click operating system. It provides step-by-step instructions for the *basic* procedures necessary to organize and manipulate programs and applications. This guide was developed in order to assist MR to use MS Project, a project planning and management software package which operates in a Windows environment. For a more detailed overview, it will be necessary to refer to the Windows user's guide.

Using a Mouse

Moving Around the Screen:

The mouse is a device for pointing at things on the screen. It can be used instead of the keyboard to carry out any Windows task. As the mouse is moved along a desk or any other flat surface, the pointer moves on the screen. If there is no more room to move the mouse, just pick up the mouse and move it to an open space on the desk and continue. Sometimes the pointer changes to an hourglass shape. This means the computer is working.

Selecting and Dragging an Item:

An item on the screen is selected by moving the pointer to the item and then pressing and releasing the left mouse button. This is called clicking. To select an area of the window or an icon, point to the object and click the mouse button. Once an object is selected, the mouse can be used to drag an item from one area of the screen to another. Another way to select an item is to rapidly click twice. This is called double clicking.

Getting Around the Windows Environment

Program Manager:

Each time Windows is opened, Program Manager is started. Program Manager is used to organize programs and applications into groups. Each icon in the Program Manager window represents a group.

When a group is opened, the applications contained in that group are displayed in a window. Groups are opened by double clicking the group icon.

Group windows contain icons. Each icon represents an application. An application is started the same way as opening a group -- by double clicking its icon.

Maximizing a Window:

An application may be made to use the full computer screen as the workspace by clicking the maximize button, the up arrow in the upper right hand corner of the window. If any other applications are running, they will be behind the window. The restore button replaces the maximize button after the window is maximized. It returns the window to the previous size.

Minimizing a Window:

An application may be reduced into an icon by clicking the minimize button, the down arrow left of the maximize button. When a window is minimized, the application within it is still running. The application can be restored by double clicking its icon at the bottom of the screen.

Moving and Sizing a Window:

A window can be moved to another part of the screen by placing the pointer on the window's **title bar** and dragging the window to its new location.

The size of any window can be changed by moving the pointer to the border of the window and dragging the border until the window is the size desired. The pointer will change to a double arrow indicating the direction in which the window can be sized.

Any window covered by another window when moving or sizing are still opened; they are just hidden behind the window. Several windows can be sized so that the contents of more than one window can be visible at one time

Menus:

Most windows have a menu bar across the top of the window. The menu bar contains the names of menus. When a menu is opened, a list of commands is displayed. To cancel a menu without choosing a command, click outside the menu or press the ESC key. Commands are grouped by task. For example the File menu lists the commands necessary to work with files. A menu can be opened by clicking the menu name.

A command can be chosen by clicking the command name. When a command that is not followed by an ellipses (...) is chosen, the command is immediately carried out. When a command that is followed by an ellipses is chosen, more information needs to be provided before the command can be carried out. A **dialog box** appears and prompts the user for the necessary information. Sometimes commands are dimmed. This means that they are temporarily unavailable and cannot be used.

Activating Windows:

When working with Windows, it is common to have more than one application running. Applications may be running in windows or minimized as icons at the bottom of the computer screen. The window in which work is being done is called the active window. All other windows are inactive. A window is made active by clicking anywhere in the window. An application can be closed by double clicking the control menu box in the upper left corner.

Switching Between Applications:

There are a number of ways to switch to another application. Any of the following ways will achieve this:

- Click anywhere in the application's inactive window;
- Press ALT+ESC until the desired window is active;
- Press and hold down ALT while pressing TAB repeatedly to cycle through running applications. When TAB is released, the application comes to the foreground.
- Press CTRL+ESC or double click the desktop to open the Task list. Select the application, and then choose the Switch To button or select the application and then press Enter.
- Choose Switch To from the Control menu (the small white box in the upper left hand corner of the window) of any running application.
- Choose the application's icon.

Note: Definitions of selected terms include the following:

Icon: a small picture which represents an application, accessory, or document in a Windows group.

Title Bar: the bar on the top of all Windows where the title of the group is written.

Dialog Box: a box that appears on screen when more information is required to perform a given command.

Appendix B (continued)

An Abridged Guide to Using Microsoft Project for Windows

AN ABRIDGED GUIDE TO USING MICROSOFT PROJECT FOR WINDOWS (PREPARED FOR MALAWI RAILWAYS)

Introduction

This abridged guide is meant to help the Malawi Railways get started using Microsoft Project (MS Project). It is divided into three sections: (i) the *Overview* section gives an overall picture of how to use MS Project; (ii) *Creating a Project*, the second section, provides step-by-step instructions for entering new projects into MS Project; and (iii) *Managing a Project*, the final section gives specific procedures for updating and keeping track of a project. For a more detailed overview, it will be necessary to refer to the user's guide for MS Project.

Definition Phase: Before working with MS Project, several steps must be performed to ensure a successful project. The first step in successfully managing any project, whether the project is large or small, is to clearly and accurately define the objective. This is an important step that must be undertaken to determine the appropriate tasks to be implemented. In defining the objective, it is essential to keep in mind the underlying rationale, the resources available, and the timing and budget constraints.

Planning Phase: Once the objective has been defined, the next step is to specify the tasks necessary to fulfill the given objective. It is best to start with the largest and most essential activities and then to break them down into smaller, easily manageable tasks. Then, durations must be approximated for each of the tasks, and timing relationships must be specified among the tasks (for example, whether one task may start only after a second task is completed, or whether two tasks must start simultaneously). Finally, resources (such as individuals, groups of people, computers, or equipment) must be assigned to each of the tasks. Some tasks may have only one resource assigned to it, while others may have several resources assigned to them.

An Overview of Microsoft Project

Views

Following this preliminary definition and planning phase, it is possible to start using MS Project as an aid in managing the project. In MS Project, project information can be viewed in different ways. There are three different kinds of views: Forms, Sheets, and Charts.

- Forms are used to enter detailed information. With a form, details about a single task or resource can be seen. MS Project includes the Task Form and the Resource Form.

The Task Form is used to enter information for one task at a time. The task form also shows resource information, so that resources can be assigned at the same time that tasks are entered. Fields at the bottom of the form can be changed to display other kinds of information, or to make a place for notes with the Format menu.

The Resource Form is used to enter or view details for a single resource. The Resource Form also shows details about the resource's tasks. As with the Task Form, fields at the bottom of the form can be changed to display other kinds of information, or to make a place for notes with the Format menu.

- Sheets are used to enter and display information. MS Project sheets are like spreadsheets, consisting of rows and columns. MS Projects includes the Task Sheet and the Resource Sheet.

The Task Sheet is a table of task information used to create a project, outline tasks, and create text reports. The columns of information in the Task Sheet can be changed by applying a different table from the Table menu or by using the Define Tables command.

The Resource Sheet is a view for entering and reviewing resource information and creating text reports. As with the Task Sheet, the columns of information in the Resource Sheet can be changed by applying different tables.

- Charts provide another way of looking at project data. A graphic display of information is helpful for:
 - Looking at the broad scope of the project;
 - Seeing relationships among tasks;
 - Presenting the project on a timeline; and
 - Highlighting scheduling and resource problems.

MS Project chart views include: the Gantt Chart, the PERT Chart, the Task PERT Chart, the Resource Usage View, and the Resource Graph.

The Gantt Chart consists of a table of task information and a chart that graphically displays the project schedule. The chart displays a bar next to each task showing the task's start and finish date and duration on a timescale.

The Palette command on the Format menu can be used to specify how the information should look on the chart. As with the sheet views, the columns in the Gantt Chart table can be changed by applying different tables.

The PERT Chart is a graphic display of the relationships among tasks. Each task appears as a node, and the nodes are interconnected with lines that show task relationships.

The Palette command on the Format menu can be used to specify the information that is displayed in the nodes. The appearance of the dependency lines and the types of tasks that appear in the PERT chart can be changed with the Layout command on the Format menu. The Zoom Out command on the Format menu can be used to see more nodes and less task detail for a wider overview of the project.

The Task PERT Chart is a specialized version of the PERT Chart. This view shows a single task and its immediate predecessors and successors.

The Resource Usage View shows how the resources are allocated and exactly where the resources are overallocated. When this view is first opened, the total work per time unit is shown. However, commands on the Format menu can be used so that allocation, work, and cost information for each time period are shown instead.

The Resource Graph uses a bar graph to display resource information over time. Information can be viewed for an individual resource, a group of resources, or both.

The first view opened when MS Project is started is the Task Entry view. This is a combination of the Gantt Chart and the Task Form. The Task Form in the bottom view shows details about the task that is selected in the top view. This combination view is a good way to begin entering tasks.

Using Combination Views:

Any two single-pane views can be combined to create a combination view. In a combination view, the information in the bottom view relates only to the tasks or resources selected in the top view. In a combination view, the view that has a colored or black vertical bar at the left is called the active view. The other view is inactive. One can easily move between the two views to make one or the other active. To move to a view, click anywhere in the view. Only one view can be active at a time.

To switch from a combination view to a single-pane view, hold down SHIFT while choosing a view from the View menu. To go back to a combination view, use SHIFT while choosing

another view from the View menu. The view chosen will be displayed in the bottom pane. In a combination view, one can change how much of each view is displayed by moving the split bar.

Useful Combination Views:

The following are some views that are particularly effective in combination with each other.

- To review the tasks that immediately precede or follow another task, a combination view using the Gantt Chart and the Task PERT Chart is very effective. This is especially useful if there is a task with more than one task preceding it. The Task PERT chart also notes the type of relationship between the tasks.
- Another useful combination view is the PERT chart and the Resource Sheet. This view is useful for reviewing dependencies between tasks and resource assignments to tasks. As each task is selected on the PERT chart, resources for that task are listed below on the Resource Sheet.
- A good way to check how well project resources are being used is to display the Resource Sheet in the top view and the Resource Graph in the bottom view. As each resource is selected on the Resource Sheet, the Resource graph shows allocation, work, or cost overtime.

Establishing Task Relationships

When tasks are first entered in a project, they all start on the same date and appear as left-aligned bars on the Gantt Chart. The Link Task command on the Edit menu assigns a finish-to-start relationship to tasks. In a finish-to-start relationship, a task cannot start until the preceding task has finished. With a mouse, it is also possible to link the selected tasks with a finish-to-start relationship by clicking the link tasks button on the tool bar (See Exhibit 1 at the end of this Guide). With relationships assigned, MS Project can schedule the entire project from start to finish. Since task relationships affect the start and finish dates of dependent tasks, it is a good idea to check their accuracy. To see the selected task's predecessors and successors, reformat the fields at the bottom of the Task Form.

Using Outlining and Subprojects

When a project is first set-up, one way to structure it is at a single level of detail. But for more complicated projects, it can be helpful to organize tasks in successive levels of detail. With successive levels, one can choose the level of the project to work with. Sometimes the broad picture might be more interesting. Other times it is necessary to concentrate on the details. A project can be organized by using outlining and subprojects.

- Outlining helps show how tasks fit in broader groups and allow the project detail to be shown when necessary. For example, once a task list is outlined, it is possible to collapse it to see an overview of the project or expand it to show every task.
- Subprojects keep detailed tasks separate from the master project. The master project is used when only a broad picture is desired, and separate subprojects can be viewed when the details of the subprojects are desired. One can create subprojects as separate projects, then connect them as tasks to the master project using the Subproject box in the Task Edit Form dialog box. Because subprojects are separate projects, they can help conserve memory by reducing the size of the main project, and subprojects make it convenient for different managers to "own" different parts of the project.

Customizing and Presenting Information

By choosing different views from the View menu, one can determine how the project information is displayed. It is possible to further specify exactly what information is displayed by applying a table or a filter to any view.

A table specifies which columns of information appear in a view. It can be applied to the Gantt Chart, Task Sheet, Resource Sheet, or Resource Usage view. A filter specifies what related tasks and resources to display or highlight while temporarily hiding or not highlighting the others. This helps to narrow the focus. It is possible to either select one of the tables or filters included with MS Project or to create a new one, name it, and add it to the menu.

One can report project information by printing views and reports, some of which may be customized to show the desired information. Before printing, it is possible to use the Print Preview command on the File menu to see each page exactly as it will be printed. The Page Setup dialog box can be used to change the margins, headers or footers, or orientation. Also the legend can be adjusted in the view or report. To print the active view, choose the Print command from the File menu. The views that can be printed are the Gantt chart, PERT chart, Task Sheet, Resource Sheet, Resource Graph, and Resource Usage view.

In addition to printing views, one can print reports. A printed report can show more detailed information than a printed view. A report uses a table and a filter to present detailed information on individual tasks and resources. To print a report, use the Print Report command on the File menu. MS Project comes with several types of reports to print which can be modified as necessary.

Creating a Project

Entering Tasks

The first step in using MS Project is to enter the basic project information. To enter this information, use the Project Info command from the Options menu. A Project Information dialogue box will appear. The name of the project, the company, the manager, the planned start and finish dates and notes about the project, such as the objective, can all be entered.

The most common way to enter task information is using the Task Entry view. In the Name field of the Gantt Chart table, type the name of the first task in the project. Click the enter box or press Enter. As each task is entered, it is a good idea to enter the task duration. In the Duration field, type the estimated duration of the task, followed by a duration abbreviation (i.e., h for hours, d for days, or w for weeks). Click the enter box or press Enter. The amount of time a task will take to finish is initially based on an 8-hour day. *Elapsed duration* is based on a 24-hour day and it is useful when a duration reflects the number of continuous hours needed for a task. To change a duration to elapsed time add an e before the duration abbreviation (i.e., 3ed refers to 3 elapsed days).

Milestones:

Milestones are important points in the project. Usually a milestone represents a transition point--the beginning or completion of a group of tasks. Since a milestone usually marks a transition, it often has a duration of zero. One way to designate a milestone is to give a task a zero duration. A second way of designating a task as a milestone is to check the Milestone check box in the Task Edit Form dialog box.

Inserting and Deleting Tasks:

As a project changes over time, it may be necessary to add new tasks to the list and remove tasks that are no longer required. To insert a task between existing tasks, select the row above which the new task should be inserted, and then use the Insert command on the Edit menu. In the blank row, type the new information. Several tasks can be inserted by selecting several rows before choosing the command. To delete a task, select the task and then use the Delete command on the Edit menu. As with inserting, several tasks can be deleted at once by selecting them as a group before deleting.

Moving and Copying Tasks:

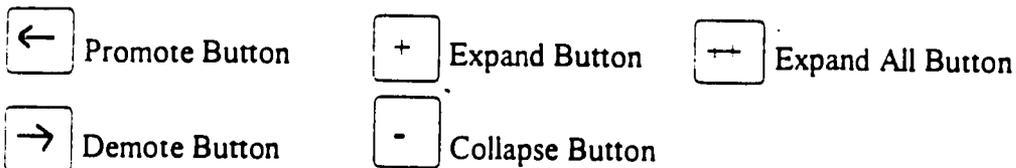
While working with a project, it may be necessary to move tasks from one place in the task list to another. To move a task, first use the Cut command on the Edit menu to delete the task. At this point, it is stored on the clipboard. Then use the Paste command on the Edit menu to put the task where it belongs.

