

Georgian Railways Restructuring
Final Report, volume 1
5-year Business Plan
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RESTRUCTURING OF THE GEORGIAN RAILWAYS

5-YEAR BUSINESS PLANS FOR 1999 – 2003:

Passenger Business Unit

Freight Business Unit

Network Infrastructure

Rolling Stock

Corporate and Other Activities

Financial Corporate Model

RESTRUCTURING OF GEORGIAN RAILWAYS

FREIGHT BUSINESS UNIT : BUSINESS PLAN 1999- 2003

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1 INTRODUCTION

The Freight Business Unit is one of six new entities which will be established as part of the management restructuring process of the Georgian railways. Business Plans have been developed both for the Corporation as a whole and also for the different entities.

These are based on a number of studies of the existing performance, future projections, market requirements and productivity improvement.

The Business Plan constitutes a Master Plan, for the rail freight business, over a 5 year period which will be rolled over annually on an ongoing basis. It will provide a base for the preparation of the annual revenue and investment budgets and determine profitability forecasts. It will be the focus of management strategy for the on-going development of the freight business.

The business runs at a profit but there is not adequate funding for asset replacement and there is a substantial arrears in maintenance. It is essential to increase revenue and reduce costs with a view to insuring a robust financial position.

2 MISSION STATEMENT

The mandate of the Freight Business Unit will be to convey freight efficiently and at a profit. It will compete on an equal basis with the private transport companies but will enter into agreements with them for the supply of both support and transport services as may be appropriate. Co-operation with neighbouring railways will be further advanced.

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3 OBJECTIVES

- The transportation of goods in a safe, reliable and profitable manner
- The development of existing and new market segments
- Enhanced relationship with freight forwarders
- Growth of transit and import/export traffic
- Effective management of assets

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4 POLICY AND STRATEGY

- A new railway law will be enacted to establish SR as a Joint Stock Company or a Limited Company
- The FBU will enjoy management autonomy and will be responsible for its financial performance
- The Ministry of Transport will enter into a 5 year contract with the railway company. A 5 year Business Plan for the FBU will be prepared, setting out its strategy, development programme and corresponding operational and financial targets. The plan will be reviewed on an annual basis and rolled over.
- The external costs of road transport shall be taken into account in determining the Access Fee.

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5 SCOPE OF THE FREIGHT BUSINESS UNIT

The Freight Business Unit will encompass the freight activities and functions currently provided by SR. The new Unit will focus on activities which are consistent with its profit oriented mandate. Unprofitable activities will be discontinued.

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6 INTERNAL ANALYSIS

6.1 Resources

The assets of the FBU will comprise all existing assets including staff which support freight train operation as set out below.

6.1.1 Network

The network will carry about 8.5 ml. Tons of cargo in 1998. The figure for 1988 was 36.2 ml. The commodities may be described as follows:

- Transit and export oil
- international freight
- Exports/imports
- Local freight

The oil traffics are carried on the main East/ West axis and are also distributed internally to the local power stations. General traffics move between the Black Sea and the Caspian.

The Financial Performance is set out in Table 2.1 below :

Table 2.1 Net Operating Result Freight 1997 (Lari 000) Est 6 Mnths

Revenue	Sales & Depreciation	Result
25,642	20,510	4,132

Performance is not good. Wagon turn-around time is excessive. Resource utilisation is low.

6.1.2 Human Resources

The total number of staff attached to the Freight Business is 3246. Locomotive drivers and assistant drivers are shown as being allocated to the Rolling Stock Services Unit. The appropriate number will be transferred to the FBU in due course.

Productivity generally is low. The management organisation needs reorientation. Training programmes are also necessary. There should be a ban on recruitment.

6.1.3 Rolling Stock

The rolling stock is generally in poor shape. It is old, maintenance is in arrears and the designs are obsolete. Heavy maintenance is carried out abroad which is expensive and demanding in fleet numbers. New maintenance facilities are required and existing workshops should be upgraded. Productivity is low and management reorganisation is necessary together with improved training. There is a need to plan major investment in new rolling stock.

6.1.3.1 Locomotives

The electric main line fleet consists of 241 locomotives of which 83 are available for traffic. A total of 20 units are overdue major overhaul. The diesel fleet totals 10 for a daily operating requirement of 10, of which only 1 is available for traffic. The remaining 9 are overdue major repairs. All main line locomotives operate as a pool with no differentiation between passenger and freight. There is a total of 175 shunting locomotives of which 63 are available for traffic

6.1.3.2 Wagons

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The wagon fleet consists of 19,507 wagons. The total serviceable is 6,419 units as compared with a daily requirement of 3,993. There is a shortage of oil tankers Maintenance is in arrears and some 13,000 wagons need attention.

6.1.4 Stations

There are too many stations in relation to the demand. The track layout and signalling at most stations is over elaborate and costly to maintain. The majority of stations have loop lines in addition to the main lines and have two crossings permitting movements between the main lines at either end of the station. This level of infrastructure is excessive. Shunting costs are correspondingly high and give rise to train delay and bad service.

7 EXTERNAL ANALYSIS

7.1 Market

Future traffic markets have been identified and traffic forecasts produced that indicate an increase to 12 million tonnes by 2003. It has been assumed that the present network remains as do the international connections.

The recent signing of a co-operation treaty between the Trans-Caucasian countries including Georgia, Azerbaijan and Armenia in Baku on 8th September 1998 may affect the present border closures but any traffic effect will have to be reflected at the annual business plan review as it has been assumed that there will have no effect in the short term.

Freight traffic forecasts have been prepared for the 15-year term of the EBRD loan, from 1999 to 2013. For the first five years to 2003, they are based on detailed traffic analysis, with more generalised assumptions used for the remainder of the period. Detailed forecasts for the period to 2003 are provided in Table 3.3. They assume that the current network and international connections remain for the foreseeable future. The situation regarding the route to Russia through Abkhazia remains uncertain. Short-term prospects seem poor, but it is likely that the route will eventually be re-opened, giving a substantial boost to both domestic and international traffic levels at that time.

All traffics carried by SR are priced in either dollars or Swiss francs and yields in lari will thus vary in inverse proportion to any change in the external exchange rate if nominal rates remain unchanged. In addition to this, the forecasts assume that local yields are, in practice, adjusted to maintain a constant rate in lari, whilst international rates are forecast to reduce by 3 percent per annum in real terms. In addition, export oil yields (revenue/ntk) have been assumed to reduce by a further 5 percent in real terms in 1998, responding to low world crude oil prices and competition from Russian rail routes for Tengiz crude.

Total traffic on the network is forecast to reach 11.9 million tonnes per annum by 2003, which amounts to an annual increase of 8.7 percent annually over this five year period.

Domestic traffic is expected to parallel the forecast growth in GDP over the period of 6 to 8 percent annually. Although some short distance general freight will be lost to road as the road network is improved and the trucking sector developed, such traffics are currently only a very small part of the total traffic.

Petroleum-related traffic is forecast to increase at 6 percent per annum over the period; in practice this may be rather greater if domestic production of crude and/or refined products increases and replaces products currently imported. Construction materials (mostly sand, stone and gravel) are forecast to also increase at 3 percent per annum, paralleling the growth in the economy. Grain traffic has been held constant. Other traffic (manufactured and semi-bulk freight) is assumed to grow in line with the economy. Overall, domestic traffic is forecast to increase at 5.2 percent per annum.

These are relatively minor and have been forecast by simple trend extrapolation, assuming an average growth rate of 5-10 percent per annum, depending on the route.

Georgia currently imports substantial volumes of refined oil products from Azerbaijan. Economic growth in the region is expected to stimulate both local and regional demand for energy, which will include fuel oil, diesel and petrol. Georgian demand will increase in line with its projected economic growth but there are prospects for local production as well as imports through the Black Sea ports. Forecast volumes have been increased slightly to 1999 and then held constant.

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Most other imports are through the Black Sea ports. Grain and flour are assumed to be constant, with other semi-bulk freights growing at 5 percent per annum and manufactured goods and foodstuffs and imported fuel growing at 10 percent per annum.

The growth in oil and oil related freight is a function of forecast crude oil production, refinery production at Baku and the speed of development of the various pipeline schemes.

There are substantial reserves of crude oil in the region (Azerbaijan, Kazakhstan and Turkmenistan) and regional production could reach as high as 100 million tonnes per annum by 2010. A substantial proportion of this production will reach international markets through the Trans-Caucasian corridor. Several pipelines, either already operating or under development¹, will carry the majority of this tonnage but transport of some residual volumes by rail will continue. In addition, Azerbaijan intends to increase refinery throughput at Baku in the medium-term, allowing it to export to regional and Black Sea markets. No pipelines are planned for refined products and this traffic, together with exports from Turkmenistan, will effectively be captive to rail.

Overall, transit oil traffic is forecast to grow at 10 percent per annum over the period to 2003. Almost all this growth will occur over the next three years with volumes then stabilising as the reduction in crude oil transport (particularly the Tengiz cufee) is off-set by increasing volumes of refined product for regional markets. Although there are several opportunities for continued growth, the longer-term forecasts assume oil volumes are constant after 2003.

Transit traffic from Central Asia has grown strongly in the last 2-3 years and the forecasts allow for this to continue. Cotton from Uzbekistan will become the main westbound transit traffic, confirmed by a recent regional agreement to use Poti for its export. Traffic grew sharply in 1997 and this is set to continue with the creation of a new marketing centre at Bokhara. In 1997, 84,000 tonnes of cotton was carried by rail and this is expected to rise to 300,000 thousand tonnes by 2000 and 0.5 million tonnes by 2003. Export of Turkmenistan refined products will continue, bolstered by the rail ferry to the Ukraine and there are also long-term prospects for up to 300,000 thousand tonnes of aluminium from Tajikistan when the political situation stabilises.

A major new traffic is likely to be exports of sulphur removed from the Gengiz crude oil in Kazakhstan. This represents around 10 percent by weight of the crude oil, and there is currently a stockpile of at least one million tonnes. It is planned to ship up to 0.5 million tonnes p.a. from Aktau for export through Georgia. The forecasts allow for 200,000 thousand tonnes in 1998, increasing to 400,000 thousand tonnes per annum by 2000.

The main transit traffics eastbound from Georgia to Azerbaijan (mostly transit from the Black Sea ports) are grain and flour, sugar and foodstuffs and manufactured goods. Grain and flour imports are expected to remain constant but the other commodities will grow at rates ranging from 5 percent per annum (for sugar and industrial products) to 10 percent for manufactured goods and foodstuffs. Beyond Azerbaijan, the existing contract to supply soya to Uzbekistan still has another four years to run. The other traffics are mostly manufactured goods and foodstuffs. Traffic to both Azerbaijan and Central Asia is beginning to convert to containers, and this will be encouraged by the container handling equipment which forms part of the EBRD's Baku Port project.

The Trans-Caucasian route competes for transit routes both with northern rail routes through Russia and southern routes, mostly by road through Turkey and Iran. However, it offers a distinct distance saving for many traffics, particularly with the introduction of the new rail-ferry between Poti and Bulgaria/Ukraine as well as avoiding politically sensitive areas such as Chechnya. The railways are currently planning to introduce a piggyback service from Poti to Baku.

Overall, transit traffic is forecast to grow at around 12 percent over the period.

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International freight flows in the main Tbilisi-Samtredia corridor are forecast to increase from 3.7 million net tonnes (0.8 million eastbound and 2.8 million westbound) in 1997 to 6.5 million tonnes (0.9 million eastbound and 4.7 million westbound) by 2000. Local traffic in 2003 is forecast at 3.5 million tonnes westbound and 1.9 million tonnes eastbound. The forecast increase in total traffic thus ranges from 48 percent at the eastern end of the corridor to 75 percent at the western end.

7.2 Financial Performance Trends and Targets

It has been assumed that real freight tariffs decrease at 3% per annum during the period 1998 to 2003. The Railways revenue from freight traffic is significantly higher than its costs of transportation.

It has been assumed that approximately 12% of revenue is paid for in the form of barter goods. The Railway must reduce the amount of barter transactions in order to generate more cash and improve its cash position. The effect of barter transactions have not been allowed for in the revenue figures.

7.3 Traffic Projections and Trends Analysis

Freight traffic is projected to grow by 8.7% per annum from 1999 to 2003. Freight Tonne Kilometres grow from 2394 billion in 1998 to 3369 billion in 2003. Freight Tonnes transported grow from 8.5 million tonnes per annum to 12 million tonnes in 2003.

Within this overall figure it is anticipated that transit and export oil would increase from 3.8 million tonnes in 1997 to 5.8 million tonnes in 2000 then remain constant (75% increase). Other international freight would increase from 2.3 million tonnes in 1997 to 3.9 million tonnes in 2003 (69% increase). Local freight would increase at a lower rate (35% increase over the same period) from 1.7 million tonnes to 2.3 million tonnes.

The key corridor between Samtredia and Tbilisi has seen an increase to an average of sixteen pairs of freight trains at the end of the first six months of 1998. Total tonnage of 3.85 million tonnes (nationally) has been conveyed which should give an outturn, in line with earlier predictions, of 8.5 million tonnes for the year.

7.4 Competition Analysis

As in most FSU countries, road competition is largely insignificant for the majority of traffics carried by rail. There are rapidly increasing numbers of container trucks but this is not a significant segment of rail's traffic. In the medium-term, it is unlikely that rail will lose short-distance traffics. However, SR is essentially a transit railway and again this is a small part of its total traffic.

Oil pipelines present the greater threat in the long term and some traffic will transfer when the new AIOC Early Oil Western Route pipeline becomes operational in 1998. There are plans to build another pipeline but it is unlikely to be constructed before 2002 and could be delayed for several years.

The proposed concentration of activities to a limited number of freight stations and working closely with freight road hauliers to provide an integrated transport facility through railheads should also stem loss of business whilst improving the attractiveness and competitiveness of rail.

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8 PERFORMANCE IMPROVEMENT STRATEGY

8.1 Targets

The key business targets of a restructured SR should be the safe, timely and efficient movement of freight to provide a commercial return that creates a sustainable and growing business, generating a profit and providing rewarding work for its employees.

The business focus must be directed to satisfying the customer and meeting his or her requirements consistently and economically. This requires the development of quality procedures as part of the marketing strategy which must include a thorough understanding of SR's customers and the strengths and weaknesses of the competition. It may also be appropriate to develop a customer's charter that sets out in principle how the business will handle its customers and what service(s) they can expect from SR.

The creation of a commercial return and hence a profit will require a change from the present tonne/kilometre performance culture to one where each element of the business generates a profit and contributes to freight's overall success. To achieve this will require the development of traffic costing procedures to provide a thorough understanding of the individual cost elements for each traffic flow. When the costs for each type of traffic are known a tariff policy can be developed to ensure commercial viability.

Safety is a given for railway operation and is one of the traditional advantages that rail has over road transport. Safety is good business, as is environmental awareness, and SR must achieve appropriate standards in both areas to ensure compliance with regulations and satisfy public expectations. These standards should be set to achieve risk levels that are as low as reasonably practicable. This process will require an assessment of present arrangements to eliminate prescriptive standards, where appropriate, and introduce output standards and specifications that are based on sound commercial and operating judgement.

8.2 New Management Organisation

The Freight Business Unit will be independent and self contained. It will have managers responsible for marketing/sales, operations, accounts and human resources.

The Unit's main functions will be:

- Transport of goods in a safe, reliable and cost effective manner
- Development and marketing of logistical systems
- Development of combined transport
- Increase in volumes transported
- Close liaison with neighbouring railways
- Contact with customers and shippers
- Management of the assets in a most efficient manner
- Contract with the Rolling Stock Service for heavy overhaul
- Contract with the ISU for track access
- Realisation of financial and other targets laid down at Addy corporate level

The organisation structure is included in the report

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8.3 Network Adjustments

The track layouts at stations, freight stations and marshalling yards have not been rationalised since 1988 despite present traffic levels being 20% of those in 1988 and predicted to reach less than 30% of the 1988 levels by the end of the 5-year business plan.

The infrastructure reflects the traffic flows and patterns that existed on 1988. The current traffic flows and patterns are completely different from those of 1988 both in quantity and direction. The present traffic split is 80% for transit traffic, travelling on an east - west axis, with only 20% being domestic traffic either starting or finishing in Georgia.

Ideally 80% of the traffic would pass through Georgia without stopping and would require no facilities other than at the port, terminal or border. The facilities at the latter should only be for customs purposes as there need be no railway reason for stopping there.

8.3.1 Freight Stations

It follows therefore that the domestic traffic needs considerably less infrastructure than previously. The freight stations on the Trans-Caucasian route should be rationalised and activities concentrated at:

- Samtredia
- Zestafoni
- Khashuri
- Gori
- Tibilisi Tov
- Tibilisi Usi
- Batumi
- Poti
- Marneuli

8.3.2 Marshalling Yards

The two main marshalling yards at Samtredia and Tibilisi- Sort should be reconstructed to handle domestic traffic sorting with some additional capacity to hold transit traffic that is either waiting forward transit, a technical examination or a change of locomotive/driver. This should permit a reduction in the number of tracks to 16 and 23 respectively.

8.3.3 Stations

A survey of station layouts should be completed with a view to simplification. At some stations there will be no need for any facilities other than the main lines which will allow simplification of the signalling and control arrangements. The introduction of auto block facilities will further speed up journey times and permit a reduction in operating costs.

8.4 Marketing and Tariff Policy

8.4.1 Marking

It was identified that a key business objective was to focus on the customer.

Individual customers and the freight market generally are changing in response to market forces and the emerging economic climate both in Georgia and in the countries who forward

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and receive traffic that is conveyed over the SR network. SR must therefore be responsive to and have a system that can identify change at both international and customer level.

It will be the responsibility of the Marketing department to develop such techniques and to maintain a regular dialogue with its customers. This department must become the driving force of the business by satisfying the customer, identifying traffic opportunities and capturing profitable business. It must be seen as the one railway point of contact for existing and potential customers by co-ordinating the activities of the other departments to deliver the product that it is selling. The activities of running the railway should be invisible to the customer with the Marketing department acting as the link between the railway and the customer.

It will also be the responsibility of the department to develop mutually beneficial business partnerships through contractual arrangements with other transport operators for the following activities:

- Collection and delivery of freight between freight stations and customers' premises
- Warehousing
- Documentation
- Loading and unloading
- Freight movement information
- Special loads

8.4.2 Tariff Policy

The Marketing department will be responsible for defining the business economic internal rate of return and the development of a tariff policy to deliver it.

As a first stage it will be necessary to identify the costs associated with the conveyance of particular traffics and in some cases at the level of individual traffic flows. This requires the introduction of a traffic costing system that can identify the avoidable(i.e. how much would be saved if the traffic was not carried) costs of carrying a particular flow of traffic.

8.5 Market Development

In developing its freight business SR must concentrate on rail's traditional strengths of long haul, bulk traffic. Rail in western Europe only becomes competitive with road for transits longer than 300 km. This is not the case in SR since road competition is not so well developed but it gives an indication of what may happen in the future. As transit traffic accounts for 80% of SR's freight business future efforts must be to retain the present profitable flows and develop block load traffic. It will be necessary to provide a continually improving quality of service whilst reducing costs:

SR must critically examine its present wagon load traffic to understand its contribution to the overall business. Where it is shown that some traffics do not cover their costs SR will have to make a conscious decision either to cross subsidise from other parts of the business or withdraw from that sector of the market.

There will be more containerisation of non bulk goods and as the economy improves more 'white goods' will flow, predominantly in containers. The traditional loading and unloading methods will need to be replaced by greater mechanisation for handling container and palletised goods. SR will have to decide whether this is core to their business or would be better handled through private sidings or by franchised terminal operators at their rented freight stations.

Identifying non bulk traffic that can be handled at a competitive price will be one of the main challenges facing the marketing department as rail's traditional monopoly is eroded. The development of strategic partnerships with emerging transport operators at an early stage is

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essential as SR needs to lock them into its system before they develop too great an independence.

SR must recognise that with the change in the business structure new railway operators could set up in business as direct competitors. It may be appropriate therefore to split the freight business into identifiable market segments e.g.

- Oil
- Transit
- Internal
- Containers
- Construction
- Others

This would create a closer customer focus within the freight business. It would give a greater cost awareness and assist the business sector in improving service delivery whilst being closer to the customer and should improve market intelligence for future business opportunities.

8.6 Quality of Service Targets

Quality of service targets must be developed to enable the business to measure its performance and to satisfy customers that the contract service levels are being provided or bettered. They should also be used to indicate to prospective customers that the railway is capable of delivering its promises.

Where service levels are inadequate then management action can be targeted and results tracked to ensure effective action is being taken. This can then be used to give comfort to customers that the business cares and is acting positively.