Some tasks may be used more than once. In this case, use the Copy command on the Edit menu to copy tasks instead of retyping the task each time. Once the Copy command has been selected, the tasks will be copied to the clipboard, so that they can be inserted elsewhere. Then the tasks can be pasted where desired using the Paste command on the Edit menu. Copied tasks may be inserted in as many places as desired. When tasks are copied to the clipboard, they stay there until something else is copied or cut.

Outlining Tasks

As discussed above, outlining gives a project a hierarchical structure in which it can be seen how *subordinate tasks* fit within broader groupings or *summary tasks*. As tasks are broken down, MS Project's outlining feature organizes them into levels of detail. Tasks that are components of other tasks are *demoted*. When tasks gets demoted, a summary task and subordinate tasks are automatically created. A summary task is like a heading, it summarizes the costs, work, and scheduling information of the tasks below it.

A summary task is only completed when all of its subordinate tasks are completed. The duration of a summary task is the amount of working time between the earliest scheduled start date and the latest scheduled finish date of all its subordinate tasks. Tasks can be outlined on either the Gantt Chart or the Task Sheet. When either of these views are chosen, the following outline buttons appear at the end of the entry bar:



To make tasks subordinate to a summary task, demote the tasks by selecting the tasks and clicking the demote button. This shifts the tasks to the right. The demote button can be used to create an outline of up to ten levels. Each summary task summarizes all the tasks that are subordinate to it, including other summary tasks. To raise a subordinate task to the next higher level, *promote* the task by clicking the promote button.

When a summary task is moved or copied, all of its subordinate tasks are copied or moved with it. To cut only a summary task and not its subordinate tasks, move or promote the subordinate tasks before cutting the summary task.

Hiding and Displaying Levels of Detail:

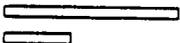
An outline structure makes it easy to create summary presentations and reports. One can show or hide any level of detail by expanding and collapsing summary tasks. By selecting a summary task and clicking the *Collapse Button*, all levels of subordinate tasks below it disappear. By selecting a summary task and clicking the *Expand Button*, the next level of detail is displayed.

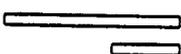
By selecting a summary task and clicking the *Expand All Button*, all levels of detail are displayed.

Assigning Task Relationships

As tasks are entered into the Gantt chart, MS Project schedules them all to start on the same date by default. However, it is more likely that the tasks will occur one after another rather than start at the same time. Assigning task relationships turns a task list into a realistic model of the project. A task that must start or finish before another task can begin is called a *predecessor* task. Any task that depends on another task's completion is called the *successor* of that task. There are several ways to establish relationships between tasks. The Link Tasks command on the Edit menu links tasks with a Finish-to-Start (FS) relationship. A task will start as soon as its predecessor finishes. When tasks are linked, a change in one task will affect the other tasks. For example, if it takes longer than the specified amount of time to complete a task, the successor tasks will be postponed. The Link Task Button (See Exhibit 1) can also be used to carry out the command. Just select the tasks to link and click the button on the tool bar. The Task Form view is especially useful for assigning relationships. To assign task relationships, enter the type of relationship in the Predecessors field.

So far, only the simplest task relationship, Finish-to-Start has been defined. But tasks are typically more complex than that. It may be necessary to assign task relationships in which the start of one task depends on the start of another, or the finish of one task depends on the finish of another.

Use Start-to-Start (SS)  for a task that can start as soon as its predecessor task starts.

Use Finish-to-Finish (FF)  for a task that can finish as soon as its predecessor task finishes.

To change the task relationships, enter the new type of relationship in the Predecessors field of the Task Form. Sometimes it is necessary to add time between related tasks, or overlap the timing of related tasks. In a Finish-to-Start relationship, *lag time* is the amount of delay time between two activities, while *lead time* is the overlapping time between two tasks. To add lag time, in the Task Form type a positive number in the Lag field. To add lead time, type a negative number in the Lag field.

Entering Resources

Resources are the people and equipment needed to complete a project's tasks. All the resources in a project make up that project's resource pool. To make use of resources, they must be assigned to tasks. To assign new resources to tasks using the Task Entry View, select a task to which the resource will be assigned. On the Task Form, select the Resource Name field and type in the resource name. Choose the OK button. Since the resource is new, the system will bring up a dialog box asking whether that resource should be added to the resource pool. Type yes, and the system will bring up a Resource Edit Form to fill in the maximum units for the resource and details on rates. After filling in this information, choose the OK box, and in the Units field on the Task Form, enter the number of resource units that will be assigned to the selected task. Finally, choose OK.

MS Project will automatically calculate the hours of work the resource will spend on the task based on the resource units and task duration using the equation: $Work = Resource\ Units * Duration$. However, the amount of work can also be entered manually, and MS Project will recalculate the duration of the task using the equation above. This is known as *resource driven scheduling*. Then if either more resource units are added or the amount of work is decreased, the duration of the task will decrease. But for some tasks, it may be necessary to hold the task duration constant. In this case, select the Fixed check box on the Task Form, and the duration will always stay constant. This is known as *fixed duration scheduling*.

For a resource that will be working on more than one task, it may be easier to enter the resources directly into the Resource Pool. To do this, enter the resource information and the tasks that the resource will be working on directly into either the Resource Form or the Resource Sheet. To assign a resource already in the pool to an additional task, bring up the Task Entry view, and on the Task Form, select the Resource Name field. Either type the resource name or choose the entry bar arrow (see picture to the right) to see a list of all resources, and select one of the resources. This is especially useful for resources with long or difficult names. Then enter the number of resource units.

Creating Calendars

Calendars define the days and hours that resources are available to work. One calendar can be created for the entire project, or if certain groups have different schedules, separate calendars can be created for them. Also, it is possible to schedule variations in a particular resource's calendar for such events as holidays or equipment downtime.

Before beginning to work on a project, it is necessary to determine the project's working hours and days. MS Project is set up with a standard calendar with: (i) a Monday through Friday work week; (ii) an 8 to 5 workday with an hour off for lunch; and (iii) no holidays. This standard calendar can be used as is, it can be modified, or a new one can be created.

To modify the standard calendar, from the Options menu, choose Base Calendar. In the Base Calendar box, choose standard. Then click the Edit button. If the work week is different from the standard calendar (i.e., for a 4 or a 6 day work week), select the day titles for the days to be changed, and select the Working or Nonworking option button. If the workday is different from the standard calendar, select the day titles of the working days, and type the working hours in the From and To boxes. To change holidays to nonworking days, select their dates on the calendar select the Nonworking option button. Once a calendar is specified for a project, tasks and resources are scheduled according to that calendar.

The calendar sets and shows project working days, nonworking days, and working hours. The calendar displays one month at a time. To move from month to month through the calendar, use the scroll bars, or the PAGE UP and PAGE DOWN keys.

The project calendar set up is called the *base calendar*. It can be used to create calendars for groups of resources who have different schedules from the standard. To do this, choose Base Calendar from the Options menu. In the Base Calendar box, select the calendar to be copied and choose the Copy button. Give the calendar a name and set the workdays and the working hours for the calendar. Choose the OK and Close buttons to close the dialog boxes. Then, in the resource sheet, select the resources to be assigned to the calendar. Choose the Form button on the toolbar (See Exhibit 1) or choose Form from the Edit menu. Then in the Base Calendar box, choose the calendar to be assigned to the resources, and choose OK.

Even after creating and assigning different base calendars to different groups of resources, it is necessary to change individual resource's calendars to reflect holidays or periodic equipment maintenance. In this case, it is easiest to first choose a resource view. Then select the resource whose working days or hours are to be changed. From the Options menu, choose Resource Calendars. Change the working days or hours, and choose OK. Tasks without assigned resources and tasks with fixed durations will continue to use the base calendar.

Analyzing the Plan

Once the tasks and relationships have been entered, the resources have been assigned, and the calendars have been set up, it is important to review the project's schedule. See how much leeway there is, and try out alternate scenarios. Identify tasks both on and off the critical path (critical tasks are shown in bold on the Gantt and PERT charts) to spot potential areas where work could be held up, and to develop alternative plans. Most projects include noncritical tasks. Since these tasks can be delayed without affecting the project finish date, they add some flexibility to the scheduling process. For these tasks, it is a good idea to check the amount of slack time available (using the Schedule table or the Delay Gantt chart) because if their durations increases by more than the total slack time, then they too become critical, and the project will be delayed.

Managing a Project

Using Tables and Filters to Emphasize Information

Project information can become overwhelming. But commands on the Filter menu can be used to find the tasks or resources of interest, and commands on the Table menu can be used to display the desired information associated with those tasks or resources. In a sheet view, project information is displayed in columns and rows. Each column shows one type of information about the tasks or resources. Commands on the table menu control which columns are displayed. Each row shows more than one type of information about the tasks or resources. Use commands on the Filter menu to display groups of tasks or resources that have at least one type of information in common. MS Project provides several tables for use with the Task Sheet, Gantt Chart, Resource Usage, and Resource Sheet views. It is possible to use the supplied tables, modify them, or create new ones.

Tracking Progress

While managing a project, it is imperative to monitor the use of time, money, and resources. During the course of a project, even the most clearly defined plans can be disrupted. This can result in project delays, resource shortages, and cost overruns. To set the project plan, just choose the Set Plan command from the Options menu before the project begins. MS Project saves a copy of this schedule as a base for future comparisons. In tracking a project, the current estimate of the project's schedule is compared to the original plan. As the project progresses, it is necessary to enter the actual data to keep the schedule up to date.

The tracking table is a convenient place to enter actual data about tasks. Just select the task to update and enter the data in the appropriate column. A simple way to update the schedule is to use the % Complete column in the table. A task's *percent complete* is the assessment of how far along the task has progressed. It is expressed as a percentage of the task's total duration. In the Gantt chart view, a black bar drawn across the Gantt bar indicates the portion of the task that is complete.

In addition to entering the percent complete for each task, progress can be tracked by updating the schedule with the following types of data:

- Actual Start - the date the task actually started;
- Actual Finish - the date the task was completed; and
- Actual Duration - how long the task has taken up to the present time; if the task is complete, how long it took to finish the task.

As the actual data is entered, MS Project updates the other fields associated with the task. It is a good idea to use the Set Actual command on the Options menu to automatically update the rest of the schedule.

To update only tasks that were scheduled for completion on or before the update, select the Set Actual Start and Actual Finish Only option button. This option copies the scheduled start and finish dates to the actual start and finish dates.

To update the percent complete for tasks with actual start dates occurring before the update, select the Set % Complete to Update Date option button. This option calculates the percent complete as of the update date using each task's stated duration.

To update tasks that are behind schedule, use the Schedule Remainder to Start on Update Date option. This option moves the tasks so that the entire task or the remainder portion is rescheduled from the update date.

In addition to tracking tables, there are several other tables useful for tracking data.

- The *Cost* table compares planned, scheduled, and actual costs of tasks.
- The *Variance* table compares actual start, finish, duration, cost, and work information.
- The *Work* table compares planned, scheduled, and actual work.
- The *Tracking* table compares scheduled start and finish dates of tasks with planned dates.

Managing resources

MS Project has four views that help manage resources effectively. The *Resource Sheet* shows the resource pool in a spreadsheet-like view. The *Resource Form* shows information about individual resources. The *Resource Usage* view shows how the resources are allocated over time. The *Resource Graph* displays the maximum allocation of one resource for a given time period.

One way to view and edit information for the whole resource pool is to use the Resource Sheet. If a resource is assigned to work beyond its capacity, the Resource Sheet shows that it is overallocated by displaying it in bold type. When a resource is overallocated, a message also appears in the status bar stating that the resource should be leveled.

To see how many resources are allocated over time, use the Resource Usage view. Overallocated resources are shown in bold, as in the Resource Sheet. In this view, commands from the Format menu, such as the Percent Allocation, are valuable in analyzing resource allocation information.

To view or edit more detailed information about a single resource, use the Resource Form. The Resource Form shows how many units of the resource are available to the project and gives detailed cost information. Also a list of the resource's tasks is shown.

To see a resource's peak usage over time, use the Resource Graph. The Resource Graph shows whether a resource is overallocated during each time period. The vertical dashed line shows the current date. The horizontal solid line shows how many units of the resource are available (the Max. Units). If the total amount allocated at any one time is more than Max Units, then the resource is overallocated.

Viewing Capacity and Overallocation and Resolving Conflicts:

As a project is carried out, changes to resource information may need to be made. If resources are overallocated, tasks can be rescheduled or resources can be added. But the tradeoffs must be considered. Rescheduling tasks to meet resource availability may lengthen the project's duration. Adding resources to maintain the schedule may increase the cost of the project.

One of the key features of resource management is resolving resource conflicts and overallocations. The process of *leveling* resolves conflicts and overallocations by rescheduling tasks when resources are available to work. To resolve a resource conflict or overallocation, use the Level Now command on the Options menu. From a resource view, there is a choice to level all resources or only the resources selected. From a task view, MS Project levels all resources. Leveling works by delaying a conflicting task so that it starts later, when enough of its resources are available.

Use the Leveling command on the Options menu to determine when and how leveling will take place. If the Manual option button is selected, leveling will occur only when the Level Now command from the Options menu is chosen. If the automatic option button is selected, each resource will be leveled automatically as soon as it becomes overallocated.

If the Delay Only Within Slack box is selected, tasks will not be delayed past their slack times. With the option selected, tasks are moved only if the adjustment will not delay the project finish date. When an overallocated resource is leveled, MS Project analyzes the resource's tasks to choose which ones to delay. If Delay Only Within Slack is selected, leveling will not delay the end of the project.

When the Automatically Remove Delay is selected, existing delays will be removed the next time the project is leveled. With this option selected, delays resulting from leveling will replace, rather than be added to, existing delays. Tasks are delayed according to the criteria selected in the Order box. Use the Order box to tell MS Project which tasks to delay first. On the "standard" setting, the task with the latest start date will be adjusted first. If two tasks have the same slack time and begin and end on the same day, the lower priority task will be moved. Tasks with a "Do Not Level" priority will not be leveled. Use the form button on the tool bar (See Exhibit 1) or the Form command on the Edit menu to set a task's priority.

Adjusting Schedules

As a project progresses, various events affect the schedule. A delay in completing a task or an adjustment in resource allocation may influence the rest of the schedule. If a task on the critical path is delayed, the project end date will be delayed. To bring a project back on schedule, efforts should be focused on the critical path. Since the critical path is the longest path through the project, the whole project will end sooner if the critical path is compressed. To shorten the critical path, the durations of the critical tasks can be reduced by: (i) adding resources to resource driven tasks; (ii) reassigning resources from tasks with slack time to tasks on the critical path; and (iii) assigning overtime to resources. The critical path can also be shortened by finding tasks that can start sooner and overlap their predecessors. To make linked tasks overlap, it is necessary to adjust task relationships, for example, to add lead time. Adding *lead time* overlaps the start and finish of the tasks. Lead time indicates that the start of one task leads the finish of its predecessor.

Printing Views and Reports

MS Project provides a variety of formats for reporting progress or communicating the needs of a project. Any active view of a project, except Task PERT and Form views, can be printed as it appears on screen by choosing the Print command on the File menu. To print specific tasks or resources only, apply Filters. To control the information printed about each task or resource, apply tables.