SR currently measures many of its activities. The list is not exhaustive and quality of service targets should be developed as an integral part of the management information system. Where appropriate these should be driven by the need to satisfy customers and they should be shared with them as part of service delivery and to confirm contract compliance.

8.7 Operations

8.7.1 Strategy

The present strategy is based on maximising train length. When the correct tonnage or number of wagons is reached arrangements are made to send it forward. As such freight trains do not run to a timetable though a theoretical timetable is produced at the start of each timetable period.

With the level of traffic now operating this system is wasteful of resources in that locomotives and train gangs are on constant standby. The benefit however is that track capacity usage is minimised as the least number of trains are operated between any two points during a 24 hour period. With the present capacity constraints, due to the state of the signalling, the capacity is limited and the introduction of a fully timetabled service may have to wait until the planned signalling improvements have been completed.

Freight trains should be operated to a timetable in the same manner as passenger trains. This will allow the allocation of locomotives and train gangs to specific times and reduce the number of resources required and hence operating costs.

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It is recommended that the introduction of a fully scheduled freight timetable should be progressed at the earliest opportunity in line with the present timetable planning process.

At present train gangs are allocated to individual locomotives. This is a recent practice adopted to overcome the poor reliability of the locomotive fleet. The theory is that each gang (3/4) allocated to a locomotive understands its workings and are able to rectify problems when away from the depot. This results in locomotives being changed when train gangs are changed. If this occurs away from the depot the locomotive stands idle until the same train gang has rested (12 hours) before being available to work another train.

This practice must be reduced and eventually eliminated as the most expensive resource (locomotive) is limited in its operational availability by the hours of the least expensive resource (train gang). Consideration should be given in the short term to creating a dedicated locomotive fleet to work key traffic flows e.g. transit oil between Dubendi and Batumi. A similar arrangement could apply to train gangs who would be trained and if necessary paid accordingly.

8.7.2 Marshalling and Shunting

Freight train marshalling and shunting by its very nature delays wagons and should be reduced to the minimum necessary to achieve an effective and efficient operation. The creation of a timetable service pattern will enable a review of the working hours necessary to handle traffic at the freight stations and marshalling yards. The increase in block trains and in containerisation will further reduce the need to marshal and shunt trains as the proportion of wagon load traffic decreases.

The present and predicted traffic levels are insufficient to support 24 hour operation of freight facilities with the exception of those required for some oil traffics.

Train movements should be planned and the workload assessed to calculate the optimum solution by balancing the effect of rationalisation on quality of service delivery and the risk to performance.

8.7.3 Terminal Handling

The number of freight stations should be reduced to those where a reasonable level of activity currently exists and can be predicted to continue and develop in the future. The following freight stations are identified for retention:

Samtredia, Zestafoni, Khashuri, Gori, Tibilisi Tov , Tibilisi Usi, Batumi, Poti and Manueli. All others should be closed and their activities and equipment ,if suitable, transferred to the remaining locations.

Tibilisi should be developed to handle 40ft containers to complement the port development at Poti and Baku. Development at Samtredia and Gori are not proposed as part of this plan but should be reviewed in the light of future traffic levels.

A key strategic business decision to be made is whether freight station terminal management should be a core activity of the freight business or whether it should be privatised and if so to what extent.

8.7.4 Border Crossing Procedures

The present border crossing procedures require trains to stop for lengthy periods for both railway operational and engineering procedures but mainly for customs purposes. Border stops of over 3 hours are normal.

In western Europe border procedures have been changed through adoption of internationally developed agreements concerning both customs and railway operating and engineering

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standards. These arrangements have either reduced the time taken to complete border procedures or in some cases eliminated stops at borders.

Azerbaijan and Georgia achieved a considerable reduction in border station stop times with the introduction of the Logistics Express container train. It is an indication of what can be achieved and both countries are recent signatories to an agreement made together with the majority of the other TRACECA route countries, to work towards the adoption of western European practice.

As part of this process both countries should consider the benefits of permitting locomotives and train gangs to work across the border to avoid stopping at a location where the only purpose of the stop is to change either locomotive and/or train gang.

(a) 8.7.5 Operating Performance

The monitoring of freight operating performance is essential to the understanding of the business; for use as a basis for targeting improvements; to develop future plans; to deliver a quality product and to ensure customer satisfaction. This information forms a key part of the management information system.

Performance targets need to be developed in line with the quality of service targets. At present SR measures and records a wide range of data concerning its freight movements. With the development of a freight timetable new data will be required to measure actual performance against the plan and to measure productivity of its resources (e.g. locomotives, wagons, staff)

8.8 Rolling Stock Fleet Level

8.8.1 Wagons

The 1998 traffic levels of 8.5 million tonnes could be handled with an operational wagon fleet of 3,993 wagons. During the business plan period productivity improvements of 30% for oil wagons and 15% for others are assumed which will require 4892 wagons to handle the forecast of 12.5 million tonnes in 2003. This assumes a 300-day operating year with 10% of the fleet undergoing repairs or maintenance at any one time.

It also assumes the achievement of a 6 day round trip for wagons. This is being achieved for local traffic and with the operating and infrastructure improvements continued in the business plan it is realistic for all traffics. The reduction in round trip time will require considerable management action to reduce loading and unloading times. Too many wagons are being used as warehouses which reduces their earnings potential and requires additional repair, maintenance and storage facilities to service the unnecessarily large wagon fleet.

8.8.2 Locomotive Requirements

With the present locomotive and train gang operating arrangements locomotives rarely achieve a working day of more than 12 hours and 8 hours is nearer the norm. This accounts for the present level of utilisation where locomotives are achieving an average of 202km per day with a daily tonne.km per locomotive of 258. The reasons were explained in 6.6.8 as were some short and long term solutions.

The business plan assumes a 12% productivity improvement during the life of the business plan. The number of electric line haul locomotives peaks in 2002 at 69 then reduces as the tonnage rise slows down but productivity continues to improve.. This level of reduction requires the changes to operating practices and infrastructure improvements to reduce journey times outlined elsewhere in the plan.

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Shunting locomotive requirements show a more dramatic reduction to reflect the proposed rationalisation of freight stations and yards and subsequent concentration of freight activities at a few locations.

8.9 Train Crews and Rostering

Train crews are currently part of the locomotive department. It is recommended that they are transferred to the freight and passenger business as appropriate. This will enable the businesses to have a tight control over one of the main cost elements. This also recognises the difference between the two businesses and will enable them to develop independent strategies appropriate to their individual needs.

The measures to be adopted may be summarised as follows:

- Introduction of a freight timetable
- Roster gangs to trains not locomotives in a similar manner to passenger services
- Review shunting and freight station arrangements to reduce activities to meet business requirements.
- Consider the introduction of driver only operation.

8.10 Employment Levels and Productivity

The staffing levels below have been identified to the freight business through a process of disaggregation of the present activities into their component parts and summing the figures from these basic building blocks.

It is considered that a 30% reduction in staff numbers is achievable during the life of the business plan through the actions outlined in the freight business section.

The following table provides the total staff numbers for each year of the plan.

	Base year	Year 1	Year 2	Year 3	Year 4	Year 5
Freight	3246	3149	2929	2695	2479	2281
% change		3%	7%	8%	8%	8%

The figures do not include any provision for the introduction of driver only operation as it is not considered that this will be achievable during the plan timescale. It should be investigated however to understand the requirements and trials introduced on certain traffic flows as considerable cost benefits stem from this method of operation.

9 OBJECTIVES OF BUSINESS PLAN 1999/2003

The key objectives of the Business Plan will be to:

- maintain market share over the 5 year plan to achieve 12.5 million tonnes km in year 2003.
- introduce new management structures and procedures to achieve increases in productivity performance and efficiency.
- create a marketing strategy to achieve targeted annual growth and set tariffs to give profit revenue and cost targets
- increase speed and reliability of freight trains through track upgrading and signalling improvements and rationalisation : speed by 33% and reliability by 20%
- introduce freight timetables for all freight trains and in particular those between the principal marshalling yard at Tbilisi Sort, Samtredia and the ports of Batumi and Poti together with the Border stations at Sadakhlo and Beikkiasik
- increase block training working to reduce the level of marshalling.
- achieve productivity improvements for:
 - locomotives of 12%
 - train crews of 20%
- wagons of 30% for Oil: 15% for others
- close the majority of freight stations on the designated Trans-Caucasian routes and concentrate activities at:
- Samtredia, Zestafoni, Khashuri, Gori, TbilisiTov, Tbilisi Usi, Batumi, Poti and Marnueli
- review the need for the following freight forwarding and receiving stations to concentrate activities or close them in line with traffic requirements:
 - Rustavi, Kaviskhevi, Kutaisi, Chiatura, Sachkhere, Akhaldaba, Borjomi, Lilo,
 - Vaziani, Dedoplistskaro, Ponichal
- develop intermodal systems in respect to combined transport and containerisation at Poti and Batumi as part of the port developments and at Tbilisi. The future of Samtredia and Gori as container terminals should be dependent on predicted traffic levels being reached but this would not arise until 2002.
- Decrease staff numbers by 30% without provision for one man operation which is seen as not being achievable within the plan timescale. The numbers are set out in the table below:

	Base year	Year 1	Year 2	Year 3	Year 4	Year 5
Freight	3246	3149	2929	2695	2479	2281
% change		3%	7%	8%	8%	8%

- Improve rolling stock maintenance and reduce costs
- Negotiate competitive rates for track access

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- Improve return on investment

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10 FINANCIAL ANALYSIS

10.1 Key Assumptions

The key planning assumptions used in the preparation of the Freight Business Unit projected income statements were as follows.