In addition to printing views, reports can be printed. Use reports to print information from the Task Form or the Resource Form. MS Project provides several report formats that can be printed as they are, or customized to meet specialized needs.

- Task and Resource reports can be used to print detailed information. The types of information correspond to the fields at the bottom of the forms and any tables and filters applied.
- Periodic reports are used to print a list of tasks or resources taking place during a particular block of time (i.e., weekly).
- Monthly calendar report shows tasks displayed as bars across a calendar.
- Base calendar report lists the days and hours for each base calendar.
- Summary reports give a one page overview of the project.

To print a report, choose the Print Report command from the File menu and select the type of report to print.

Setting Up a Printer:

Before printing for the first time, it is a good idea to check which printer is selected and how the printer options are set. To check the printer settings, choose Print Setup from the File menu. The Print Setup dialog box lists the printers currently installed for Microsoft Windows. Use the Setup button to change the settings for the selected printer. Different types of printers have different settings. If the needed printer is not on the list, install it for Windows by using the Windows Control Panel. For more information on the Windows Control Panel, see the Microsoft Windows documentation.

Setting Up the Page:

Use the Page Setup command on the File menu to specify how each printout will look before printing. Margins, headers and footers, text styles, legend options, borders, and page orientation can all be specified. To see how the page settings will actually look, click the Page Preview button on the toolbar (See Exhibit 1) or choose Print Preview from the File menu.

Exhibit 1: Tool Bar

The tool bar contains a set of buttons that are shortcuts for commands. The appearance of a button and the command the button is assigned to run can be changed by using the Button Definition dialog box. To display the Button Definition dialog box, hold down the CTRL key and click the button to be changed. The following buttons are included with MS Project.

Button	Action
	Saves the project; same as choosing <u>S</u> ave from the File menu.
	Previews the pages in the active view as they will be printed; same as choosing <u>P</u> rint <u>P</u> review from the File menu.
	Prints the active view using the current settings in the Print dialog box.
	Removes the selected information and stores it on the Clipboard; same as choosing <u>C</u> ut from the Edit menu.
	Copies the selected information and stores it on the Clipboard; same as choosing <u>C</u> opy from the Edit menu.
	Inserts the information from the Clipboard; same as choosing <u>P</u> aste from the Edit menu.
	Links the selected tasks with finish-to-start relationships; same as choosing <u>L</u> ink <u>T</u> asks from the Edit menu.
	Unlinks the selected tasks; same as holding down <u>S</u> HIFT and choosing <u>U</u> nlink <u>T</u> asks from the Edit menu.
	On views with a timescale, moves to the next point in time when an overallocation occurs; same as pressing <u>ALT</u> + <u>F5</u> .
	Displays the <u>T</u> ask <u>E</u> dit <u>F</u> orm or <u>R</u> esource <u>E</u> dit <u>F</u> orm dialog box to change task or resource details. If the active view is a task view, clicking the form button displays the Task Edit Form; if a resource view is active, the Resource Edit Form is displayed. Same as pressing <u>S</u> HIFT+ <u>F2</u> .
	Displays the Resource Assignment dialog box to add, change, or remove resource assignments for the selected tasks; same as choosing <u>A</u> ssignment from the Edit menu.
	Displays tracking form dialog box used for entering information.
	Marks the selected tasks as complete; the scheduled finish date is entered as the actual finish date, the percent complete is changed to 100%, and all remaining fields, such as Remaining Duration and Remaining Work, are set to zero.
	Remaining duration on the selected tasks is scheduled to continue on the current date; same as selecting Reschedule Remainder To Start On Update option button in the <u>S</u> et <u>A</u> ctual dialog box.
	Displays the Project Status dialog box; same as choosing <u>P</u> roject <u>S</u> tatus from the Options menu.
	Calculates the open projects; same as choosing <u>C</u> alculate <u>N</u> ow from the Options menu.



Copies the active view as an object; same as selecting the **Linked Or Embedded Object** option button in the Copy Picture dialog box.



Starts Microsoft Graph.



Checks the spelling of words in your project; same as choosing Spelling from the Options menu.



Shows a smaller time unit on the timescale.



Shows a larger time unit on the timescale.



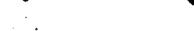
Runs a macro; you can assign anything you want to this button.

Appendix C
Project Implementation Plan

Illustrative Project Implementation Plan: Malawi Railway Restructuring

ID	Name	1995												1996												1997											
		O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S
1	Develop/Build Infrastructure and Equipment	[Solid black bar from Jan 1995 to Dec 1995]																																			
2	Develop procurement plan	[Solid black bar from Jan 1995 to Feb 1995]																																			
3	Rehabilitate 40 km of track on core railway	[Solid black bar from Mar 1995 to Sep 1995]																																			
4	Upgrade railway telecommunication facilities	[Solid black bar from Mar 1995 to Apr 1995]																																			
5	Install new safety-related equipment	[Solid black bar from Mar 1995 to May 1995]																																			
6	Build up spare parts inventory	[Solid black bar from Jun 1995 to Dec 1995]																																			
7	Reach normal stock levels	[Solid black bar from Dec 1995 to Dec 1995]																																			
8	Receive Technical Assistance	[Solid black bar from Jan 1995 to Dec 1997]																																			
9	General Manager	[Solid black bar from Jan 1995 to Jun 1996]																																			
10	Financial Manager	[Solid black bar from Jan 1995 to Jun 1996]																																			
11	Marketing Manager	[Hatched bar from Jan 1995 to Dec 1996]																																			
12	Severance Packages	[Solid black bar from Jan 1995 to Dec 1996]																																			
13	Design package	[Solid black bar from Jan 1995 to Feb 1995]																																			
14	Identify staff to be retrenched	[Solid black bar from Mar 1995 to Apr 1995]																																			
15	Implement payout of phased severance program	[Solid black bar from Mar 1995 to Sep 1995]																																			
16	Staff Training	[Solid black bar from Jan 1995 to Dec 1997]																																			
17	Conduct on the job training	[Hatched bar from Jan 1995 to Dec 1996]																																			
18	Train management in negotiating/leadership skills	[Solid black bar from Jan 1995 to Jun 1995]																																			
19	Train staff in post-downsizing roles	[Hatched bar from Jul 1995 to Dec 1996]																																			
20	Conduct Studies	[Solid black bar from Mar 1995 to Apr 1995]																																			
21	Improve reliability of equipment in operations	[Hatched bar from May 1995 to Jun 1995]																																			
22	Enhance staff productivity	[Hatched bar from Jul 1995 to Aug 1995]																																			
23	Improve effectiveness of mgmt and operating system	[Hatched bar from Sep 1995 to Oct 1995]																																			
24	Facilitate private sector involvement in core R/R ac	[Hatched bar from Nov 1995 to Dec 1995]																																			
25	Institute Credit Facilities	[Solid black bar from Jan 1995 to Dec 1996]																																			
26	Develop credit schemes	[Solid black bar from Jan 1995 to Feb 1995]																																			

Project:
Date: 3/24/84

Critical  Progress  Summary 
 Noncritical  Milestone  Rolled Up 

130

TECHNICAL WORKING PAPER
ENVIRONMENTAL ASSESSMENT

Prepared in support of:

The Malawi Railway Restructuring Project

Prepared by:

Abt Associates, Inc.

Funded by:

USAID/SARP/Zimbabwe

Funded via:

The Privatization and Development Project
(Prime Contractor: Price Waterhouse)

Malawi Railways Restructuring Project

Technical Working Paper: Environmental Assessment (Management for Environmental Protection and Worker Safety)

1. Introduction

In preparation for a joint donor mission to assess the prospects for restructuring Malawi Railways, a preliminary assessment of the Railways' environmental and safety impacts was conducted. The terms of reference for this assessment focused on the extent to which the Railways complies with existing environmental laws and regulations and on whether the Railways was taking adequate precautions to protect worker safety. Recommendations for ways of addressing inadequacies in either area were to be constructed. These recommendations would be considered for incorporation, as appropriate, in a donor-funded project supporting the restructuring. The full terms of reference are provided in Appendix B.

On a national scale, most detrimental environmental impacts from rail transport appear to be low priorities relative to other environmental problems in Malawi. Even within the transport sector, railroad impacts have not been singled out for attention in the recommendations made to date in the preparation of the National Environmental Action Plan (DREA, #9). However, the lack of urgency at the national level should not be interpreted as cause for ignoring the environmental damages from rail activities altogether. Instead, it should be noted that these damages are typically local in scope but not necessarily inconsequential. As a result, site-specific measures to address these damages can be justified in many instances.

Worker safety is an important consideration in evaluating the operations of the Railways because of their scale and the variety of high risk activities undertaken. The use of heavy machinery is routine, not only on the rail lines but also in the rail yards and workshops. The workshops, which are primarily oriented to overhauling and repairing locomotives and rolling stock, are essentially a form of heavy industry. Their activities pose risks of accidents that can cause severe disabilities or fatality. Consequently, the worker safety considerations are not minor.

This technical working paper is organized as follows. The next section provides an overview of the regulatory context for environmental protection and safety at Malawi Railways. Section 3 presents a broad assessment of the Railways' performance in protecting the environment and worker safety. Section 4 outlines recommended steps to be taken by Malawi Railways and the Government of Malawi to address shortcomings identified in the assessment.

Finally, a note on the scope of this assessment is important. Malawi Railways, as an organization, is linked to a myriad of activities, including the provision of housing to its employees, the operation of transport on Lake Malawi, and rail activities in Mozambique. This assessment concentrated solely on explicit rail operations in Malawi.

2. Regulatory Context

2.1 Regulatory Context: Environment

A complete program for the regulation of environmental impacts from rail operations should oversee pollutant emissions to water, air, and land. Of these, only water pollution from Malawi Railways' operation and maintenance is currently subject to any regulation that is really binding but even this regulation may be only irregularly enforced. Each of the major regulatory authorities and their linkage to rail activities are considered in turn below.

Although the Railways operates as a national institution, its activities are primarily regulated at the local level. This orientation is probably fitting given the localized nature of many of the environmental impacts emanating from rail activities. There are however inconsistencies in the ability of the local authorities along the rail line to oversee the activities of the Railways and to restrict any detrimental impacts. Even for the largest city, limited resources inhibit the full inspection of environmental impacts from industrial sources, including the Railways.

For example, primary regulation of the effluent discharges from the Limbe workshop comes from Blantyre City Health Department and the City Engineering Department. These discharges are mainly composed of oil-contaminated wastes to the creek adjacent to the facility. The division of responsibility between them is unclear. The Engineering Department is responsible for sewage systems in the city and for the analysis of effluent. It appears that the Health Department is also charged with testing the creek for contamination. One or both of these required the Railways to install an oil separation facility about ten years ago to reduce the discharge of oily waste into the adjacent creek. It was asserted by Malawi Railways that the Engineering Department checks the pollution levels regularly. Other sources indicate that this department has severe staff shortages and that the current staffing is inadequate for enforcing city regulations (DREA, #18, pp. 23-24).

Regulating air emissions also appears to be the domain of local government officials. No specific statutes or standards confirm this but one railway official indicated that air emissions from the workshop are the responsibility of local health officials. Currently, however, there appears to be little or no regulation of air emissions from the Railways or other major polluters. While air pollution may not be a high priority environmental issue at the national level, this does not rule out serious local impacts. Visible emissions (smoke) from transport in Malawi have been cited as a problem (DREA, #18). While smoke from road vehicles has been the primary concern, smoke from locomotives could be an issue as well. Such emissions certainly have an impact on the welfare of populations living close to

the rail yards. Apparently, no attention has been given to this impact by either local health officials or the Railways.

Land disposal also seems to be the responsibility of local government. However, it is unclear what local oversight, if any, exists for the disposal of large quantities of solid wastes. Currently, for example, on-site disposal of these wastes in the "graveyard" at the Limbe railway yard appears to be subject to no governmental regulations. Smaller quantities are collected by the municipalities for disposal. No restrictions appear to be placed on the types of materials that can be disposed through the municipal collection.

In addition to a review of the specific regulations related to individual environmental media (water, air, and land), the terms of reference for this technical analysis called for an assessment of environmental laws and regulations related to the procurement, storage, and disposal of chemicals, oils, fuels, and lubricants. With the exception of the regulation of water discharges and the regulation of storage for worker protection under the Factories Act, there appear to be no specific regulations that are relevant.

However, an institutional mechanism does exist at the national level for addressing these activities. The Malawi Bureau of Standards has an Environmental Protection and Pollution Control Technical Committee that has responsibility for environmental standards. This technical committee has published only one environmental standard, for water quality. However, the Bureau has published other standards which may incorporate safety, health and environmental considerations (DREA #15, p. 43). Standards appear to exist for the handling and use of certain substances, and, sometimes, the associated waste disposal. It is not clear whether any of these pertain to the types of substances that MR uses (fuel, solvents, lubricants, other chemicals). Furthermore, the Bureau does not have the capacity to apply the standards. This responsibility is left to the relevant ministries and departments, which may also lack the resources and authority to enforce the standards fully. Consequently, even if relevant standards did exist on paper, it is likely that they would not be effectively applied to Railways activities.

2.2 Regulatory Context: Worker Safety

The Factories Act (Cap. 55:07) regulates at a general level a wide array of activities by Malawi Railways in order to ensure worker safety. The Factories Inspectorate of the Ministry of Labour is responsible for conducting inspections and enforcing compliance with the terms of this Act. The Inspectorate can impose fines for noncompliance and ultimately has the authority to close any facility that remains out of compliance.

Supplementing the terms of the Act itself is the Industrial Safety Code of Malawi. This code was prepared by the Employers' Consultative Association of Malawi, of which Malawi Railways is a member. Although the code has no regulatory aspect, it is intended to

"aid management and employees in the introduction, institution, and maintenance of practical safety systems" (Employers' Consultative Association of Malawi, No Date, p. i). In addition to general checklist for using in reviewing internal safety practices, the code makes specific recommendations for the supervision of fourteen different areas of safety concern.

3. Environmental and Safety Performance

3.1 Review of Environmental Impacts from Workshops at Limbe

The primary workshops for Malawi Railways are in Limbe. These workshops include a diesel overhaul and repair facility, an automotive repair shop, a foundry, a coach shop, fuel tanker cleaning area, a blacksmithing shop, a structure shop, a lathe shop, a wagon shop, and an old bridge assembly shop, where minor welding and blacksmithing are conducted.

The diesel overhaul and repair workshop is housed in one building in the Limbe yard. In this location, diesel locomotives are dismantled for general overhaul, the most extensive rehabilitation work that can be conducted on a locomotive. Much of the initial work has to be conducted from within pits constructed underneath track leading into the facility. Directly outside of this building is a steam cleaning area for the engines being overhauled and a load box and refueling area where engines are tested. In the pits and around the building are drainage and collection systems intended to capture waste oil spillage and rainwater.

Until the early 1980s, oil-contaminated water drained from the pits inside the workshop to the creek adjacent to the facility. Because populations living downstream from the facility used the water for drinking, washing and bathing, the City of Blantyre required the installation of an oil separation unit to reduce the amount of waste oil entering the creek. This unit was installed at some time in the early 1980s and is still in place. The oil collected in this system is sold or distributed for several different uses, according to several individuals at the railway. The biggest environmental concern stems from individuals' using this waste oil in household lamps. This practice can cause air emissions of heavy metals and other pollutants in close quarters, leading to potentially toxic exposures for household residents.