Assumptions used in Corporate Financial Computer Model	
Planning Parameter	Modelling Assumption
Freight Traffic and Revenue	
Freight Volumes	
- import/transit oil	(1999 +20.9%),(2000 +14.6%), (2001 +4.0%), (2002 - 1.0%), (2003 -1.0%) (Tariff elasticity -0.5)
- other international freight	(1999 +13.2%),(2000 +9.0%), (2001 +5.8%), (2002 +6.2%), (2003 +6.5%) (Tariff elasticity -0.2)
- local freight	(1999 +5.4%),(2000 +5.5%), (2001 +5.5%), (2002 +5.6%), (2003 +5.7%) (Tariff elasticity -0.3)
Freight Tariffs	
- import /transit oil	reducing by 3% per annum in real terms
- other international freight	reducing by 3% per annum in real terms
- local freight	reducing by 3% per annum in real terms
Freight Operating Resources	
- loco fleet	Requirement for 55 loco's increasing to 68 by 2003
- loco's per train	1.6 loco's on average per freight train
- wagon fleet	3993 wagons increasing to 4892 wagons in 2003
- wagons per train	38.8 wagon per train increasing to 42 in 2003
Freight Services	
- labour productivity	Staff reduction (1999 -3%), (2000 -7%), (2001 -8%)
- unit wages	(2002 -8%), (2003 -8%) Real wages increase by 25% in 1999, 20% in 2000, 15% in 2001, and 10% per annum thereafter
- materials	10% increase per annum
- other costs (excluding depreciation)	10% increase per annum
Traffic Department	
- labour productivity	Staff reduction (1999 -3%), (2000 -7%), (2001 -8%)
- unit wages	(2002 -8%), (2003 -8%) Real wages increase by 25% in 1999, 20% in 2000, 15% in 2001, and 10% per annum thereafter
- materials	10% increase per annum
- other costs (excluding depreciation)	10% increase per annum

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10.2 Freight Business Unit projected Income Statement

Freight Revenue : Growth in freight traffic between 1998 and 2003 is set at 52%. Tariffs on all traffic carried by Georgian Railways is set in either US\$ or Swiss francs and as a consequence of this the local currency yields will vary inversely with changes in the lari exchange rate. The assumption that local yields are adjusted to maintain a constant rate in lari whilst international rates are set to reduce by 3% per annum in real terms, has been retained. Export oil yields (revenue/ntkm) have also been assumed to reduce by a further 5% in real terms in 1998 as a result of low world crude oil prices and competition from Russian rail routes for Tengiz crude.

Domestic traffic is forecast to increase by between 6% and 8% per annum over the period of the plan in line with forecast growth in GDP. Short haul domestic traffic may be lost to competition from road haulage but this represents only a small proportion of SR traffic in total.

Exports are a relatively minor part of total traffic and growth in this area has been set at between 5% and 10% per annum.

Imports of refined oil products are held constant for the period of the plan as increased demand for energy may be met by local production as well as imports through the Black Sea ports. Grain and flour imports are assumed to be constant. Other semi-bulk freight is assumed to grow by 5% per annum with manufactured goods, foodstuffs and imported fuel growing by 10 per cent per annum.

Transit oil traffic is forecast to grow by 10% per annum over the period to 2003 with almost all of the growth occurring in the first three years on the plan. After the initial growth the volumes will stabilise as the reduction in crude oil transport is off-set by increasing volumes of refined products for regional markets.

Direct expenditure on freight services, including the costs of the freight service department, a share of the traffic department costs and the salary costs of freight drivers and assistants, grows by 180% during the period of the plan. This reflects increases in real wages and a growth in expenditure in line with the projected increases in the volume of traffic.

Historical depreciation costs are constant throughout the period of the plan.

The Freight Business Unit must bear a charge for the use of infrastructure which is tentatively estimated at 24.7 million lari for 1998 and this grows to 50.7 million lari by 2003 in line with increases in costs of the Infrastructure Business Unit. The charge out is based on freight train gross tonne kilometres.

Rolling stock charges are estimated at 18.9 million lari for 1998 growing to 47.8 million lari by 2003. These charges are made up of the cost of supplying and maintaining wagons used by the freight business unit and for the use of locomotives. The wagon maintenance costs are separately identified in the SR accounts and can be charged directly to the freight business unit. The charge of locomotive use is based on the number of locomotive kilometres operated in freight service.

The Freight Business Unit must also bear a proportion of the costs of the Administration and this charge has initially been set at 50%.

The projected net result for the Freight Business Unit in 1999 is a profit of 34.4 million lari which declines to 29.7 million lari in 2003. The increases in the infrastructure and rolling stock charges throughout the plan are the main factors that contribute to this deterioration. The increased freight traffic will result in a higher charges from both of the units. The Infrastructure and Rolling Stock Units will be embarking on rehabilitation programmes which will see their cost bases rising throughout the plan period and this will result in higher charges for track access and rolling stock use.

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Freight Unit Plan

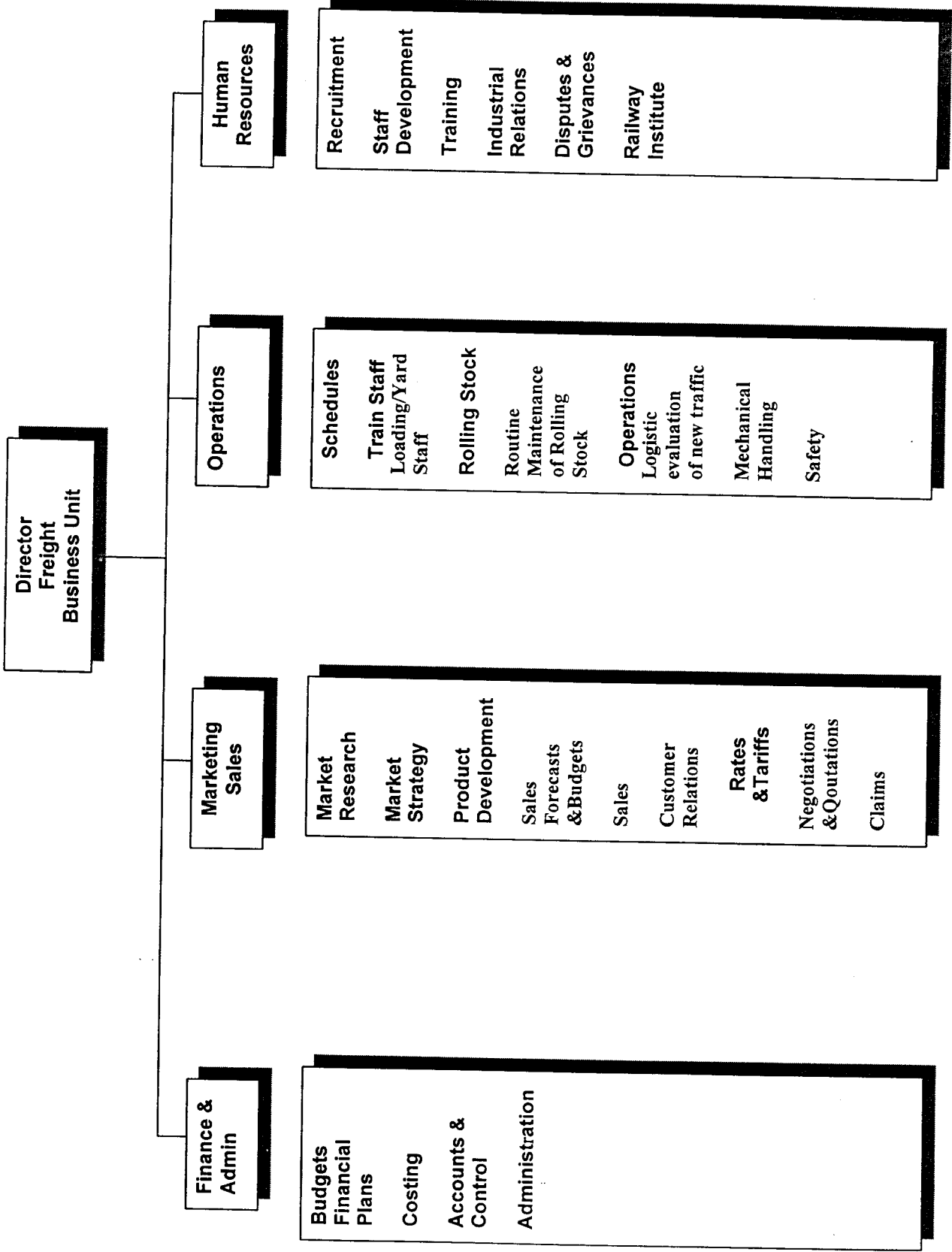
Georgian Railways
Table 11 : Freight Business Unit : Financial Plan

	Total Cost (000 Lari Current)						
	1997	1998	1999	2000	2001	2002	2003
Freight Revenue	61,100	81,700	98,991	115,248	126,041	135,805	145,079
Salaries & Social Insurance	2,795	3,264	4,856	6,382	7,459	8,277	9,062
Materials	35	52	70	91	112	135	161
Diesel - Traction	-	-	-	-	-	-	-
Diesel - Other	29	30	37	44	48	53	57
Electricity - Traction	-	-	-	-	-	-	-
Electricity - Other	133	147	180	212	234	257	278
Capital Repairs	326	102	138	178	217	262	311
Other	312	692	935	1,212	1,475	1,780	2,120
Total	3,630	4,287	6,217	8,120	9,544	10,763	11,990
Operating Surplus/Deficit	57,470	77,413	92,775	107,128	116,497	125,042	133,089
Depreciation	618	1,684	1,694	1,727	1,744	1,778	1,771
Infrastructure Charges	18,069	24,723	29,707	36,630	42,050	46,261	50,741
Rolling Stock Charges	14,215	18,925	24,351	30,332	35,662	41,508	47,850
Administrative Services Charge	1,918	2,409	2,668	2,827	2,932	2,994	3,061
Net Income/Loss	22,650	29,672	34,355	35,611	34,108	32,500	29,666

Freight Unit Plan

Georgian Railways
Table 12 : Freight Business Unit : Financial Plan

	Total Cost (000 Lari Current)						
	1997	1998	1999	2000	2001	2002	2003
Freight Services							
Salaries & Social Insurance	269	358	541	724	862	967	1075
Materials	9	14	19	25	31	38	46
Diesel - Other	3	6	7	9	10	11	12
Electricity - Other	15	14	17	21	24	26	29
Depreciation	5	20	20	21	21	21	21
Capital Repairs	97	12	16	22	27	33	40
Other	10	110	151	199	246	300	363
Total	408	534	773	1020	1221	1396	1585
Traffic Department - Freight							
Salaries & Social Insurance	1256	1373	2039	2673	3117	3454	3774
Materials	26	38	51	66	80	97	115
Diesel - Other	26	24	29	35	38	42	45
Electricity - Other	118	133	163	191	211	231	249
Depreciation	613	1664	1674	1707	1723	1757	1750
Capital Repairs	229	90	121	157	190	229	272
Other	302	582	784	1013	1228	1480	1757
Total	2570	3904	4862	5842	6588	7289	7962
Drivers & Assistants - Freight							
Salaries & Social Insurance	1270	1533	2276	2985	3480	3856	4214



RESTRUCTURING OF GEORGIAN RAILWAYS

PASSENGER BUSINESS UNIT : BUSINESS PLAN 1999- 2003

RESTRUCTURING OF GEORGIAN RAILWAYS

PASSENGER BUSINESS UNIT : BUSINESS PLAN 1999- 2003

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1 PASSENGER BUSINESS UNIT : BUSINESS PLAN 1999 - 2003

The Passenger Business Unit is one of six new entities which will be established as part of the management restructuring process of the Georgian railways. Business Plans have been developed both for the Corporation as a whole and also for the different entities.