During dryer periods this system may serve as an adequate buffer for keeping large quantities of used oil out of the creek. Problems may arise, however, during heavy rains which overwhelm the capacity of the separator as stormwater enters the system. This can result in oil-contaminated water entering the creek. In response to an insurance questionnaire in 1989, the Railways indicated that the "[d]efective oil separator spills waste oil into rivers at times." What was meant by "defective" is unknown but this statement suggests that other problems which could not be uncovered during this provisional inspection may also limit the effectiveness of the oil-separation system.

Other parts of the drainage system are meant to collect ordinary rainwater and have no oil separation unit since they were not designed to handle oil-contaminated wastes. In practice, however, waste oil can still enter the creek through this route, from at least two sources. First, rainwater runoff can carry waste oil from spills in the shop into the gutters around the diesel overhaul building. Oil contamination was evident in these gutters. Second, spills of oil or gasoline in the auto repair pits can enter the same drainage system.

The likelihood of oil contamination reaching the creek raises human health and welfare concerns. Observations made during a rail tour of the downstream area confirm that households still use the downstream creek for washing and bathing and possibly for direct consumption. Within close proximity (within 2 to 3 kms.), there appear to be a few hundred households that have access to the creek.¹

Several possible sources of groundwater contamination exist at the workshops. One source is the refueling depot. In general, refueling activities in rail operations can be a significant source of fuel losses. Without fuel recovery systems, repeated spills can be a major source of ground contamination. No specific estimates of fuel losses could be obtained for Malawi Railways but visual evidence of chronic contamination at the Limbe refueling station suggests that the accumulated amount of fuel spilled has been substantial. In the absence of a fuel recovery system, these spills have soaked into the ground. Groundwater contamination is likely to have occurred as a result. Contamination of the adjacent creek may also be linked to any groundwater contamination.

Another possible source is the steam cleaning of fuel tanker cars, which is necessary each time the type of fuel carried is changed. These tankers are steam-cleaned for 24 hours a day. Fuel-contaminated steam and water flow out of the tankers directly onto the ground without any intervention. This practice has been used for years in the same location at the Limbe workshops.

A third possible source of groundwater contamination, as well as surface water contamination, is the steam cleaning of diesel engines and parts. This cleaning is conducted on a dirt surface outside of the diesel overhaul workshop. Water that is contaminated with waste oil and sludge is allowed to seep into the ground. Some water may run off into the drainage collection system surrounding the building and be emptied into the adjacent creek.

¹ At distances greater than 10 kms. from the yard, the population around the creek is sparser and maize cultivation dominates the terrain.

3.2 Other Direct Environmental Impacts

3.2.1 Right-of-Way Maintenance²

Currently, vegetation on the railroad right-of-way is being maintained manually. The practice of spraying herbicides was ceased five years ago because it was considered too costly. At that time, two types were used.³ These were sprayed usually just before but preferably just after the first rain of the rainy season. No government regulations existed to control the uses of these herbicides on the right-of-way. Instead, only Malawi Railways decided what constituted safe and unsafe applications.

The spraying was done from a moving train. Potentially, this means of spraying could expose individuals, animals, and water resources along the right-of-way. The Railways' procedure for avoiding contamination of surface water required shutting off the sprayer as the train was about to cross any stream. This approach might work reasonably well in avoiding direct exposure but given the likelihood of subsequent run-off it does not avoid surface water contamination. It is unknown what steps were taken to avoid exposing individuals and animals.

In the future, if rail operations grow and, as a result, herbicides become economically feasible once again, it is unclear how the Railways will respond. There are diverse opinions in the current management. Some say that herbicides would be used. Others say that the practice poses too many environmental concerns. Without a formal statement of company application standards and without external regulation from the government, there is little effective guarantee now that, if herbicides were used, they would be used appropriately.

3.2.2 Locomotive Air Emissions

Little is known about the Railways' performance in controlling these emissions. In the absence of any effective regulations, it is likely that little attention has been given to this environmental impact. The seriousness of this omission is unknown. Judging from the U.S. experience with addressing air emissions from locomotives, smoke emissions have been the first target of regulation and primarily on a local level. Opacity limits range from 20 to 60 percent in different localities around the U.S. (United States Environmental Protection Agency, 1991). Regulatory control of other pollutants (hydrocarbons, carbon monoxide, and oxides of nitrogen) has been limited and only recently came under closer scrutiny. Consequently, smoke emissions from Malawi Railways locomotives appear to be the more pressing problem that needs attention.

² Malawi Railways refers to right-of-way as the "permanent way."

³ The names of these two herbicides were given as Hyva-X and Die-Rite. No further information on them was made available.

3.2.3 Discharge of Human Wastes from Passenger Operations

Human wastes from passenger operations are currently discharged onto the rail tracks. Health risks could arise from direct contact with these discharges since the tracks are regularly crossed by local populations. The discharges may also be a small source of water pollution but its contribution is likely to be small.

Clearly these discharges are undesirable from a public health perspective but without better information on the magnitude of the problem and on the feasibility of different solutions it is difficult to gauge how serious this problem is. Furthermore the marginal improvements from reducing this contamination might be small in some locations along the line. Other sources of contamination, primarily poor sanitation facilities for the general population, have led to substantial bacteriological contamination of surface waters.⁴

3.2.4 Hazardous Materials Transport

Hazardous materials transport was not targeted in the terms of reference for this technical paper. By itself, a review of Malawian regulations and the Railways procedures would constitute a significant task. Still, it is important to note the potential for extensive environmental damages from improper handling hazardous goods. Currently, the most significant hazardous material being transported by the Railways are fuels. Safety precautions are being taken in the loading and off-loading of these fuels and standards for the marshalling of trains exist but the adequacy of these measures is unknown. Scrutinizing these activities more closely could be important, especially if individuals live nearby or if sensitive environments are involved (such as the off-loading of fuel from transport on Lake Malawi).

3.3 Indirect Environmental Impacts

Most of the detrimental environmental impacts associated with rail operations in Malawi are local in scope, as acknowledged above. Even when considered in the aggregate, these local impacts probably do not rank among the high priority environmental problems of Malawi. There is however an indirect, and possibly positive, influence that increased reliance on railroads could have on high priority environmental problems.

The World Bank has, for example, cited soil erosion and deforestation as two key environmental problems (World Bank, 1991). Potential impacts on these problems from

⁴ In the wet season, 87% of piped water, which is the source of water for 50% of the population in rural areas, has fecal coliform levels in excess of 50 per 100 ml, the Malawi government guideline (DREA, #13).

railroad activities operate primarily through the Railways' becoming a less expensive mode of freight transport. If the restructuring of the Railways accomplishes this, it should translate into lower costs of imported cargo, including fuel and fertilizers.

Assuming for example that the domestic prices of imported fuel decline as the result of lower shipping costs, it is possible that reliance upon fuelwood in peri-urban areas could be reduced, thereby reducing one of the sources of deforestation (which is itself a contributing factor to soil erosion). Nonetheless, this conclusion should not be carried too far. Although it may hold in a partial equilibrium framework, there is the strong possibility that other pressures on forests would actually increase when fuel prices fall. Consequently an environmentally beneficial outcome is possible under this scenario but not guaranteed.

A further pressure on forest resources in Malawi comes from increasing the extensiveness of cultivation. In meetings with USAID, it was suggested that lowering the price of fertilizer though lower transport costs could induce small farmers to use more intensive cultivation practices to expand production rather than encroach upon forested areas.⁵ This outcome would of course be environmentally beneficial but more intensive fertilizer use could lead to a negative effect too, such as an increased likelihood of groundwater contamination. So, the prospects for an environmental benefit from cheaper rail through this particular linkage are ambiguous.

Less ambiguous is the impact that cheaper rail transport could have on the amount of road hauling of freight and its detrimental environmental impacts. In the transport sector, road transport, which competes with railroads in the movement of freight, has been singled out for its environmental effects. Assuming that a restructuring of the Railways leads to substantially more freight customers to choose rail over road transport, the intensity of road hauling on Malawi's highways could be reduced. While this reduction may not reduce the environmental impacts that come from road construction, one of the commonly cited problems stemming from road transport, it could reduce the volume of freight traffic on Malawian highways, or at least the rate of increase in this traffic.

The benefits from this impact depend on the differential effects that rail and road transport have on the environment and public health. Generally, rail transport produces less air pollution than road transport. However, possibly more critical is the differential impact on transport fatalities. In 1991, 1,117 people were killed in road accidents in Malawi (National Road Safety Council of Malawi, 1992).⁶ Goods vehicles were involved in 48% of

⁵ It can also be argued that lower priced fertilizer would lead to the cultivation of a larger area of land, thus exacerbating deforestation.

⁶ Malawi's road fatality rate appears to be very high relative to the experience of other parts of Southern Africa, judging from data of the mid-1980s. Malawi had 200 fatalities per 10,000 vehicles, more than 180% higher than Tanzania (71), more than 50% higher than Lesotho (119) or Zambia (113), and more than five times greater than Swaziland (36) (Institute for Transport Economics, 1988).

these fatal traffic accidents. Available figures do not allow a suitable comparison with the experience of railways, such as in terms of fatalities per ton-kilometer of freight. Still, approximations can illustrate the point. Allowing for at least a tenfold difference in level of activity, based on the relative shares of road and rail in international freight traffic (approximately 90% for road and 10% for rail), road transport would have entailed 30 fatalities when rail transport typically has fewer than 10 per year. The real differential between these two modes could be greater, if the experience of more industrialized economies provides a relevant indication. In the Netherlands, one study estimated that road transport of goods imposes accident costs that are 15 times higher than rail transport, normalized to tons per kilometer (Economic Research Centre, 1994). An analogous study in Belgium estimated accident costs from road transport that are nearly 10 times higher than those of rail transport of freight, when normalized to kilometers traveled (Dubus, 1989).⁷

3.4 Review of Safety in Workshops at Limbe

An on-site review of these shops revealed significant safety problems in parts of the facility. It appears that the Railways has operated the shops with minimal investment in protective infrastructure and equipment. Compounding the problem is the fact that the existing infrastructure has been allowed to deteriorate. Although registered in the past under the Factories Act as having approximately 700 workers, the current configuration appears to be no more than one third that amount. Exact figures were not available.

The diesel workshop currently suffers from several problems that compromise safety and the ability to work for the approximately 40 people who work in the building.⁸ The roof of the building has extensive leaks that allow the floors and pits to flood during periods of rain. Electrical work benches are in the middle of the area that floods the most. As a result, work must be conducted with the risk of electrical shock or be suspended until the water can be cleared. Although a drainage system was built into the pits, they have been clogged for some time. During the rainy season, the pits are flooded, leaving difficult working conditions even after the pits are cleaned out manually. Even during the dry season, other factors, such as congestion and oily floors in the work area, make safe operation difficult.

⁷ The ratio of road accident costs to rail accident costs is far higher (480) when costs are normalized to tons per kilometer. This high figure should be viewed with caution since the study compared all utility vehicles on the road with rail transport of freight and was unable to focus solely on comparable modes of transport (lorries versus rail freight).

⁸ All of the problems cited in this review are at least generally and sometimes specifically included in either the Factories Act 55:07, the Industrial Code of Malawi, or both, as safety issues to be avoided in Malawian industrial operations.

The overhaul work entails substantial lifting of heavy locomotive components (including the engine housing, the engine itself, wheel bogies, among other things) by overhead crane assisted by a work crew on the ground. Running repairs are also conducted in this same building but do not involve the same heavy lifting. Instead, the repair work is conducted mostly from work pits underneath the track.

The lifting configurations used in the workshop have some immediately apparent shortcomings that raise the risk of accident substantially. Ramshorn hooks suspended from the crane have no safety catches to prevent a load from slipping off. The steel slings wrapped around the load itself are aged and need to be replaced. The implications of the resulting higher risks of a lifting accident are even more serious because of the absence of certain types of protective equipment. For example, no hard-hats were available to prevent head injuries from falling objects, which is a critical gap for a shop where the lifting of heavy loads by crane and working under heavy machinery are routinely involved.

Other conditions outside of the diesel workshop also pose safety risks. Next to the building is the "load box" where locomotive engines are tested. Directly adjacent to this unit is the fuel stand where locomotives are refueled. A USAID consultant engineer singled out this configuration as a particularly dangerous one (Harper, 1994). Although it is unknown what the Railways experience has been, a 1989 insurance questionnaire indicates that MR recognized that "sometimes locomotive engine crank case explodes" indicating justified reason to be concerned.

In several other workshops at Limbe, the most pressing safety concern relates to protective equipment. Stoking the cupola-style furnace in the foundry requires close proximity to very high temperatures in confined quarters at the mouth of the furnace. No protective barriers are available to the workers. The furnace operates only once a week now so it was not possible to determine how adequate the protective clothing of the workers is. Given the chronic shortfall of all types of protective gear at the Railways, it is likely that insufficient gear are provided for this work too.

In the coach shop, where woodworking equipment is used, there was signage reminding workers not to smoke and to "Use the Guards" for eye protection at the table saws but there appear to be an insufficient number of eye guards for the number of workers in the shop. In the blacksmith shop, workers also had insufficient protective clothing. Inadequate venting of smoke could be a problem. One blacksmithing location had no chimney, allowing smoke to accumulate within the building.

In the structure shop, where major body work is done, including painting and welding, no fire extinguishers were available. Protective eye gear and gloves were being used by welders but some shortcuts were being applied in the absence of other proper equipment. Used 55-gallon oil drums have been used to hold up heavy equipment. Their damaged condition seemed to indicate that they have failed on numerous occasions to provide adequate support and have collapsed. In the wagon shop, certain types of important

protective gear were absent. No protective eye gear was worn by the lathe operator, riveters working with heavy metal plating wore no hard-hats, and welders and other workers wore street shoes in circumstances where steel-toed boots would have been more protective.

3.5 Inspections under the Factories Act

Malawi Railways' past experience with inspections under the Factories Act provided insights into longstanding safety problems that are still present in Railway operations. After an inspection is conducted and if the Railways is cited for problems, an official notice is sent from the Factories Inspectorate in the Ministry of Labour. The Railways was very open, allowing the examination of such notices and the internal and external correspondence it generated. Correspondence over the past ten years was reviewed. This review led to the following findings.

Inspections at least appear to generate internal discussion of cited problems and in varying degrees of completeness over the years, initiate some steps to address these problems. Given the constructive role that these inspections play and the current, deteriorated conditions in parts of the workshops, it is important that they take place regularly. Therefore, it is disturbing to note that it has been some time since an inspection has taken place, or least one that uncovered problems. The last general inspection to uncover problems at the Limbe workshop took place in 1989.

From the correspondence files, it appears that the last steam boiler inspection took place in 1991. A follow-up inspection was supposed to have taken place in 1993 but no record indicates that it did. The boiler in question has been in service since 1958. The apparent lack of inspections means that opportunities have been missed. Boiler problems appear to arise with regularity. In the past, though, MR has shown a willingness to address at least some of the problems identified during inspections. For example, an earlier inspection of this same boiler uncovered operation problems that internal records indicate were addressed. There was an inspection of explosives magazines conducted in 1993 as directed under the Explosives Act.

According to the correspondence files, some imported air receivers were inspected in 1990 and were supposed to be re-examined in 1992. There is no record that this inspection took place. Two locally-made air receivers were targeted for a hydraulic pressure test by the Factories Inspectorate in 1990 as well because earlier records showed that there were leaking portions requiring repairs. No paperwork indicates that this inspection ever took place.

Drainage of floors and pits has been a persistent problem in Lilongwe as well as Limbe. Calls by the Inspectorate for redesigning the drainage system to avoid the accumulation of rain water in the workshop, especially in the locomotive inspection pit, date back to 1988 at least. As noted above, the problem is even more pronounced today in Limbe because of roof leaks.

A related problem is the condition of the floors in the diesel workshop. Oily deposits are universal. To a degree, the spillage of oil is unavoidable but some form of regular cleanup is necessary to ensure safe and productive operations. This is difficult in an environment where other contamination problems, especially those stemming from poor drainage in the pits, are left unresolved.

Protective clothing has also been a persistent problem, since at least 1984. The Inspectorate has called for the following steps, some on more than one occasion. Worn out overalls have needed replacement. Employees handling batteries should be issued acid-proof overalls and gloves. All workshop employees should be issued steel-toed safety boots. On this point, MR has consistently resisted issuing all workshop staff with steel-toed safety boots as called for in several inspections.

The need to recharge and service fire extinguishers has been cited frequently, since 1987 at least. Given the frequency of citations for inadequate fire protection equipment in the past, the lack of general inspections in the past five years could mean that there are problems today too. Even the most recent inspection, conducted pursuant to the Explosives Act, indicated that there were inadequacies in the fire protection equipment provided at the explosives magazines. Some problems could be resolved simply (by covering pails of sand) and others require the expenditure of funds (equipping the magazines with fire extinguishers, which Malawi Railways asserted would be done in 1992 but never was).

Improper storage of materials (parts, tools, etc.) has been cited on occasion. This problem appears to arise regularly. From the internal correspondence, it appears that Malawi Railways usually musters some form of remedial response to the problem. However, the fact that it continually arises indicates that these remedial measures are short-lived. The Railway's experience with first aid boxes is similar. Once cited for having improperly stocked first aid boxes, it appears that steps are taken to restock them. These steps are typically not sufficient. What appears to be lacking is a systematic effort by the Railways to uncover these problems on its own, such as, in this case, by instituting measures to assure that the first aid boxes are appropriately stocked.

In sum, compliance with some of the Factories Inspector's recommendations has been a problem. Furthermore certain inadequacies have been chronic. It is worth noting though that Malawi Railways has actually responded to at least some of the problems as they are identified. In this process, however, the Railways appears to have taken a very reactive stance, waiting to respond to problems as they are pointed out by the Factories Inspectorate. It should also be noted that the Railways typically responded to the types of problems that could be readily resolved and that were not resource-intensive and not necessarily to the problems that were most critical to increasing worker safety.

Finally, the apparent lack of general inspections by the Government of Malawi in recent years is a serious shortcoming. Given the critical role that inspections have apparently played in inducing Malawi Railways to redress at least some safety problems, the absence of

inspections has probably contributed to a significant deterioration of safety conditions in the Railways. The fact that the Railways does not systematically monitor workshop accidents and near-misses means the costs of these poor safety conditions, to workers and the Railways, are unknown.

3.6 Procedures to Monitor Workshop Safety

The Industrial Safety Code of Malawi recommends that medium to large industrial concerns should assign one employee at least part-time as safety officer. One of the suggested duties of such an officer is to maintain accident records. The Code also suggests that such historical accident information can provide an empirical basis for identifying the particular types of safety problems that impose costs on a given facility.

While a position for an accident prevention officer has recently been established at the Railways, it appears that the responsibilities of this officer are focused exclusively on derailments and do not include other workplace accidents that threaten worker safety. Nor is there any other management entity systematically generating reports on the Railways' experience with workplace accidents. Though required to submit reports on major individual accidents to the Ministry of Labour, Malawi Railways does not appear to generate explicit summaries of its experience with workplace accidents (e.g., in the form of aggregate statistics). One railways management official indicated that there were approximately 100 accidents per year. Another put forward an estimate of 2 to 3 per month, which translates into only 24 to 36 per year. No further information was made available to derive firmer estimates or to elaborate on the Railways accident experience.

Greater attention appears to be given to derailments, since the Railways' working capital is involved, than to workshop accidents. While the protection of rolling stock is financially important to the Railways, this bias raises the question whether there is sufficient recognition within the Railways of the potential costs posed by safety risks. These potential costs include workmen's compensation, medical attention, lost productivity, and damages to Railways property, among other things. While workmen's compensation is negligible except where losses of limbs are involved, and even then the compensation is low, the overall total costs from an accident may not be small, especially if damage to property is involved. Whether this is the case or not remains unknown until a more systematic approach is taken to monitor workshop accident experience.

4. Recommendations

Resolving some of the inadequacies identified in Malawi Railways' environmental and safety performance could be accomplished by reallocating resources within the organization. In many cases though, additional financial resources will be required. The following recommendations are made under the assumption that a donor-initiated effort will assist Malawi Railways not only to get on a more sound economic footing but also to make investments in environmental protection and worker safety that are not currently affordable.

4.1 Recommendations: Environment

4.1.1 Steps to Be Taken by Malawi Railways

Of the inadequacies in Malawi Railways' environmental performance, it is recommended that the following be addressed in the near term via a donor-initiated effort (the first three to six months). Although they are at times made with specific reference to the Limbe workshops, they apply to analogous situations at other locations as well.

- Identify sources of pollutant discharges to surface water adjacent to railroad workshops.
- Correct defects in oil separation system that allow oil-contaminated discharges into the adjacent surface water.
- Where possible, channel oil-contaminated water that now passes directly into the surface water through the oil separation system once it works properly.
- Identify sources of groundwater contamination (such as refueling, tank cleaning, and engine washing) and develop a plan for intercepting this contamination, such as through recovering fuel product and capturing and treating wastes.

Currently Malawi Railways does not have an explicit plan for assuring compliance with environmental protection regulations. In many respects this shortcoming is a function of the lax oversight and enforcement exercised by governmental authorities. Below, it is recommended that the Government of Malawi address this inadequacy. As a result, it is anticipated that Malawi Railways will have to take more initiative in anticipating and resolving environmental impacts from its operations. Consequently, it is recommended that in the medium term (the first six months to one year) Malawi Railways initiate steps to identify high priority environmental impacts from rail operations, that have not been addressed in the near term, and ways to mitigate these impacts. This process may include, among other activities:

- A review of locomotive idling and operation practices to reduce smoke emissions.

- A review of procedures to ensure adequate protection in hazardous material loading and transport.
- A review of uses of waste oil captured in the oil separation system or other effluent treatment facilities.
- A review of the management of human wastes discharged from passenger services.

While it is unlikely that dedicating the full-time efforts of a single individual to this oversight will be justified, there may be economies of effort that can be achieved by combining the environmental supervision recommended here with the safety responsibilities identified below.

In the long term, Malawi Railways should have in place a procedure for anticipating new environmental impacts that arise from changes in rail operations and for identifying means of mitigating these impacts. For example, if the Railways returns to using pesticide to maintain the rail right-of-way, a pesticide application policy should be drafted to ensure adequate environmental protection.

4.1.2 Steps to Be Taken by the Government of Malawi

The Government of Malawi is currently preparing a National Environmental Action Plan (NEAP) and undertaking other environmental institution-building activities (such as one sponsored by the United Nations Development Programme) that are expected to change the regulation of environmental impacts from economic activities. It is premature to say exactly how the outcome of these efforts will affect the regulation of Malawi Railways. There is fortunately a common perception of the need to bolster the monitoring and enforcement of compliance with environmental regulations and standards by line ministries and other organizations with responsibilities for the environment.

Because many of the environmental problems that come from Railways' activities are local in scope, it is fitting that local health and other authorities have regulatory responsibility. They have, however, lacked the resources or the administrative leverage to ensure that these problems are addressed. Inspections are infrequent and they have not been able to ensure that problems that are identified get resolved.

The effectiveness of local authorities in ensuring compliance with environmental regulations needs to be improved. There is a risk that the institutional changes being envisioned in Malawi are too oriented to national entities because these are the primary target of the NEAP process and other donor-supported activities. Because these local authorities are the front-line regulatory agencies with regard to Railways' operations, they should not be shortchanged in the institution-building currently underway in Malawi.

4.2 Recommendations: Safety

4.2.1 Steps to Be Taken by Malawi Railways

In the near term via a donor-initiated effort (the first three to six months), it is recommended that Malawi Railways address the following inadequacies in its workshop operations. As was the case for the environmental recommendations, these are at times made with specific reference to the Limbe workshop but they apply elsewhere as well.

- Repair leaky roof of diesel overhaul building in Limbe.
- Clear drainage system to make pits operable.
- Fill long-standing and urgent needs for protective equipment, including protective head gear (hard hats) and work boots especially.
- Address perennial shortcomings in fire extinguishers and first aid boxes.

In the course of the Malawian effort to draft a National Environmental Action Plan (NEAP), which is financially supported by the World Bank, one suggestion has been put forward to improve workplace safety. The legislative task force of the NEAP suggests that "employers could offer awards to their employees for observing occupational safety rules" (DREA, #15, p. 20). In terms of maintaining a clean and safe workplace, this approach might be useful. With a small amount of resources, employees could be provided incentives to upgrade the work environment. There are however larger problems, such as the blocked drainage system at diesel overhaul and repair workshop in Limbe which will require more than employee incentives. Possibly Malawi Railways could divert redundant labor to this and other larger cleanup tasks. If so, the return to the Railways could come in the form of higher employee morale and productivity.

In the medium term (the first six months to one year), it is also recommended that Malawi Railways undertake the following activities in order to initiate and maintain a higher level of oversight of safety needs.

- Begin a systematic and on-going analysis of the Railway's experience with workshop accidents.
- Conduct a comprehensive audit of safety needs in the workshops. This audit should identify the types of risks to be avoided, cost-effective means of avoiding these risks, and the likely return to Malawi Railways.
- Establish priorities among these safety needs as the basis for a new safety investment program.

The review conducted during this mission uncovered but a few of the types of workshop practices that need to be addressed. Because there appear to be a large number of inadequate practices, the ones cited here probably do not constitute a comprehensive list of important practices that should be changed. At the same time, it probably will not be possible for the Railways to implement simultaneously all of the changes necessary to upgrade safety conditions. Before the Railways increases its level of activity as the result of donor funding, a thorough review of workshop practices should be conducted to determine priorities in workshop safety improvement.⁹ This review should lead to the design of a workshop safety improvement plan. The design and implementation of such a plan could be milestones for a donor-funded project with the Railways.

4.2.2 Steps to Be Taken by the Government of Malawi

The primary tool of the Government of Malawi for encouraging improved workshop safety is its authority to inspect the Railways and enforce relevant provisions of the Factories Act. This authority is not being used to its fullest potential. Three dimensions of the inspection and enforcement activities need further attention.

First, most pressing is the need to undertake more regular general inspections to evaluate safety procedures at the workshops. Others have also observed a lack of regularity in inspections to ensure environmental safety in the workplace (DREA, #15, p. 22). A review of Malawi Railways correspondence indicated at least a past willingness to try to address some shortcomings raised by these inspections.

Second, it is not clear how thorough the inspections are. The safety citations made by the Factories Inspectorate reflect only a small portion of the problems that exist today. This discrepancy may stem from an increase in safety problems that has occurred in the absence of inspections. Or, it may indeed be the case that the Inspectorate's citations only reflect a modest portion of the problems existing at a given time. If this is the case, then the inspection program needs to be upgraded to provide a more comprehensive and rigorous review of the safety practices.

The final shortcoming of inspections conducted under the Factories Act is the lack of adequate enforcement mechanisms. Malawi Railways has chosen not to respond to certain safety problems identified by the Factories Inspector. The primary mechanism at the Inspectorate's disposal is the right to shut down an operation violating the Factories Act, or, at least threaten to do so. Because this option may be best exercised as a last resort, an intermediate mechanism should be constructed. A system of fines or penalties that are high

⁹ The further definition of a restructuring program for the railway overall will have implications for the size and nature of work carried out at the workshops. This in turn will impact the safety issues. For example, the restructured railway may no longer carry out heavy overhaul and maintenance of locomotives, and instead contract out these activities.

enough to create incentives to redress safety problems but not so high that they would not be effectively imposed could offer such an intermediate mechanism. The current penalties and incentives are too small or ineffectively administered to change employer behavior. The feasibility of changing these penalties or of identifying other, intermediate enforcement mechanisms should be investigated.

REFERENCES

- Department of Research and Environmental Affairs (DREA), Government of Malawi. No date (1993?). Issues Paper on Legislation Policies and Institutional Framework. National Environmental Action Plan (NEAP), Task Force No. 15. Consultant: S.B. Phiri. Lilongwe, Malawi.
- Department of Research and Environmental Affairs (DREA), Government of Malawi. No date (1993?). Issues Paper on Pollution Control and Waste Management. National Environmental Action Plan (NEAP), Task Force No. 18. Compiled by: J. Kazombo. Lilongwe, Malawi.
- Department of Research and Environmental Affairs (DREA), Government of Malawi. No Date (1993?). An Issues Paper on Transport and Communications. National Environmental Action Plan (NEAP), Task Force No. 9. Compiled by E. R. M'mangisa. Lilongwe, Malawi.
- Department of Research and Environmental Affairs (DREA), Government of Malawi. 1993. Population and Human Settlement Issues Paper. National Environmental Action Plan (NEAP), Task Force No. 13. Compiled by: M. Shawa. Lilongwe, Malawi. July.
- Dubus, P. 1989. Comparative Accident Costs of Transport Modes. In: Railways, Environment and Transport Quality. International Transport Workers' Federation. London, Great Britain.
- Economic Research Centre, European Conference of Ministers of Transport. 1994. Benefits of Different Transport Modes. Report of the Ninety-third Round Table on Transport Economics. Lyons, 30 June - 1st July, 1992. OECD Publications Service. Paris, France.
- Employers' Consultative Association of Malawi. No Date. Industrial Safety Code of Malawi. Blantyre, Malawi.
- Harper, W. 1994. Personal Communication. Limbe, Malawi. March.
- National Road Safety Council of Malawi. 1992. Annual Report of the National Road Safety Council of Malawi for the Year ended 31st March, 1992. Blantyre, Malawi.
- United Nations Development Program. 1993. Institutional Support for Environmental Management. Component Document, Component for the Government of Malawi. MLW/93/005.
- United States Environmental Protection Agency. 1991. Report to Congress on Railroad Emissions - A Study Based on Existing Data. Prepared by the Office of Air and

Radiation. EPA 460/3-91-01.

World Bank. 1991. Malawi: Economic Report on Environmental Policy. Volume I: Main Report. October 25.