These are based on a number of studies of the existing performance, future projections, market requirements and productivity improvement.

The Business Plan constitutes a Master Plan, for the rail passenger business, over a 5 year period which will be rolled over annually on an ongoing basis. It will provide a base for the preparation of the annual revenue and investment budgets and determine profitability forecasts. It will be the focus of management strategy for the on-going development of the passenger business.

Passenger numbers have fallen dramatically since 1990. The slide must be corrected and volumes increased by improving the service. At the same time productivity must be bettered. Support for social services will have to be transparent.

2 MISSION STATEMENT

- The safe and efficient transport of passengers
- The development of existing and new market segments
- The supply of social services in accordance with Government requirements
- The negotiation of train paths with the ISU

3 STRATEGIC OBJECTIVES

- Improve services and costs
- Intensify marketing effort to better market share
- Increase return on investment

To achieve these objectives the PBU will have to:

- Increase staff productivity
- Decrease traction and rolling stock costs
- Improve fare structures
- Agree compensation costs for PSO with Ministry
- Install new management organisation

4 POLICY AND STRATEGIES

- A new railway law will be enacted to establish SR as a Joint Stock Company or a Limited Company
- The PBU will enjoy management autonomy and will be responsible for its financial performance.
- The PBU will set fares levels in consultation with the Government. Concession fares will be the responsibility of the PBU
- Loss making services will not be cross-subsidised by freight. A PSO will be negotiated with the Ministry in accordance with agreed procedures.
- The Ministry of Transport will enter into a 5 year contract with the railway company. A 5 year Business Plan for the PBU will be prepared setting out its strategy, development programme and corresponding operational and financial targets. The plan will be reviewed on an annual basis and rolled over.
- The external costs of road transport shall be taken into account in determining the Access Fee.

5 SCOPE OF THE PASSENGER BUSINESS UNIT

The PBU will serve the same geographic area as the SR currently. The Regulatory mechanism will allow for the building of new lines and stations and the closure of existing as may be necessary. While the system is seen as offering transport service on a commercial basis the Government may decide to support specific social services.

6 INTERNAL ANALYSIS

6.1 Resources

The assets of the PBU will comprise all existing assets including staff which support passenger train operations as set out below.

6.1.1. Network

The network carried about 4.4 ml passengers in 1997 and it is estimated that this number will decrease to 3.6 ml in 1998. The 1991 figure was 11 ml. The services are divided into 3 categories as follows :

Direct (International)
 Local
 Suburban

International services operate from Tiblisi to Baku, Moscow, Kiev and Erevan. The troubles in Abkhazia have effectively blocked all direct connections with Russia. All international services with the exception of those to Armenia are now routed through Azerbaijan..

Local services include intercity and regional trains. Suburban services operate in the Tibilisi area.

The heaviest traffic demands are on the east-west axis towards Poti on the Black Sea.

The estimated passenger demand and passenger kilometres by service type for 1998 are set out in Table 3.1.

Table 3.1 Estimated Pass Demand And Pass Kms 1998

Type of service	Passenger Demand mls	Passenger Kms
International	0.06	4.2
Local	1.86	359.0
Suburban	1.73	105.0
Total	3.65	468.2

The financial performance is set out in Table 3.2 below.

Table 3.2 Net Operating Result 1997 (est 6 months: thsd Lari)

Revenue	Sales & Depreciation	Result
1508	6000	(4492)

Revenue for the first 6 months of 1998 stood at 1805 thousand Lari. This figure rose to 3170 thousand lari by the end of August. It is now estimated that revenue will achieve 4652 thousand lari. The increase is probably a result of the significant reduction in fares evasion as well as higher tariffs. During the period of civil unrest fare evasion was at a high of 70%.

Train performance is poor. Only 57% of Direct and Local services arrived on time and 84% of suburban. Track condition and locomotive performance were the main reasons Productivity in terms of resource utilization is low but it did improve significantly between 1996 and 1997.



Journey times are excessive and standards of comfort and service need to be improved.

6.1.2 Human Resources

The total number of staff attached to Passenger Services is 1833. Locomotive drivers and assistant drivers are shown as being attached to the Rolling Stock Services Unit. They will be transferred to the Passenger Business Unit in due course. The train crews are well trained and within the limitations of their situation they perform well. They are skilled in locomotive maintenance and often carry out running repairs which get the trains home to base where otherwise they would have to await replacement power. The station staff also perform well under difficult circumstances.

However, it must be said that productivity is low all around. The management organisation is deficient and changes in work practices are required. It is necessary to place a ban on external recruitment.

6.1.3 Rolling Stock

The rolling stock is generally in poor shape. It is old, maintenance is in arrears and the designs are obsolete. Heavy maintenance is carried out abroad which is expensive and demanding in fleet numbers. New maintenance facilities are required and existing workshops should be upgraded. Productivity is low and management reorganisation is necessary together with improved training. There is a necessity to plan major investment in new rolling stock.

6.1.3.1 Locomotives

The electric main line fleet consists of 241 locomotives of which 83 are available for traffic. The daily traffic requirement is 84 of which 24 are for SR passenger. The diesel fleet totals 10 of which 1 is available for traffic. However, they are only used in emergencies, mainly electric power failures. There is a total of 175 shunting locomotives of which 63 are serviceable for a demand of 66.

There is a large backlog of maintenance and the acquisition of new units is necessary. Maintenance facilities need to be rationalised and upgraded.

6.1.3.2 Electric Multiple Units

The fleet consists of 231 units with an operating requirement of 81. A total of 109 are serviceable and 36 are overdue major repairs.

They operate mainly on local services out of Tbilisi in 6 car sets and also out of Khasuri and Batumi in 2,3 and 4 car sets.

There have been no internal improvements made to the rail cars to make them attractive to passengers. They are quite basic with wooden seats and poor finish. It is unlikely that their life could be extended beyond 10 years.

6.1.3.3 Passenger Coaches

The total fleet is 1176 of which 505 are operational. The time table requirement is less than this. The condition of the carriages is not attractive due to lack of investment. All available funding is being used in safety related maintenance. A substantial refurbishment program is necessary.

6.1.4 Stations



The condition of many stations is poor due to age and maintenance backlog, and platforms. In addition given current passenger traffic flows many stations are over designed and inefficient. There are too many and the trackwork and signalling is too elaborate for the requirement and very expensive to maintain. Under normal circumstances stations should not be less than 15 km apart.

7 EXTERNAL ANALYSIS

7.1 External Analysis

The historic trend in passenger traffic is reported above. The trend is summarised by a sharp decline since 1995 and followed by signs of recovery. The predicted decline in 1998 reflects the increase in fares in both absolute and relative terms. That is a drop off in passengers willing to pay and competitive fares on rival modes of transport.

7.2 International Traffic

Georgia has experienced difficulties with regions which were to separate, such as Abkhazia and South Ossetia, but has made significant progress since 1995 in developing a stable environment politically and generally establishing a degree of law and order.

With the exception of any international traffic to Armenia all passenger services go via the Azerbaijan border. This includes train services to Moscow, Kiev as well as Baku.

Growth in traffic to Russia and beyond will very much depend upon the developments between Georgia and the secessionist republics on the northern border. The direct line to Russia and Ukraine via Rostow travels via Abkhazia and it is difficult to say when services will resume on this route.

There is no current direct line between Georgia and Turkey. This effectively means that passenger traffic between Turkey and the Republics of Armenia and Georgia is restricted to road and air. The rail link between Gyumri (Armenia) and Kars (Turkey) is restricted as a result of the political situation. There is however the possibility of a rail link between Ahalkalaki (Georgia) and Kars for the main purpose of freight transport from Georgia to the Turkish ports around Adana. This could open up a new market for passenger traffic to and from Georgia and Turkey.

7.3 Economic Projects

The economy has become more stable with the 1997 GDP growing by over 11% and inflation has reduced to around 7.1% in 1997. Although rail fares remain one of the few regulated prices most other prices have been liberalised and the majority of small enterprises have been privatised. Approximately 50% of large enterprises have undergone some degree of privatisation. However, there are still a number of issues to be developed in order to achieve improvements in external financing. The key critical issues that need to be addressed concern the following factors:

developments concerning the Secessionist Republics
ongoing progress in achieving stabilisation and structural reform
capability to obtain external financing.

The forecasts and economic and financial analysis in the Business Plan assume that stabilisation and structural reform continue within Georgia. However it assumes that whilst the relationships with the Secessionist regions develop positively it is unlikely that the situation will be sufficiently normalised in the next five years to result in major changes in passenger

demand. This situation needs to be continually reviewed in each year of the plan. Developments within Georgia and with the Secessionist Republics will be favourable to external financing. The following table summarises the assumed growth rates and also includes the growth forecasts prepared by the IMF, IBRD and Plan Econ for comparison purposes.

Table 4.11 Economic Growth Forecasts 1996 - 2003

	1996	1997	1998	1999	2000	2001	2002	2003	Growth 1996:2003
Real GDP growth									
Actual	11.4	11.3							
Minimum			9	7	7	7	5	5	1.60
Maximum			12	10	10	10	10	10	2.02
EIU			10.0	8.0					
IMF	10	10	10	8	8	8	6	6	1.71
IBRD	8	10	10	8	8	8	6	6	1.71
PlanEcon	14	12	11	10	9	-	-	-	-

Nevertheless, even with these relatively high growth rates Georgia's GDP would still be only around half of its 1989 level.

Around 13% of Georgia's current passenger traffic is to or from its neighbouring countries and its traffic volumes will thus also be influenced by regional economic growth, particularly in Armenia and Azerbaijan. The outlook for the Azerbaijan economy is good with GDP forecast expected to grow at around 8% per annum for the next five years. In Armenia real GDP growth fell in 1997 to 3.1% following rates of 5 to 7% in previous years. The forecast growth is expected to revive at 5 to 6% per annum for the next two years.