APPENDIX A

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APPENDIX B

Terms of Reference

- 1) Prepare environmental assessment of Malawi's environmental laws and regulations as related to Malawi Railways' operations. This assessment shall cover the following: a) procurement, storage, and disposal of chemicals, oils, fuels, and lubricants; b) identify and assess Malawi Railway's procedures for implementing safety regulations; c) assess Malawi Railway's procedures for controlling emissions from locomotives, maintenance depots, and workshops; and d) review Malawi Railways' maintenance procedures for maintaining the railway track right-of-way.
- 2) Review Malawi Railways' workshop safety standards and determine if adequate procedures are in place to implement and monitor workshop safety. Recommend appropriate procedures and a mechanism for addressing workshop safety conditions.
- 3) Review Malawi Railways' environmental implementation and monitoring plan and determine if there is adequate compliance with national and local environmental laws and regulations. Should Malawi Railway lack proper compliance procedures and an implementation and monitoring plan, recommend appropriate mitigating procedures and mechanisms necessary to achieve compliance.

TECHNICAL WORKING PAPER
BENEFICIARY IMPACT ASSESSMENT

Prepared in support of:

The Malawi Railway Restructuring Project

Prepared by:

Abt Associates, Inc.

Funded by:

USAID/SARP/Zimbabwe

Funded via:

The Privatization and Development Project
(Prime Contractor: Price Waterhouse)

Technical Working Paper

Beneficiary Impact and Social Soundness Analysis

1. Introduction

Malawi Railways (MR) is in the process of restructuring with the objectives of providing efficient service in a competitive environment and becoming financially self-sustainable. MR and the Government of Malawi have sought assistance from donor agencies in support of this effort. A team of consultants, funded by USAID, conducted technical analyses in selected areas in support of the joint World Bank-USAID-ODA project preparation mission. This technical working paper resulted from the assessment of impact and analysis of social soundness of MR restructuring.

The paper is organized as follows. The remainder of this section gives a geographical perspective of Malawi and a broad overview of the transport sector to provide the context of MR as a major part of the sector and indeed the economy. The Scope of Work of this study is stated in Section 2. A description of the project and the main assumptions used in the study are enumerated in Section 3. The methodology employed to identify impact and analyze social soundness is discussed in Section 4. The main findings of the study are analyzed in Section 5, and the conclusions and recommendations are presented in Section 6.

Malawi stretches over approximately 850 km in the north-south direction and about 300 km in the east-west direction at its widest point. It measures about 120,000 square km, of which 20 percent is covered by Lake Malawi. It is a land-locked country bounded by Mozambique in the eastern, southern and south western borders; Tanzania in the north-northeastern border; and Zambia on the northwestern border. About eighty percent of Malawi's population of an estimated ten million¹ lives in the central and southern part of the country, primarily in rural areas. The two most populous cities are Blantyre and Lilongwe. Malawi with a per capita income of less than US \$200 per annum is among the poorer countries in Africa, with a fragile agricultural based economy. Population growth is high and the social indicators are low. The economy has been stagnant for the last several years.

The transport system of Malawi includes an infrastructure of about 2,700 km of main roads and 8,100 km of secondary and district roads, 797 km of railroad, four inland (lake) harbors and four commercial airports. The roads are concentrated in the south, but a north-south highway (M1) links the northern extreme of the country with the southern extreme. All of the railway lies in the southern half of the country.

¹ The population in the 1987 census was estimated at approximately eight million.

The main hub of the railway is in Limbe, a satellite of Blantyre² the largest city in Malawi. From Blantyre, the rail line moves to Nsanje in the southern most part of the country bordering Mozambique, and northward toward the Lake Malawi port of Chipoka and then on to Salima. From Salima, it goes westward through Lilongwe to the Zambian border at Mchinji. Another line joins the north-south track at Nkaya with the Mozambique Railway-North (also known as Caminhos de Ferro de Mocambique or CFM-N) connecting the port of Nacala at the border town of Nayuchi. This track of railway network (with Malawi Railway and CFM-North) is more popularly known as the Nacala corridor.

The railway transports mainly goods, but it also carries passengers on some of its routes. In the fiscal year 1992-93, it transported 340,000 tons (52.3 million tons/km) and 859,000 passengers (65.3 million passenger/kms). In the first nine months of the 1993-94 year, the transportation of passengers has dropped relative to goods. Table 1 in Appendix I, shows the performance of the railway in more detail.

2. Scope of Work

The key tasks listed in the Scope of Work are the following.

1. Identify the socioeconomic impact of the Malawi Railway Restructuring project and conduct a social soundness analysis of the project.
2. Assess and quantify the economic and social impact on the main beneficiaries of the project.
3. Assess the extent to which social and economic dislocations will result from the proposed project and make recommendations as to how adverse social and economic consequences might be mitigated.

The MR Restructuring Project has not been fully designed and the involvement of the donors has not yet been completely defined. In this study, we have analyzed the socioeconomic impact of the Malawi Railway restructuring project as articulated in the draft corporate plan prepared by MR, defined by recent World Bank documents³, the Transmark report, and the Malawi Government (GOM). It is understood that the restructuring program, in the process of implementation and further definition, will have many new elements. Therefore, the impacts emanating from it are likely to be somewhat different. But in the absence of any other clear and complete statement of the project, the description in the corporate plan is taken as the most appropriate alternative. The implicit assumption here is that the restructuring process is well

² With a population of about 500,000, Blantyre represents more than half of Malawi's urban population, and is the prime center of its commerce and industry.

³ Aide-memoire of December 1993, and the corresponding Project Identification Sheet.

under way, and any donor supported changes in the recommended activities will increase the positive impact and ameliorate the negative impact of the continued restructuring process.

3. Description of the Project

The Malawi Railways has increasingly experienced financial difficulties, and since FY93, if not before, has effectively been insolvent. The government has kept it alive with financial assistance. Mounting financial pressures on Government, resulting from the recent regional drought and other factors, has resulted in government being unable to continue with subsidies to financially "troubled" parastatals. The Government of Malawi, eager to continue with sound fiscal management and continue with the economic structural adjustment program, was forced to encourage the railway to restructure in lieu of continued assistance. MR has already taken a number of steps towards restructuring itself and is developing a strategic plan to operate as a commercially viable organization in a competitive environment.

The objective of the proposed restructuring project is to improve the overall efficiency of MR by improving performance in key result areas. Achieving specific targets in these key result areas will involve the following changes in the structure and operation of MR:

- i. Reduction in the workforce from the 1992-93 strength of 3,386 to 1,460 in the year 1998⁴. Since October 1993, 867 staff have been retrenched and another 240 are being served notices in April 1994⁵. The manpower plan for MR is given in Table 1.
- ii. The railway network will be classified into "core lines" and "retained lines". The core lines will be fully maintained and will see increased and efficient services in goods transportation. The core lines will consist of the current tracks between Limbe-Salima-Lilongwe and Nkaya-Nyuchi (on towards Nacala). This section of MR will operate efficiently and there is expected to be an increase in volume and frequency of goods transportation. Tariffs here will be competitive and the railway will not receive any subsidies from the GOM for the operation of goods trains in this sector.
- iii. The retained lines will be maintained so as not to let the lines go into total disrepair. They can be brought up to full operation within a reasonable time and with minimum resources when demand increases. Both passenger and goods

⁴ The actual number of staff required to run the restructured railway needs further analysis and definition. A number of scenarios for the future of the railway already exist, and each estimates a different "optimal" level of staff.

⁵ Precise numbers are not fully verifiable. Thus, alternative estimates exist, but on an order of magnitude basis, the various estimates are roughly equivalent.

transportation will be reduced in these lines. The retained lines will consist of the existing lines between Limbe-Nsanje and Lilongwe-Mchenji. Passenger (and accompanied baggage) services between Limbe and Luchenza in the Limbe-Nsanje line and between Salima and Mchinji will be greatly reduced. There will only be special seasonal services between Lilongwe and Mchenji, particularly during the tobacco harvest season.

In general, there will be a reduction in passenger services in all lines and more particularly in the retained lines, and there will be increased services in the core lines for transportation of goods. The GOM will continue to provide subsidies for passenger services in some routes where alternative travel options are not feasible.

4. Methodology

The methodology employed in this study involved review of pertinent documents, particularly relating to transportation issues and those relating to household responses to social and economic changes. Discussions were held with key people involved with transportation in Malawi, especially the railways and the major shippers, and with a range of other people who provided first hand information on the condition of the people affected or likely to be affected by MR restructuring, and their aspiration and plan for the future. Data was provided by MR, the Ministry of Labor, and collected from secondary sources like the publications of the National Statistical Office, Ministry of Transportation and the World Bank are used wherever appropriate. The characteristics of the recently retrenched railway workers was analyzed from information obtained from MR and through interview with some of the workers.

5. Findings

This section presents findings concerning the social soundness of the MR restructuring project. The assessment of impact and social soundness analysis focuses on three areas of changes envisaged in the project. In each of these areas, the characteristics of the people affected, the types of impact, and the adjustment process adopted by the affected people will be examined. Due to lack of precise data and time constraints, this study was unable to quantify impact attributed to the project, nor is it appropriate to attempt such quantification until the project itself is defined with greater precision.

5.1. Impact of retrenchment

The Malawi Railways has retrenched 867 people since October 1993 and is in the process of laying-off another 240 before the end of April 1994. They also plan to further reduce their work force in the next five years. Although the management has indicated that further reduction in staff will generally occur through regular and normal attrition (that is, natural wastage), it seems unlikely that such a large reduction can take place naturally on sufficient scale. Also, the

restructuring will result in different configuration of staffing and skill levels.

The manpower plan for MR in 1993-94 and the next five year is given in Table 1.

Table 1
Planned Retrenchment of Staff
By Department

	1993-94	1994-95	1995-96	1996-97	1997-98	1998-99
General Manager	420	378	321	273	246	221
Finance	149	95	81	69	62	56
Traffic	769	506	430	366	329	296
Technical Services	1,983	1,404	1,193	1,014	913	822
Pers & Admin	191	144	122	104	94	85
Total	3,512	2,527	2,147	1,826	1,644	1,480

Criteria for selection of staff were quite simple. Staff at the lines (station administration, maintenance crew, traffic staff, etc.) at which services were stopped or reduced were affected the most. Those in the upper age bracket, who were going to retire in the next five or fewer years, have received accelerated retirements. The third group of retrenched workers comes from recent hires. The fourth group were those with poor job performance or discipline records.

As indicated in the table, the railway is going to reduce its staff by about 2,030, reflecting a drop of almost 60 percent in staff strength over five years from the level in September 1993.

5.1.1. Description of the affected population:

Detailed information about the personnel laid off by MR in the first six phases of retrenchment are not fully available. Some of the information obtained from the personnel department about the characteristic of the retrenched workers are given in Table 2 below.

Table 2
 Characteristics of Retrenched Staff
 Malawi Railway

Place of employment	Nos. Staff	Urban/Rural	Income per month	Years of Service	Age
Blantyre	64	Urban			
Lilongwe	29	Urban			
Salima	42	Urban			
Others	726	Urban/Semi Urban			
Total	861	Urban/Semi Urban	Min = K197 Max = K173 9 Med = k600	Min = 3 Max = 41 Med = 28	Min = 26 Max = 60 Med = 45

The monthly income of the retrenched staff ranged from K197 to K1,539, with the median income of about K600. Typically, they have served the company for more than 20 years and were over 40 years of age. Almost all of them had some level of education, with many having secondary education and other higher level of training at the vocational institute. Only 32 percent of them had some technical skills. They are generally urban dwellers, but some lived in semi-urban areas. The majority of them lived in railway owned and maintained houses, or houses leased for long-term by the railway at very reasonable rates. Some of them however, had to rent their own accommodation. The railway houses are of superior quality compared to houses people of similar socioeconomic conditions live in. Almost 31 percent of the retrenched staff were at the last few years of service before retirement. They were forced to take early retirement. The staff at MR had good access to outpatient medical facility and also received prompt and quality inpatient care once referred by company physicians. Although the average size of the households of the retrenched staff was stated to be five, there are many households with more than ten members of immediate and extended family. A much higher percent of the railway staff has sent their children to primary and secondary schools than the national average for urban population.

5.1.2. Impact of Income loss

The laid off staff have worked for the railway for between 3 and 41 years, with the majority working for more than 20 years. They have worked full-time with perception of significant job security. Once employed, they expected to be employed until retirement. As such, they have not engaged in any other income earning occupation or accumulated significant savings for unforeseen events. With an average wage of the laid-off workers estimated at K600,

the railway workers maintained relatively comfortable lifestyles compared to national per capita income estimates⁶. As people with secure incomes, the railway workers were also able to take the added responsibility of taking in members of the extended family. All the workers interviewed mentioned of having extended families.

Employment Prospect: The current employment situation in urban Malawi is poor. In the absence of the recently collected comprehensive data on employment, it is difficult to estimate the actual unemployment rates in Malawi. However, discussions with government officials in the Ministry of Labor, large private employers and employees at the railways, indicate that there is a serious employment problem in general and more so in the urban areas. The 1987 population census cites the urban population at 11 percent, or approximately 850,000. There were about 600,000 working age people in the urban areas. With an underestimated participation rate of 46 percent, the total number of people employed or looking for work amounts to 272,000. With approximately 169,000 reported as employed as wage labor, and about 37,000 self-employed, the unemployment rate is estimated at almost 25 percent.

Furthermore, the economic problems and population increases in the last two years are likely to have accentuated the problem of unemployment. The real GDP in 1992 and 1993 has gone down. The unemployment rate therefore, is likely to be higher than the 25 percent estimated for 1987.

The unemployment problem is further aggravated by the fast growing population and the ever-increasing new entrants to the work force. Every year there is an addition of 185,000 people in the labor force, but the economy is able to generate only 15,000 to 35,000 new jobs. The laid off railway workers are generally older (more than 40 years of age), and many of them unskilled or have skills quite unique to the railway and therefore are less likely to be able to compete favorably in the labor market. There is a prevailing practice among many organizations that set maximum age limit of 40 years for new hires. Many of the retrenched workers have very little prospect of employment in urban areas. Their options are generally limited to setting up small businesses, or to go back to their traditional villages and engage in agricultural activities.

Business Opportunity: Malawi is currently going through difficult economic times. In the face of economic difficulties and general stagnation there are fewer business opportunities. Moreover, the unemployed railway workers had no exposure to business practices and lack market and business related information. Having been used to fixed and stable earning sources, they are not used to risk-taking and aggressive pursuit of business objectives. They also lack business skills, capital and physical assets for accessing bank financing. On the positive side, however, the railway workers are generally more educated, are better connected, and have some institutional support from union and colleagues, etc.

⁶ However, relative to many other workers in the formal economy, wages at MR are quite low.

The loss of a secure job has been devastating for the laid-off staff. The retrenched staff were generally the heads of households and most often the only formal sector income-earning member of the household. The average size of urban household is five, but a large percentage of families have in excess of nine members. Therefore, in the absence of alternate income-earning occupation, the loss of a job amounts to the loss of sustained livelihood for five or more members in the households. With an estimated average income of K600, the laid-off staff generally lived a modest but relatively comfortable life style. The loss of income will affect most adversely on food consumption (about 50 percent of income), housing (15 percent of income), and schooling. The impact of loss of job and income is further accentuated by rising inflation and poor conditions of the current economy.

5.1.3. Impact on Women:

In the absence of a secure job for the traditional income earner (almost exclusively male in the urban household in Malawi), experience in many of the East and Central African countries have shown that women seek income earning alternatives, particularly in the informal sector. Some have become involved in urban farming or have become self-employed. This could also happen in Malawi. Women typically took up activities with low capital requirements such as food preparation, retail of fuel and consumables, and cottage industry activities.

As women become more involved with income generating activities, and become important source of income to the family, their status in the society also changes. This empowerment often leads to greater economic and political dynamism in the society. However, it also has other consequences. Greater involvement in an income-earning occupation leads to lesser time for the traditional role as housekeeper and for the upbringing of children. Mothers have delegated household tasks to a greater extent to children, generally to their daughters. As a result fatigue from household work and of helping mother were often cited as the single most important reason for poor school performance and participation in school work.

5.1.4. Impact of Relocation:

The high cost of living in the urban areas and low probability of alternative employment or other income-earning activities would force many to relocate to traditional villages in order to live on less, and also for an opportunity to grow subsistence crops. It is pointed out that the younger workers are more likely to stay in the cities and seriously pursue employment and business opportunities in the urban areas, and with support will be successful. The older workers are more likely to retreat to their traditional villages and engage in subsistence activities. Land for building houses and for cultivation is not seen as a major problem. Local chiefs are eager to help and are willing to provide land for homestead and garden at no cost. Clearing and development of the land and building houses are the responsibilities of the tenants.

Housing Problems: One of the better amenities that railway employees enjoyed relative to colleagues in comparable jobs in other industries is improved housing facilities. Relatively better housing facilities were provided to railway employees at low or nominal rents. Railway

housing had significantly superior accommodations compared to average housing available in the urban areas, let alone those in the rural areas. These houses/apartments have electric facilities, piped in water, complete sanitation facilities and adequate floor space. They are generally of cement and concrete structure with corrugated iron or concrete roofs. Loss of housing facilities will be a serious reduction in the quality of life for the retrenched workers. It is very unlikely that they will be able to afford similar housing at the market rent,

Table 3
Housing Characteristics
Percentage Distribution of Household by Characteristics

Housing Characteristics	Urban	Rural
Electricity	19.8	1.1
Piped water	11.1	.6
Access to piped water	71	17.4
Modern sanitation	14	.6
Pit latrine	82.9	68.5
No facility	3.1	30.8
Avg persons per sleeping room	2.7	2.8

even if they are able to find comparable jobs. The retrenched staff have to move from improved housing to lesser housing in the urban areas or as is more likely to rural areas. Table 3 list the housing characteristics of urban and rural housing. Discussions with various people have indicated that the majority of the retrenched workers would be going back to their traditional homes. They will build houses on family land. Considering the low severance package that the workers were able to receive, these houses are more likely to be very modest. In general, housing characteristics in the rural areas is perceived to be significantly inferior to the urban condition. Only one percent of rural dwellings have access to electricity, 18 percent have access to some kind of piped water, and 69 percent have access to some sanitation facilities. Comparable figures for the urban areas are 20 percent, 82 percent and 95 percent, respectively. There is no appreciable difference in the number of people sleeping per room between urban and rural areas.

Schooling Problems: Almost universally the railway workers have enrolled their children in schools. Their children have planned to complete at least secondary school. Dislocation will force many of the children to drop out of schools. Although there are free primary schools in rural areas and public school with low fees like the urban areas, they are far apart and represent longer travel. Table 4 shows the percentage of school age children enrolled

in schools in urban and rural areas. More than twenty percent fewer children from all age groups attend schools in the rural areas. Dropping school will be one of the more serious impacts of dislocation and possibly the greatest loss of investment

Table 4
School Enrolment
Percentage of School Age Population Enrolled

Age Group	Urban	Rural	Aggregate
6-10	73.9	49.6	52.3
11-15	78.6	64.5	66.3
6-15	76.2	56.5	58.7
16-20	52.4	34.2	36.7
21-24	17	8.4	9.7

for the retrenched workers. One of the retrenched staff mentioned that he has nine children in his household and all of them go to school. The oldest is eighteen years old and is preparing for matriculation. He believes he has no prospect for any employment in Blantyre and has decided to go back to his traditional village. He needs to get all his children to the village to help him prepare the field for agriculture. He does not see any further education for his children. The most far reaching social problem arising out of the retrenchment, if long term urban residents have to move to traditional homes, will be the loss of opportunity for their children who were in many cases born and raised in urban settings, and other adjustment problems including social conflict arising out of this mis-adjustment.

Health Care Issues: The railway employees and their families received company provided outpatient and ambulatory care free of charge. For serious cases requiring inpatient and specialized care services, the railway dispensary referred to St. Elizabeth Hospital, the country's premier acute care hospital, which provided services free of charge. Access to health care in the rural areas is less than satisfactory. The retrenched employees are going to lose this important benefit. One of the employees interviewed stated that he has a good piece of land that he could cultivate. But because his wife has a serious case of chronic asthma, he is in a dilemma about what to do. He cannot survive financially in the city, but at the same time, his wife who often needs emergency medical attention, will not survive in the traditional village.

5.1.5. Acceptability of the Program

The retrenchment of employees under the railway restructuring project is only partially understood by most staff. They saw it coming due to the ever decreasing levels of services from the railways since the civil war in Mozambique. However, a number of concerns

were voiced by many of the people interviewed. Three of those concerns were raised most emphatically: (i) the inadequacy of the severance allowance; (ii) the mis-timing of the retrenchment; and (iii) lack of communication, and representation of the employees in the management decision.

Adequacy of the Severance Allowances: The railway provided two kind of packages for the retrenched staff. Both packages contain a 'notice pay', a relocation allowance, three months notice and a right to stay in railway accommodation for three months. The notice pay for regular retrenchment candidates amounts to half a month pay for every year of service. For the early retirement candidates, the railway pays the company contribution to the pension fund for stipulated years remaining before the actual date of retirement and regular pensions. For example, a 55 years old employee who was forced retire at 55 instead of the regular 60 years, will receive an amount equal to four percent (approximately) of pay company contribution for the remaining years (five). For relocation, the railway will either transport the retrenched employee's family and household furniture and other goods to the choice of place, or pay a reasonable transportation fee at the choice of the employee. The transport allowance is equally applied for both retrenched and early retirees.

The affected people do not feel that the severance benefit is very reasonable and fair. They complain that allowances provided by other organizations are more substantial than what the railway is offering them. For instance, Air Malawi has offered one month's pay for every years of service. David Whitehead, a private textile company which laid off thirteen hundred employees two years ago, offered three percent of a year's salary for every years of service for employees with less than five years of service; five percent of yearly salary for those serving for five to nine years; and six percent for those over nine years of service. Translated into an equivalent time frame, the Whitehead allowance is equal to 1.56 weeks for each year of service for those under five years, 2.6 weeks for those under nine years; and 3.12 weeks for those over nine years. The retrenched workers and the labor leaders interviewed also indicated that recent high inflation and virtually stagnant pay level in the past few years makes the severance allowance inappropriate and unfair. The severance package is also subject to normal taxation, resulting in further reduction in effective compensation. The half months pay for a year of service was established in 1963, when about 3,000 railway workers were laid off. Both the officials of the labor union and the employees interviewed suggested that one month salary for every year of service would be a fair settlement.

The people who were made to take early retirement did not receive severance pay. They feel they have been treated unfairly. They do not understand why they should not receive severance pay when technically they have been terminated because the position they occupied does not now exist under the restructuring program.

Timing of Retrenchment: Concerns were raised on the timing of the retrenchment. Many of the six phases of retrenchment were carried out in the rainy season. This is a particularly bad time for travel for relocation. Roads are bad and properties are damaged in the rain. Moreover, the building materials (straw for roofing) are only available after the rainy

season. The June to September time frame is most appropriate for travel and building houses in rural areas.

The severance pay is not all paid at one time. They are usually paid over three or more months. During this period, workers are required to stay in their post. It is often traumatic for the laid-off staff to come to work for three months, often doing no work. Lack of motivation and preoccupation with thoughts of misfortune often expose the workers to accidents particularly in the cases of locomotive drivers or maintenance gang, and also make them more prone to erratic behavior. They risk personal injury and loss of severance compensation resulting from accident and disciplinary actions for untoward incidence occurring in these three months.

Lack of Communication: The restructuring of the railway and the process of retrenchment has been conducted with very little interaction with the general employees of the railways. In the absence of proper communication, rumors were rampant, resulting in anxiety and serious morale problems. There was no representation or other forms of involvement from the side of the workers. There were few meetings with the workers and the union, and there was some other discussion and dialogue. The workers voiced their concerns and stated what they thought was appropriate compensation. There were no other communication between them and the time of termination notice. This resulted in some ill feelings among the workers, because they felt that they should have been informed about the consultations going on between appropriate government officials and the railway management. As explained by the Personnel Director at David Whitehead, perhaps the one single action that was responsible for smooth implementation of worker lay-offs, was the regular communication between the workers and management, either through newsletter or through regular meetings.

5.2 Impact of Transportation Efficiency in the Nacala Corridor

One of the main objectives of the MR restructuring program is to improve services at the Nacala corridor, that is on the core rail line. MR recognizes that Nacala port can be the most cost-effective rail outlet for Malawi and therefore it should be safe in operation, provide maximum customer satisfaction, and operate efficiently so as to reduce cost to the minimum. By providing assured and quality services at efficient cost and charging competitive rates, MR expects to increase freight on this route from its current level of about six percent of international trade volume to 40 percent of international trade volume. This will enhance revenue for MR and the GOM will save substantial money previously used to subvent the railways excess cost over revenue.

Malawi has the world's highest transportation cost element in the value of imports (CIF). It is estimated that currently transportation costs represent 16 percent of the commodity value of exported goods and 23 percent of imported goods (please see tables in Appendix A). For some commodities, eg. imported food grains, transportation cost exceed the value of the commodity. The transport burden for overseas traffic to the economy of Malawi is estimated at K660 million (\$120 million, 1990 data). The World Bank estimated that if all the international corridors operated efficiently, the country could save almost 24 percent, or K154

million (\$28 million). The two rail routes to Beira and Nacala provided the shortest way to the ports. With the Beira route out of commission for several years to come, Nacala provides the best potential for savings in transportation cost. Unreliable services in the Nacala corridor in the past have prevented the shippers to use this route. Recent improvement has led to more reliable services, and favorable tariffs is providing greater incentives to shipper to use the Nacala route.

5.2.1 Direct Impact

The direct impact of efficient operation of MR will be borne by the shippers and traders. Lower transportation cost will result in higher margins for the traders. Compared to alternative routes, shippers at the Nacala port will save between K165 and K196 for every ton of dry commodity. The savings could be even greater for bulk exporters and importers who have been able to negotiate favorable tariff rate for their products in return for guaranteed volume. Traders in large consignment and bulk commodity transportation like fuel, grain, fertilizers etc. can reduce their transportation cost significantly often by more than 50 percent. A recent inquiry by USAID/Maputo indicated that transportation costs of petroleum products can be reduced from its current cost of K0.6 per liter to K0.12 per liter. Similarly, trader of edible oil and tea can save K825 and K247 per ton, respectively.

Even though the potential for saving is enormous, not many shippers have shifted to Nacala Corridor. This is primarily due to uncertainty and often inconsistent services. The OILCOM which imports 50 percent of the country's oil mentioned that they can gain significant cost advantage by using the truck route to Beira and MR to Nacala, but due to high leakage/pilferage in the Beira route and longer travel time (average of seven days) in the Nacala corridor, they continue to use the Dar, Harare and Lusaka routes, which cost almost 50 percent more. If the railways can guarantee consignment within four days instead the current seven days, the company can use the Nacala Corridor for 50 percent of its oil and save substantial amount of money.

The Grain and Milling Company has aggressively used the Nacala Corridor and obtained great results. The company has been able to negotiate a rate of K149 per ton for transportation of wheat. This rate is considerably lower than the K440 per ton they paid for shipment from Beira. The trucking companies have since then lowered their rate to K275, but the Grain and Milling Company is happy with the MR. The company expect to import 35,000 tons of wheat in the current year saving almost K11 million in transportation cost.

Importers of fertilizer are another major stakeholder in the improvement in efficiency in transportation in the Nacala corridor. The use of fertilizer is increasing as hybrid seeds are being introduced and increasingly adopted by the farmers. It is estimated that 185,000 tons of fertilizer is going to be imported this year. In 1992-93 year, 150,000 ton were actually imported. The Smallholder Farmers Fertilizers Revolving Fund of Malawi which imports almost all of Malawi's chemical fertilizers have not used the Nacala corridor since 1989, when their experience has not been satisfactory. The bulk of its fertilizers comes from Dar es Salaam,

Richard's Bay (South Africa), and Johannesburg. As Table 5, below indicates transportation cost varies from the least

Table 5
Transport Cost from Selected
Ports to Blantyre

Routes to Blantyre	Cost/ton Kwacha
Dar-es-Salaam	K495
Richard's Bay- Harare	K496
Johannesburg	K445
Nacala	K350

cost route from Johannesburg at K189 per ton to the most expensive route of Richard's Bay at K496 per ton. Compared to those, the posted rate for the Nacala-Blantyre train route is K350 per ton. Implying a savings of almost K150 per ton. With guaranteed volume, the rate can be negotiated down considerably. With an estimated import of over 150,000 tons of fertilizer a year, transport savings alone amounts to more than K2 million. In addition the ex-port price for Nacala is indicated to be more attractive particularly for European imports.

It must be mentioned cost alone does not influence the use of a specific mode or route of transportation. Reliability, time and wastage are other major determinants. A World Bank study analyzed the distribution of international trade traffic among the major corridors and concluded that if all available corridors operated optimally, the Nacala corridor will be used for 58 percent of cross border transportation, as against its current handling of only six percent of overseas trade. The study also estimated that with all routes operating optimally, there will be a saving of 24 percent in total transport cost.

Increased efficiency in the operation of MR will result in its financial solvency. In the absence of financial solvency, the government has been making up the operational shortfall from its revenue budget. Since 1990 GOM has been supporting MR with about K10 million annually to support the operating shortfall. In 1990-91 GOM subvented K6 million in operating subsidy to MR, in addition to K8.8 million in development assistance. With restructuring the government will no longer need to provide such regular subsidies to MR to meet the operational deficiency. GOM however, will continue to provide financial support for passenger services in the financially infeasible lines.

5.2.2 Indirect Impact

Savings from efficient and reliable transportation will initially accrue to shippers and trader. But some of this savings will be passed on to consumers and producers in the form of lower prices. The extent of this pass through will obviously depend to a large extent on the level of competition and the price elasticity of the concerned commodity. Reduction in input prices and increase in producer prices resulting from transportation cost savings are likely to lead to higher production.