Table 4.12 Economic Growth Forecasts Azerbaijan and Armenia 1996 - 2003

	1996	1997	1998	1999	2000	2001	2002	2003	Growth 1996:2003
Real GDP growth									
- Azerbaijan									
Actual	1.3	5.8							
Minimum			6	5	5	4	3	3	
Maximum			8	11	15	12	10	10	
EIU			7	8					
PlanEcon			6						
Expected			7	8	10	8	7.5	7.5	
-Armenia									
Actual	5.8	3.1							
EIU			5	6					
Expected					5	5	5	5	

7.4 Traffic Forecasts

In 1997 the railway reported that its passenger traffic amounted to 572 million passenger kilometres. In 1998 passenger traffic is expected to decline to 467 million passenger

kilometres and it is assumed that this is a reaction to price increases which have made train travel very expensive relative to other modes. The forecasts are summarised below.

The forecast assumptions prepared by EBRD have been used to determine the anticipated passenger traffic growth between 1998-2003. It should be noted that whereas earlier forecasts suggest an increase in demand between 1997 and 1998, the first six months of 1998 suggest that demand for the year will actually be lower. As a result the traffic forecasts start from a lower base than previously estimated by EBRD.

Total passenger traffic is expected to grow at an average annual rate of 2% less the effect of tariff increases. Growth by passenger type may be broken down as follows;

International – 2% per annum
 Local – 2.5% per annum
 Suburban – 1.5% per annum

These figures are based upon the assumption that as the economy improves domestic passengers are likely to a) switch from suburban rail to competing modes, b) switch from suburban rail to longer distance local services and c) enter the market as passengers of local services as opposed to suburban services.

As a result the total number of passengers carried by Georgian Railways is forecast to rise from an estimated 3.65 million in 1998 to 3.89 million in 2003. Thus the 2003 forecast is lower than the 1997 total of 4.37 million

Forecast Passenger traffic trends (millions)

	1997	1998	1999	2000	2001	2002	2003
International passengers	0.55	0.60	0.60	0.61	0.62	0.63	0.64
Local passengers	1.88	1.86	1.90	1.94	1.97	2.01	2.05
Suburban passengers	2.43	1.73	1.74	1.75	1.76	1.76	1.77
Total passengers	4.37	3.65	3.70	3.75	3.79	3.84	3.89
International pkm	3.85	4.23	4.29	4.35	4.42	4.49	4.55
Local pkm	340.5	358.8	366.0	373.2	380.7	388.2	395.9
Suburban pkm	228.1	104.8	105.3	105.8	106.3	106.9	107.4
Total pkm	572.4	467.9	475.6	483.4	491.4	499.6	507.9

7.5 Market

The average haul of local and suburban passenger is small. This is to be expected given the size of the country. This however makes this traffic more vulnerable to competing modes namely bus. The location of the capital, Tbilisi, being non-central in location, has an influence on the average length of haul for domestic and international passengers. By rail Tbilisi is located 52km from the Azerbaijan border, 71 km from the Armenian border and 306km from the Black Sea port of Poti. All international traffic crosses the Azerbaijan or Armenian borders and most domestic traffic travels westwards towards Poti on the east-west main line. These distances explain why international traffic hauls are lower than domestic hauls. The hauls also suggest that the volume of transit rail passengers is low or non-existent.

This project is financed by the European Union's Tacis Programme, which provides grant finance for know-how to foster the development of market economies and democratic societies in the New Independent States and Mongolia.

The other reasons researched for the reduction in passenger numbers include the fact that fare evasion has resulted in apparently high loading yet the derived statistics show only a 17 passengers per coach. The statistics are based upon ticket sales and the number of passengers entitled to go free. Also previously there were very cheap season tickets and prices have generally increased substantially albeit from a very low base. Overall passenger traffic contributes only 3% of the railways income and although the focus of investment will be on commercial freight operations the re-structuring plans shown here recommends solutions to the viability and funding issues involved in continuing the provision of passenger services.

It is not easy to identify the market share currently held by the rail passenger business however it is fair to say that rail's market share has declined as a result of growth in competing modes such as air and bus. Competition is strongest on suburban routes and this market segment is expected to decline or remain static in the short term unless government acts to improve the attractiveness of these services. Growth in the rail market share is therefore likely to come mainly on long distance and international routes where the distance factor can give rail the advantage and will be in line with economic growth.

As a result of using ticketing data as the main source of identifying patronage there is a probable underestimation of the number of passengers using the trains. In 1996 the number of train kilometres was 2.6m compared with total passenger kilometres of 380m. This results in an average load of 146.2 passengers. Rationalisation of services is inevitable but it will be essential to retain and introduce services that maximise patronage in the time table.

Primarily, a result of poor infrastructure but also procedural delays, journey times are uncompetitively high. It is hoped that with necessary improvements in infrastructure alone there will be a significant drop in journey times.

The concept of separating the passenger market into two types, regional and intercity needs to be developed. Effort should be spent in developing the intercity service provision as a "flagship" service operating on a minimal, if any, subsidy with excellent marketing and offers.

Facilities on trains range from simple hard seat carriages to international coaches with sleeping facilities and air conditioning. The passenger business needs to identify the size of market willing to pay for extra comfort at a premium. It may be viable to reduce the number of sleeper coaches and replace them with airline style seats to boost patronage. Alternatively the poor comfort offered by some carriages may be deterring some of the market.

There is a need to review the viability of each station and other locations where stations need to stop. By reducing the number of stations and stops journey times will fall particularly for the inter-city service and this will be paralleled by a reduction in operating costs.

Historically the passenger business has not been able to cover its own expenditure through revenue collected from its passengers. It is unlikely that in the short term the passenger business will be able to achieve profit in the commercial sense of the word. However by developing services which are more customer oriented then the business will have the opportunity to raise tariffs at minimum cost in terms of loss of market share. The passenger business in the short term at least has to receive a subsidy or withdraw unprofitable services. This subsidy may come from two sources. Firstly the government may choose to subsidise those services which the government believes are essential in terms of social need. The subsidy must be conditional on the continuing performance of these services in terms of meeting social objectives and in a cost-effective manner that is maximising revenue direct from the passenger on unprofitable services. The alternative is to continue cross-subsidy from other revenue generating businesses (namely freight). The criteria for subsidy should be the same as those if the subsidy came from the government. The freight business would need to know in advance of each year the subsidy required by the passenger business in order to plan to minimise its effects on the freight business performance.

The concept of a “level playing field” in the transport market needs to be discussed with government. Government subsidies to competing air services and free road access for buses and cars needs to be reviewed as these give such modes an advantage over rail.

7.6 Competition

Georgia has the highest car ownership of the three Caucasus republics but ownership levels remain relatively low, at around 80 per 1000 inhabitants and are unlikely to increase rapidly for at least the medium-term. Passenger traffic in the medium-term is likely to face strong competition from buses and, given the financial performance of the segment, should probably withdraw from a number of its services. However, the main-line serves a number of relatively large centres and should have the potential to compete effectively against bus competition. Underlying demand is likely to grow more or less in line with the economy, although this will be dampened by any fare increases which the Government may introduce to improve the cost recovery.

It is essential to focus on key changes that will happen in the next few years in order to seek to be better than competitors and so influence customers to choose to travel by rail. This means understanding what plans competitors have for their product development, new technology and equipment and commercial issues.

8 PERFORMANCE IMPROVEMENT STRATEGY

8.1 Targets, Standards and Service Levels

The principal business objectives of SR are to deploy its capability and resources to achieve its strategic goals and to meet market needs in order to earn profitable revenue. This will be done through positioning the passenger business relative to competition to rail in Azerbaijan to enable the railway to achieve competitive advantage. The main corporate strategy will therefore be to increase the value of the railway to the Government in respect to its return on investment.

The general direction in which the railway will move forward over the 5 years of the plan and beyond is to achieve significant improvements in quality and performance in order to achieve target growth..

The business focus must be directed at satisfying the needs of the customer and meeting his or her requirements consistently and economically. This requires the development of quality procedures as part of the marketing strategy. The marketing strategy itself must include a thorough understanding of SR's customers and the strength and weaknesses of the competition

The passenger business needs to adopt the drive to obtaining a commercial return on its activities. In the purest sense this means a change from the conventional quantitative measures of performance such as passenger kilometres to one where each element of the business generates a profit and contributes to the overall success of the business. Unlike the rail freight business unit the passenger business may have duties and responsibilities which cannot produce a positive return from customer revenue alone. This does not reduce the need for the passenger business to develop proper traffic costing procedures nor to provide a proper understanding of the individual cost elements for each traffic flow. When the costs for each type of traffic are known a tariff policy can be developed to ensure commercial viability.

Safety, together with environmental awareness is good for business and one of the traditional advantages that rail has over competing modes. The passenger business must achieve appropriate standards in both areas to ensure compliance with regulations and satisfy public expectations. Public image or profile can be a powerful weapon or a weak link in the marketing armoury of the railway. The standards should be set to achieve risk levels that are as low as reasonably practical. Present arrangements need to be assessed to eliminate prescriptive standards and, where appropriate, introduce output standards and specifications based on sound commercial and operating judgement. The strategy should introduce modern risk analysis and risk management techniques that then become an integral part of SR's standard procedures.

High morale and a well motivated work force is essential if customers are to be attracted to the passenger business. As part of the quality management system a training programme should be developed for all employees covering customer care, management skills and technical development. All employees need to understand the "mission" of the passenger business and to this effect a mission statement should be prepared and distributed. Staff need to appreciate the value of each others work and incentives should be in place to encourage better than expected performance. Performance monitoring of all staff from senior management downwards should be undertaken via regular peer appraisals. At these appraisals strengths and weaknesses can be identified along with remedial action. Most important of all a culture of positive thinking and pro-activity needs to be developed with innovation encouraged at all levels in the organisation.

8.2 New Management Organisation

The Passenger Unit will be independent and self-contained. It will have managers responsible for the main functions of Marketing, Operations, Finance and Human Resources. The main functions of the Passenger Business Unit will be :

- Provision of cost effective and safe public passenger transport in the form of long distance (national and international) and commuter services.
- Ticket pricing and fare structure
- Development of attractive future oriented services
- Management of assets particularly stations
- Management of rolling stock including routine maintenance.
- Contracts with Rolling Stock Service Unit for heavy maintenance of rolling stock
- Contracts with ISU for track access.
- Managing in accordance with the plans and directions of the Corporate Group

The organisation chart is included in the report.

8.3 Service Improvements

The infrastructure and rolling stock requirements should be the minimum consistent with the ability to handle the present traffic levels and allow for the predicted volumes.

The passenger network has changed little despite the drop in passenger demand since the late 1980's. Average timetable speeds are very low, partly because of infrastructure deficiencies. Many of the services operate throughout the day or operate in early morning and evening only. A number of services particularly long distance and international operate over night.

The following steps are recommended:

- Increase travel speed on all services in line with the upgrading planned for the east – west line.
- Eliminate unnecessary delays, e.g. Border delays and stops at non-passenger stations
- Develop the concept of express trains by stopping less frequently on inter city services
- Reschedule services to minimise night time travelling on routes within Caucasus
- Station closures and service withdrawal.

It is expected that by 2003 there will be a 50% reduction in journey times as a result of upgrade/renewal of rolling stock and infrastructure and a 20% improvement in reliability. On all regional services stops at stations should not exceed 2 minutes. With the exception of termini, stops on inter city services should be reduced to 5 minutes.

8.3.1 Long Distance Intercity Services

A network for intercity services within Georgia needs to be agreed on the lines of major population centres. Using the 1997 passenger loading figures as a proxy the network may resemble the following:

Batumi (Makhinjauri)	97km				
Poti	68km	Samtredia	40km	Kutaisi 1	96km
	57km	Zestaponi	63km	Khashuri	
Khashuri	32km	Borjomi			
	43km	Gori	75km	Tbilisi Passenger	39km Rustavi

As for international services the service should be non-stopping between the inter city stations with target speeds at least 50% higher than current speeds. Reduced journey times based upon the above network are shown below;

Line section	Current 1988/99	Target 2003	Target Km/h
Batumi (Makhinjauri) – Samtredia	3h 20m	1h 40m	58
Poti – Samtredia	2h 48m	1h 24m	49
Samtredia – Kutaisi I	1h 26m	0h 43m	56
Samtredia – Zestaponi	2h 17m	1h 09m	50
Kutaisi I – Khashuri	4h 17m	2h 09m	45
Zestaponi – Khashuri	2h 51m	1h 26m	44
Kashuri – Borjomi	1h 19m	0h 40m	48
Kashuri – Gori	1h 33m	0h 47m	55
Gori – Tbilisi Passenger	2h 21m	1h 11m	64
Tbilisi Passenger – Rustavi	0h 59m	0h 30m	78

Reduced journey times provide the opportunity to give the inter city services priority timetabling during day times. This will avoid the extra costs of providing sleeping facilities. For example the target journey time between Tbilisi and Batumi should be 4 hours allowing for station stopping times at Samtredia, Zestaponi, Khashuri and Gori. Thus a 4 train service could operate with departure times of 06:00 and 12:00 from Batumi and Tbilisi with arrival times of 10:00 and 16:00.

8.3.2 Regional Services

The future of regional services is to an extent uncertain. The business contains all the slower local and suburban passenger services and acts as a feeder into intercity services as well as transporting the majority of short distance trips. It is envisaged therefore in the business plan that they will be the subject of a PSO contract directed towards supporting lines and stations which whilst justified in terms of social need would otherwise be closed on commercial grounds.

If adequate support is not forthcoming the PBU may have to make some unpopular decisions concerning the withdrawal of local and suburban services (including station and line closures) in order to make savings on operating costs and to divert resources to where there is a greater return for regional services.

Regional service are characterised by a larger number of stops and slower journey times compared with inter city services and a more frequent service where there is a market.

Data provided for 1997 shows that there were 140 stations that processed passengers in that year. The average distance between the 140 passenger processing stations is about 8km. Where distances between stations are less than 15km then station closures should be considered. This should be done on the basis of operating costs, ticket revenue, passenger throughput and whether the station/line receives government revenue under the PSO contract.

The following sections of line will need to have their station frequency reviewed:

Tbilisi Junction – Zugdidi – up to 17 station closures out of 55
Zestaponi – Sachkhere – up to 6 station closures out of 12
Samtredia – Batumi – up to 3 station closures out of 15
Khashuri – Bakuriani – up to 4 station closures out of 12

It is assumed in the business plan that the above station closures will go ahead but that there will be no total line closures. It is believed that the government will prefer to support a minimum standard of service on the existing passenger network than see line closure which would worsen the isolation of many rural communities.

The frequency of service on the lines will need to be reviewed. In the first year of the business plan, a detailed passenger survey needs to be carried out to identify load factors on local and suburban services. Where load factors per train are less than 50% then the frequency of service should be reduced and rescheduling needs to be considered. A minimum frequency of four train pairs per week should be considered on the least used lines.

Currently there are about 20 passengers per coach on suburban and local services. This is about 37% load factor on a 54 seat coach and 25% load factor on an 81 seat coach. In order to improve the load factor the average frequency on regional services will need to be halved or the rolling stock capacity will need to be halved.

8.4 Passenger Marketing and Fares Policy

8.4.1 General

This section of the plan summarises the fares, yields and revenues to be achieved in the course of the plan. There is low revenue yield on SR Passenger services and the reasons identified for this situation include:

- Fare evasion
- Obligations placed on SR to offer reduced fares to certain categories of passenger (officials, elderly, war veterans, invalids, refugees).
- The need to gain approval from government for tariffs.

The steps identified for SR to take to improve overall yield includes:

- Reduction of fare evasion by improving ticket inspection, removing on train ticket sales developing automatic ticket machines and operating manned and unmanned ticket barriers

8.4.2 Fares Policy

The new fare policy recommended in this Business Plan will result in fares being increased by an average of 5% per annum across the domestic network in real terms. Increases on individual services should vary from zero to 10% depending upon the estimated price elasticity of each route with fares on the least sensitive routes being increased most.

Revenue from the passenger business is planned to increase as follows:

- 1998 4.6m Lari
- 1999 5.2m Lari
- 2000 5.9m Lari
- 2001 6.7m Lari

This project is financed by the European Union's Tacis Programme, which provides grant finance for know-how to foster the development of market economies and democratic societies in the New Independent States and Mongolia.

- 2002 7.6m Lari
- 2003 8.6m Lari

These figures are based upon the 1998 revenue for the first six months of 3.5m Lari

A range of promotional fares designed to stimulate the domestic market and support the services with low load factors will be introduced. Discounting will be introduced to increase marginal revenue and promotions will be developed.

In the medium term the railway's average yield per revenue passenger kilometre will improve due to:

- a real increase in fares
- increased passenger demand as a result of attractive offers, demographic trends and economic growth
- a shift from short distance to longer distance travel

8.4.3 Marketing Initiatives

The key aim of the marketing initiatives is to make the benefits of rail known to customers and potential customers. The customer buys advantages and solutions and these need to be promoted through effective marketing in respect to:

- Advertising
- Sales promotion
- Publicity
- Sales letters
- Brochures

The business should start categorising demand so that offers are well targeted to maximise demand and revenue. A target customer matrix may consist of categories such as long distance and short distance travellers, business and leisure passengers, international, transit and domestic passengers.

Corporate identity is important. There should be a clear distinction between Intercity and regional services visible to the customer. The customer should easily find his coach and seat on the Inter city service each time he uses it. Thus a consistent sequence of carriage types and numbering is recommended on all inter city services. Inter city travellers should also expect higher comfort standards (e.g. No overcrowding, clean coaches, soft furnishing, air conditioning, clear information and welcoming attitude from staff). On regional services customer expectations are likely to be lower given that traffic is more regular. However basic standards of cleanliness, clear information and correct attitude from staff should still apply.

8.4.4 Quality of Service Targets

Over the years the railway has had to cut down on service quality and the product has degraded. This plan recognises the need to upgrade the product, improve train services, station facilities and customer care and also create a modern brand image for the railway.

A key aim is to push for new business in the following sectors:

International travel

Long distance domestic travel

and to maintain a market presence in suburban and short distance travel sectors.

There is a need to improve product performance and it is proposed to establish staff training programmes on customer relations, interpersonal skills and product offers on the technical

side. The plan proposes investment in refurbishment of rolling stock, introduction of improved information systems and ticket sales equipment. There are also plans for upgrading station facilities including waiting rooms and ticket hall refurbishment, renovation of sanitary facilities, resigning and other public information systems.

Quality of service targets must be developed to measure performance and to satisfy customers that published service levels are being provided or bettered. As a marketing tool they will show potential customers that the railway is capable of delivering its promises. Quality of service targets should include both Train and Station Performance.

The monitoring of passenger operating performance is essential:

- to the understanding of the business
- as a basis for targeting improvements
- to develop future plans
- to deliver a quality product
- to ensure customer satisfaction

This information forms a key part of the management information system. Performance targets need to be developed in line with the quality of service targets.

8.5 Development of Passenger Stations

Improvements to passenger stations should be prioritised on the Poti/Batumi – Tbilisi – Sadakhlo/Gardabani line.

Phase 1 – station building, platforms and other facilities for passenger traffic at Batumi, Poti, Samtredia, Gori, Tbilisi Tov, Tbilisi Pass, Gardabani and Sadakhlo should be rehabilitated.

Phase 2 – rehabilitation of stations in Tbilisi plus track renewal at Batumi

Phase 3 – rehabilitation of remaining stations on main line (eg. Zestafoni, Khashuri, Marneuli).

8.6 Better Crew Productivity

Train crews are currently part of the locomotive department. It is recommended that they are transferred to the passenger business as appropriate. This will enable the business to have tighter control over one of the main cost elements and develop an independent strategy appropriate to its needs.

The operational availability of rolling stock including locomotives and EMU motor units should be maximised by using them over more than one consecutive train crew shift.

The drivers of passenger locomotives and their assistants are a higher unit cost than their freight counterparts. Whilst it is recommended that they should remain an asset of the passenger business, surplus staff should be “hired out” to the freight business.

Train gangs (drivers plus assistants) working for the passenger business are assigned to trains and not locomotives this means that the shift for each gang varies on a daily basis but not exceeding the total monthly shift hours of 170.

The total pool of train gangs is currently split between 7 regional depots and total 419 drivers and 373 assistants. Of these the passenger business uses the following numbers:

- 100 locomotive drivers and 34 locomotive assistants
- 55 EMU drivers and 51 assistants

The number of train gangs required by the passenger business is expected to fall following the adoption of the recommended measures in this business plan.

8.7 Rolling Stock Fleet Optimisation

- 8.7.1 The current roster (October 1998) is believed to be 26 locomotives (18 mainline 8 branch line). Each locomotive consists of two permanently coupled units. It is assumed that these locomotives operate on all international and local services.

The Table below shows how locomotive productivity may be improved.

Forecast Locomotive Roster 1998 - 2003

Year	Passengers	Average passenger kilometres per locomotive per day					
		38257	39984	40175	43667	45647	47706
1998	1921200	26	25	25	23	22	21
1999	1959087	27	26	25	23	23	22
2000	1997724	28	26	26	24	23	22
2001	2037124	28	27	27	25	24	23
2002	2077302	29	27	27	25	24	23
2003	2118274	29	28	28	26	25	23

The business plan assumes a utilisation improvement of 12% which will see the average passenger train kilometres per locomotive per day increase to 47706 by 2003. The improved utilisation will result in the locomotive roster fall from 26 in 1998 to 23 by the year 2003. The changes in operating practices are fundamental to achieving this target.