Commodities that can be bulk handled for transportation are believed to be able to benefit most from improved efficiency in the Nacala corridor. Petroleum, cement, fertilizer, tobacco and wheat are some of the major candidate commodities to use MR in the Nacala corridor. Both petroleum and fertilizer prices are regulated by the government and therefore are not totally dependent on market condition. However, to the extent their prices reflect cost, farmers and general population will benefit from reduction in cost. This study has not been able to assess the response of fertilizer use due to changes in price, or the production response to fertilizer use. But in general, experience in other countries in Africa and Asia show price elasticity of fertilizer is significant and production of agricultural commodities has positive co-relationship with fertilizer use.

Petroleum product, particularly paraffin or kerosene is increasingly used in both rural and urban areas for lighting and cooking purposes. Price relief of these product will help the common people and also alleviate environment problem resulting from use of firewood and charcoal.

Malawi consumes about 85,000 tons of flour annually. Less than 20 percent of the flour is milled within the country, the remainder being imported as finished flour from South Africa. Bulk handling capacity and subsequent reduction in transportation cost have made wheat milling a financially feasible operation in Malawi. Large quantities of whole wheat are now being imported into in Malawi. The Grain and Milling Company of Malawi currently process 17,000 tons of wheat and expect to increase production to 35,000 tons, representing almost 40 percent of the country's need for flour. They have been able to compete successfully with imported flour by passing on savings in transport cost to the consumers. The country also benefit from employing labor and other resources for the processing of grain.

Import of bulk wheat from Nacala has been able to promote milling in-country as against importing wheat flour. Grain and Milling company projects that if they go into full capacity production (85,000 tons) early next years, and they can negotiate good tariff with railway, they can export approximately 5,000 tons of wheat bran, earning important foreign exchange for the country.. In the absence of sufficient market locally, wheat bran is currently used for stock feed at nominal prices.

Improvement in Nacala traffic and reduced transportation cost will increase competition in the transport sector. Other modes of transport will compete for business and offer competitive rates to shippers. For example, the published rate for trucking services from Beira to Blantyre has dropped from K440 to \$275. There are also indications that handling cost at Dar es Salaam are being reduced. These kind of competition is favorable for both producers and final consumers.

Financial sustainability of Malawi railway is likely to result in fewer subsidy from the government. As indicated earlier, GOM can save almost K9 million every year in tax payor money. This resources can be diverted to social services like schools and health centers or into much needed development activities. Alternatively, it can reduce the tax burden of the people.

5.3 Impact of reduced Passenger Services

Passenger services in MR are considered incapable of operating profitably. However, on social considerations, passenger services mixed with some freight facilities have been continued but on a reduced scale on some lines while closing some routes altogether. Table 6 shows current level of passenger services on specific routes and their status before October last year.

Table 6
Mixed Train Services in Selected Routes

Routes	Service Before Restructuring	Services After Restructuring
Limbe-Luchenza	Daily 2 up and 2 down	Twice a week R/T
Limbe-Salima	Daily 2 up and 2 down	Daily 1 up and 1 down
Balaka-Nayuchi	Daily 1 up and 1 down	Twice a week R/T
Lilongwe-Mchenji	Daily 1 up and 1 down	Seasonal services, Feb-Oct
Salima-Mchenji	Daily 1 up and 1 down	Cancelled

The road transport has gradually become the dominant mode of passenger traffic. But for some the railways have remained a preferred mode of passenger traffic, while in some routes it is still the only convenient way to travel. In some areas, the railway line gives access to villages that

are inaccessible (generally or seasonally) to other modes of transport. The people who are going to be most affected by reduction or cancellation of services can be classified into those living in the area that are not serviced regularly by other modes of transport, those who are able to bring large loads with them for trading or other purposes and those living close to the stations. The first group appears to belong to such areas as Nkaya, Utale, Njarenja, Shire North, Gwaza, Nansadi, etc. in the routes between Balaka and Limbe and between Limbe and Luchenza. The second group of people comes from many part of the rural districts. These groups are largely small traders who collect fresh produce from villages and bring them to cities and commercial places like Blantyre, Salima, etc for sale. On their return they bring in fertilizers, sugar and other consumer goods to villages. These people serve important function in the marketing chain. The railway stations often transform itself into busy market after these train arrive. The third groups are scattered along the railway line and reduction of service is a matter of some inconvenience. They still can access other more efficient modes of transport by travelling to nearby highways to avail of bus services.

The tobacco growing area in the south-central region and the sugar growing region of the south will be affected by reduction of services. Although, MR hopes to provide seasonal services to the Mchenji region during the harvest time, distribution of inputs during the growing season may be affected. Similarly the sugar growing area of Luchenza and Chloe will be affected by reduction of services.

6. Conclusions and Recommendations

The rationalization and restructuring of MR will reduce a significant financial burden of GOM. It is likely to have some positive macroeconomic impact either through reduction in budget deficit or by enabling the government to divert funds to more social services and development programs. Greater efficiency in railway transportation leading to lower effective transportation cost is likely to have significant positive impact on international trade. The shippers and traders dealing in large volume particularly in the international trade sector, are going to benefit most. However, increased competition both among different modes of transportation and between producers and traders will result in sharing some of the gains with the final consumers.

Rationalization of MR services will adversely affect small traders and farmers who brought produces from the farms to larger markets in the urban commercial centers and took back agricultural inputs and essential consumer goods. It will also affect those people whose only feasible travel route is the railway. But perhaps the most significant social impact of restructuring will emanate from dislocation and loss of income of a large number of people resulting from loss of employment. In the absence of many alternative employment and business possibilities, the retrenched people and their dependents face severe socioeconomic problems.

The rationalization of the operation of MR is overdue. There are many benefits resulting

from restructuring and it appears to be accepted by most of the people concerned, including the people adversely affected. However, both the government and the donors should look at possibilities to mitigate the adverse socioeconomic impact resulting from retrenchment and reduction in services in some routes. The following recommendations are made to make the restructuring project more socially sound. The magnitude of the financial burden these measure will take is not assessed.

Counselling and Placement Service: The retrenched workers are very ill-informed about employment and business opportunities. The shock of losing employment and lack of information may force them to make inappropriate decisions. Beside providing some financial compensation, MR has not addressed the issue of rehabilitation of the workers. It has not given much attention in providing pertinent information or counseling to the laid-off workers. A facility should be set up or an existing organization that can provide such assistance brought in temporarily to address this issue. Beside hiring or make other temporary arrangement with local NGOs or professional services, capability can be developed within the railway, or the labor union to provide counselling and placement services. Since neither the union nor the railway have the financial resources to run such a service, the donors possibly have to provide technical assistance and funds to develop such a capability. The implementing agency can guarantee their commitment donating office bearer time and use of their dissemination network.

Training of Workers: Some of the retrenched workers are skilled in many trades. But the majority of them are unskilled. Both of these types of workers may need to be trained or retrained to fit the demand of the market. In addition, some of the workers have the skills and aptitude to function as small self-employed businesses. But they need assistance in setting up such efforts. Several existing organizations like the Malawi Employment Development Program (MED), the Malawi Entrepreneurship Development Institute (MEDI), Small Enterprise Development Organization of Malawi, etc. provide skill assessment and skill development training in Malawi. These facilities can be involved in this effort. Rather than setting up a training facility, the existing facilities can be revamped and involved in the rehabilitation of the retrenched railway workers.

Funds/access to funds for small business: The retrenched workers do not have many tangible assets for suitable collateral in the formal credit facilities. They may have some "seed" money that they can invest, provided they can obtain additional funds to establish viable business. A fund can be set up to help the retrenched MR workers directly, or an organization that will screen loan risks and provide guarantee to formal credit facilities with some operating fund can be established. Possibilities of funding and/or assisting organizations like Malawi Union of Savings and Credit Co-operatives (MUSCCO) and other progressive credit organization to provide such support should be explored.

Housing assistance: The retrenched workers loses good housing facilities with their jobs. Many of them will relocate to their traditional villages while others will remain in the cities. Rents are high and so are the mortgages (because of current 26 to 33 percent rate of interest). Assistance in the form loans, access to construction materials and/or land to build

appropriate houses in the rural and urban areas can be provided to improve the living condition. Alternatively, the retrenched workers can be provide loans to buy-out MR owned accommodation in which they are living.

Increase severance allowance: High inflation, the current low salary and the formula to estimate compensation, provide very low severance compensation for the workers. The formula of one month salary for each year of service should be augmented to increase the social acceptability of the MR restructuring project. Also, the candidates for forced retirement should be treated equally with other retrenched staff. They ought to have the option to choose either the retrenchment allowance without pension benefit, or the pension benefit without retrenchment allowance.

Development of rural access roads in areas not serviced by MR or other means of transportation: The small traders provide an essential and cost effective marketing function to the economy. In the wake of reduced or cancelled MR services in some of the areas, the role of the small traders and their contribution to the economy should be objectively examined. If their contribution to the economy and the opportunity cost of other users of MR are found sufficiently high then the possibility of developing rural access roads in the areas not properly serviced by either MR or other means of transportation should be seriously explored. These low cost dirt roads were found to have substantial positive development impact in many countries. USAID PL 480 food assistance has been effectively used to provide balance of payment support at the same time developing rural feeder roads in many developing countries that imports food grains.

Appendix A
Tables

MALAWI RAILWAYS LIMITED

Unit (000) 1992/93 1991/92

Number of Passengers Carried	859	1,282
Passenger Kilometres	65,362	87,673
Total Goods (Tonnes) Carried	340	337
Total Goods Net Tonne Kilometres	52,265	56,443
Total Gross Tonne Kilometres (Goods and C	174,062	203,517

GOODS TRAFFIC (Tonnes)

Imports	71	25
Exports	12	13
Local	231	252

MALAWI RAILWAYS LIMITED**Goods Traffic**

Commodity (Tonnes)	Local Goods Traffic		Exports Via Nacala		Imports Via Nacala	
	1991/92	1992/93	1991/92	1992/93	1991/92	1992/93
Beans and Peas	3,188	1,099	102	20		
Beer and Minerals	1,821	102				
Cement	16,990	8,781				
Clinker	79,143	88,080				
Coal	19,009	14,996				
Cotton Lint	6,790	4,443				
Cotton Seed	10,011	5,642				
Cotton Unginned	6,284	764				
Empties Returned	673	0				
Empty Containers	422	1,197				
Fertilizer	16,080	10,234			9,652	9,589
Groundnuts	1,776	298				
Maize	17,008	41,379	4,283	241	0	25,680
Oils, Edible					0	600
Paper					0	0
Rice	1,267	953				
Salt	991	1,941				
Sugar			71	145		
Tea	631	0	205	0		
Tobacco	18,699	15,546	6,854	10,747		
Wheat Flour					2,596	10,640
Other	21,762	17,924	1,527	1,598	10,995	15,899
Sub Total	222,545	213,559	13,042	12,751	23,193	62,408
Fuel						
Diesel	15,194	5,779			1,147	5,889
Ethanol	5,509	5,608				
Petrol/Paraffin	8,714	5,776			526	2,466
Total Fuel	29,417	17,163				
Total Public Traffic	251,962	230,722	13,042	12,751	24,866	70,763
Company Traffic	0	0	0	244		
Total	251,962	230,722	13,042	12,995	24,866	70,673

Transport Routes from Blantyre for Malawi's External Trade				
Port Served	Mode (s)	Key Points En Route	Countries Transited	Length (km)
Beira	Rail	-	MOZ	640
Nacala	Rail	-	MOZ	815
Durban	Rail/Road	Tete, Harare	MOZ, ZIM, RSA	2,667
Durban	Rail/Road	Lusaka, Harare	ZAM, ZIM, RSA	3,467
Durban	Rail/Road	Lusaka, Gaborone	ZAM, BOT, RSA	3,806
Durban	Road	Lusaka, Harare	ZAM, ZIM, RSA	3,500
Dar es Salaam	Rail/Lake Road	Chipoka, Chilumba Mbeya	TAN	1,728
Dar es Salaam	Rail/Road	Mbeya	TAN	1,770
Dar es Salaam	Road	Mbeya	TAN	1,789
Dar es Salaam	Road	Lusaka, Mbeya	ZAM, TAN	3,030
Dar es Salaam	Rail/Road	Lusaka, Mbeya	ZAM, TAN	3,100

Source: Malawi NTC Project, World Bank Staff Appraisal Report
No. 6022-MAI, January 27, 1989

Malawi Transport Sector Review						
Commodity	Cost From Blantyre				Percentage of the Commodity Value	
	NAC RAIL	DUR ROAD	DAR ROAD	NTC ROAD	Present Situation	Optimal Situation
EXPORTS						
Sugar					36	35.1
Tobacco					14.9	12.2
Tea	266	296	287	301	24.2	23.2
Groundnuts					67.6	57.9
Coffee	178	200	196	260	8.7	8.6
Cotton Lint	243	293	286	300	19.4	18.1
Produce					14.2	14.2
Other	211	240	235	293	6.1	6.1
TOTAL EXPORTS					15.9	14.4
IMPORTS						
POL					50.8	34.9
Fertilizer					64.7	54.5
Iron & Steel	187	293	233	251	8.2	7.8
Wheat & Flour	209	308	241	229	116.5	107.4
Pulp & Paper	187	293	233	251	10.6	8.8
Salt	97	166	297	191	172.4	116.3
Maize	137	251	297	203	139.2	111.5
Coal & Cokes					89	89
Lime/Cement					89	89
Other	229	352	222	259	9.2	7.4
TOTAL IMPORTS					23	18.2

Source: Economist's Working Paper, November 1990

Appendix B
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- Donald W. Dzaipa, Personnel Director, David Whitehead Textile, Blantyre
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- E. L. B. Malambo, Vice General Secretary, Railway Workers Union of Malawi, Limbe
- Wesley Crighton Kondomi, Chief Inspector of Works, Malawi Railway Ltd., Limbe
- W. B. Kunjawa, Creditors Sub Accountant, Malawi Railway Ltd., Limbe
- L. G. Sinjibani, Senior Division Clerk, Malawi Railway Ltd., Limbe
- Mr. Mgomezulu, Principal Secretary, Ministry of Labor, Government of Malawi, Lilongwe
- C. M. Manda, Assistant Labor Commissioner, Ministry of Labor, Government of

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Appendix C

Bibliography

- Report of the Workshop on: The Effects of the Structural Adjustment Programme in Malawi, Center for Social Research, University of Malawi, Zomba. Edited by Gillian Roe
- Malawi's Experience with Structural Adjustment, F. King, World Bank, Washington
- Household Respons to the Impact of the Economic Crisis on Social Services, E. Jespersen, UNICEF, New York
- A Profile of Low Income Urban Households in Malawi: Results from a Baseline Survey, G. Roe and W. Chilowa, Centre of Social Research, University of Malawi, Zomba
- Monthly Statistical Bulletin, October 1993, the National Statistical Office, Zomba
- Malawi Transport Sector Review Selected Issues, August 10, 1992, Infrastructure Operations Division, Southern Africa Department, The World Bank.
- Demographic and Health Survey, 1992, National Staistics Office, Zomba
- Malawi Population and Housing Census, 1987, National Staistics Office, Zomba
- Malawi International Traffic Statistics, Mid Year Report, 1993, Ministry of Transportation and Communications
- Malawi Railways Ltd, Draft Corporate Plan, 1994/95-1998/99, February 1994.