8.7.2 Passenger coaches

The 1998/99 time table lists the rolling stock composition for international and long distance local services. These are summarised below. Staff requirements are included in the numbers shown.

To/from	Passenger accommodation per coach				Total	Restaurant	Hours/week	SR Sets rostered
Tbilisi	18	36	54	81				
Moscow	1	11	4	0	16	1	146	1
Baku	1	6	3	0	10	0	222	1
Kiev	1	10	5	1	17	1	133	1
Erevan	1	3	2	2	8	0	115	1
Zugdidi	1	7	7	3	36	0	176	2
Senaki	0	1	0	9	10	0	144	1
Batumi	1	9	5	1	32	0	170	2
Poti	1	12	5	1	38	0	177	2
Batumi	2	14	5	1	22	0	168	1
Ozurgesti	2	9	6	2	38	0	190	2
Vale	0	1	0	9	10	0	129	1

This project is financed by the European Union's Tacis Programme, which provides grant finance for know-how to foster the development of market economies and democratic societies in the New Independent States and Mongolia.

Total	16	120	65	36	237	2	1770	15
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Productivity for loco hauled carriages is assumed to increase by 15% over the 5 years of the plan. Based upon this information the estimated carriage stock required is as below with an allowance for maintenance of 10% of stock at any one time.

Year	Carriages required per year			
	18 passenger	36 passenger	54 passenger	81 Passenger
1998	18	132	215	40
1999	18	128	210	39
2000	18	123	205	37
2001	18	120	198	36
2002	18	117	194	35
2003	18	112	188	34

Following reclassification of rolling stock and reduction in night time services on domestic routes the rolling stock requirements will be as follows;

Year	International Class/18	1 st class/36	2 nd class/54
1998	5	139	255
1999	5	135	249
2000	5	130	242
2001	5	127	234
2002	5	124	229
2003	5	119	222

8.7.3 Restaurant cars

All international services/overnight services should be equipped with restaurant cars. Buffet services should be available on all other inter city services. It is recommended that catering services should be offered for franchise in order for the passenger business to minimise its assets. Where demand for restaurant/ buffet car facilities is not cost effective kiosk/trolleys should be substituted. This will be the decision of who ever manages on board catering.

The number of restaurant cars in use currently is estimated at a roster of 15 (one for each long distance service). It is estimated that by 2003 this will decline to 13.

8.7.4 EMU services

Trains consist of multiples of 2 (1 motor unit and one trailer unit). The requirement is 28 i.e. 14 motor units and 14 trailer units

8.7.5 Luggage, parcel and mail services

It is not certain whether these services are still provided by SR. If they do it is strongly recommended that mail services should be taken over by the Postal Service of Georgia whose responsibility would then be to identify coach requirement and negotiate with the rolling stock business.

9 EMPLOYMENT LEVELS AND PRODUCTIVITY

The staffing levels below have been identified to the passenger business through a process of disaggregation of present activities into their component parts and summing together. It is considered that an overall reduction in staff of 30% is achievable during the life of the business plan as a result of productivity improvements and other actions outlined in the passenger business plan. With the exception of the marketing department and replacement of essential staff, zero recruitment policy should be adopted across business activities with immediate effect.

Reductions in staff costs may be achieved by the following means:

- Outsourcing of activities (e.g. franchising of catering services)
- Greater use of part time staff
- Pay cuts
- Voluntary redundancy
- Compulsory redundancy
- Zero recruitment (e.g. zero replacement of retiring staff)

Projected Staff changes in Passenger Business

	1998	1999	2000	2001	2002	2003
Total Employees	1833	1778	1654	1522	1400	1288
% change		3%	7%	8%	8%	8%

10 FRAMEWORK FOR A PUBLIC SERVICE OBLIGATION CONTRACT

The practice of cross- subsidising passenger losses by using freight profits will have to be discontinued. It is not transparent and does not encourage the operators to improve efficiency and reduce the contribution from the tax payer.

The present system should be replaced by a Public Services Obligation contract in which payments for all non-commercial rail transport services provided by the railway and which are acknowledged as being necessary on socio-economic grounds shall be specified and agreed.

Contracts shall be negotiated on the basis of reasonable cost for the provision of the specific rail services in question which shall be unambiguously defined in both quantitative and qualitative terms. The standards of service shall be monitored by Government to ensure that the railway is performing in accordance with the contract terms.

The charge from the PBU for each particular mandated service shall be calculated in a manner such as to recover the difference between the projected revenue for that service and the variable costs of providing that service together with access charges payable to the ISU for that service and the profit payable to the PBU .

The Ministry will expect that the costs are at the lowest possible level commensurate with meeting the agreed standard. Thus negotiation will centre around the staffing of stations and trains and the productivity of all such staff. Over-manning will require to be curtailed and efficient working methods introduced.

Access charging will require careful handling. The level of track access charges for any particular socio-economic rail service ought to reflect its long run variable cost to the infrastructure company. In the case where a socio-economic rail service is the only service over a section of the railway then the long run variable cost is equivalent to the total of that section of the railway.

The Public Service Obligation Contract should include all the relevant parameters of operations and service.

11 OBJECTIVES OF PASSENGER BUSINESS PLAN

The key objectives of the PBU will be to;

- Maintain market share over the 5 year plan to achieve 507.9 million passenger kilometres in year 2003.
- Introduce new management structures and procedures to achieve increases in productivity performance and efficiency
- Create a marketing strategy to achieve targeted annual growth and set tariffs to achieve profit revenue and cost targets
- increases in speed and reliability through track and signalling renewal
- Separate the passenger business into two profit centres – inter city and regional.
- Achieve productivity improvements for rolling stock utilisation:
 - Locomotives 12%
 - Coaches 15%
 - EMUs 3%
- Close underused stations
- Introduce an Intercity Service
- Rationalise the International Services
- Negotiate a PSO contract with the Ministry for local services
- Increase staff productivity as follows:

	1998	1999	2000	2001	2002	2003
Total Employees	1833	1778	1654	1522	1400	1288

- Improve rolling stock maintenance and reduce costs
- Negotiate competitive rates for track access
- Improve return on investment

12 FINANCIAL ANALYSIS

12.1 Key Assumptions

The key planning assumptions used in the preparation of the Passenger Business Unit projected income statements were as follows.

Assumptions used in Corporate Financial Computer Model	
Planning Parameter	Modelling Assumption
Passenger Traffic and Revenue	
Passenger Volumes	
- international/long distance	2.48% per annum (tariff elasticity -0.5)
- suburban services	2.48% per annum (tariff elasticity -0.5)
Passenger Tariffs	
- international/long distance	increasing at 5% per annum in real terms
- suburban services	increasing at 5% per annum in real terms
Passenger Operating Resources	
- loco fleet	requirement for 25 loco's declining to 21 by 2003
- loco per train	average of 1 remaining constant
- EMU's	28 EMU's remaining constant
- passenger coach fleet	405 declining to 352 by the year 2003
- passenger coaches per train	average of 8.3 declining to 8.1 by 2001
Operating Costs	
Passenger Services	
- labour productivity	Staff reduction (1999 -3%), (2000 -7%), (2001 -8%) (2002 -8%), (2003 -8%)
- unit wages	Real wages increase by 25% in 1999, 20% in 2000, 15% in 2001, and 10% per annum thereafter
- materials	10% increase per annum
- other costs (excluding depreciation)	10% increase per annum
Traffic Department	
- labour productivity	Staff reduction (1999 -3%), (2000 -7%), (2001 -8%) (2002 -8%), (2003 -8%)
- unit wages	Real wages increase by 25% in 1999, 20% in 2000, 15% in 2001, and 10% per annum thereafter
- materials	10% increase per annum
- other costs (excluding depreciation)	10% increase per annum

The Passenger Business Unit will also be charged for the use of services by the Infrastructure Business Unit, the Rolling Stock Business Unit, and the Administrative Services Unit. These charges are shown at the end of the income statement.

12.2 Passenger Business Unit Projected Income Statement

Passenger Revenue: Growth in passenger traffic up to 2003 of 10.0% is modest and the increase in revenue is largely a reflection of the application of a real increase in passenger fares of 5% per annum throughout the period of the plan. Passenger Business Unit revenue, excluding public service obligation payments, is projected to grow by 64.5% between 1998 and 2003.

Cost recovery on passenger services is very low and a decision to increase tariffs in real terms will begin the process of shifting some of the burden for the cost of the services back to the customers. Cross subsidisation of passenger services from profitable freight services must be phased out. Support from the State will be required for essential social services and based on the preliminary allocations of costs to the Passenger Business Unit a figure of 20 million lari per annum has been included from the year 2001. Rationalisation of services is essential if SR is to eliminate any residual losses in the passenger business that remain after the payment of the PSO.

Direct expenditure on passenger services, including the costs of the passenger service department, a share of the traffic department costs and the salary costs of passenger drivers and assistants, grows by 120% during the period of the plan. This reflects increases in real wages, and increased expenditure on materials used in the repair of passenger rolling stock. The repair of passenger rolling stock is currently the responsibility of the passenger services department although this function should be performed by the rolling stock business unit which would then recharge the costs to the Passenger Business Unit.

Historical depreciation costs are constant throughout the period of the plan.

The Passenger Business Unit must bear a charge for the use of infrastructure which is tentatively estimated at 7.2 million lari for 1998 and this grows to 10.6 million lari by 2003 in line with increases in costs of the Infrastructure Business Unit. The charge out is based on passenger train gross tonne kilometres.

Rolling stock charges are estimated at 6.4 million lari for 1998 growing to 10.8 million lari by 2003. These charges are for the use of locomotives and EMU's and the charges are based on the number of traction unit kilometres (locomotive kilometres and EMU kilometres) operated by the passenger business unit.

The Passenger Business unit must also bear a proportion of the costs of the Administration and this charge has initially been set at 50%.

The projected net result for the Passenger Business Unit in 1999 is a loss of 18.9 million lari which rises to 20.9 million lari in 2000. The payment of PSO of 20.0 million lari per annum from 2001 onwards reduces the size of the reported loss to 2.9 million lari in 2001, to 4.8 million in 2002 and to 6.8 million lari in 2003.

Passenger Unit Plan

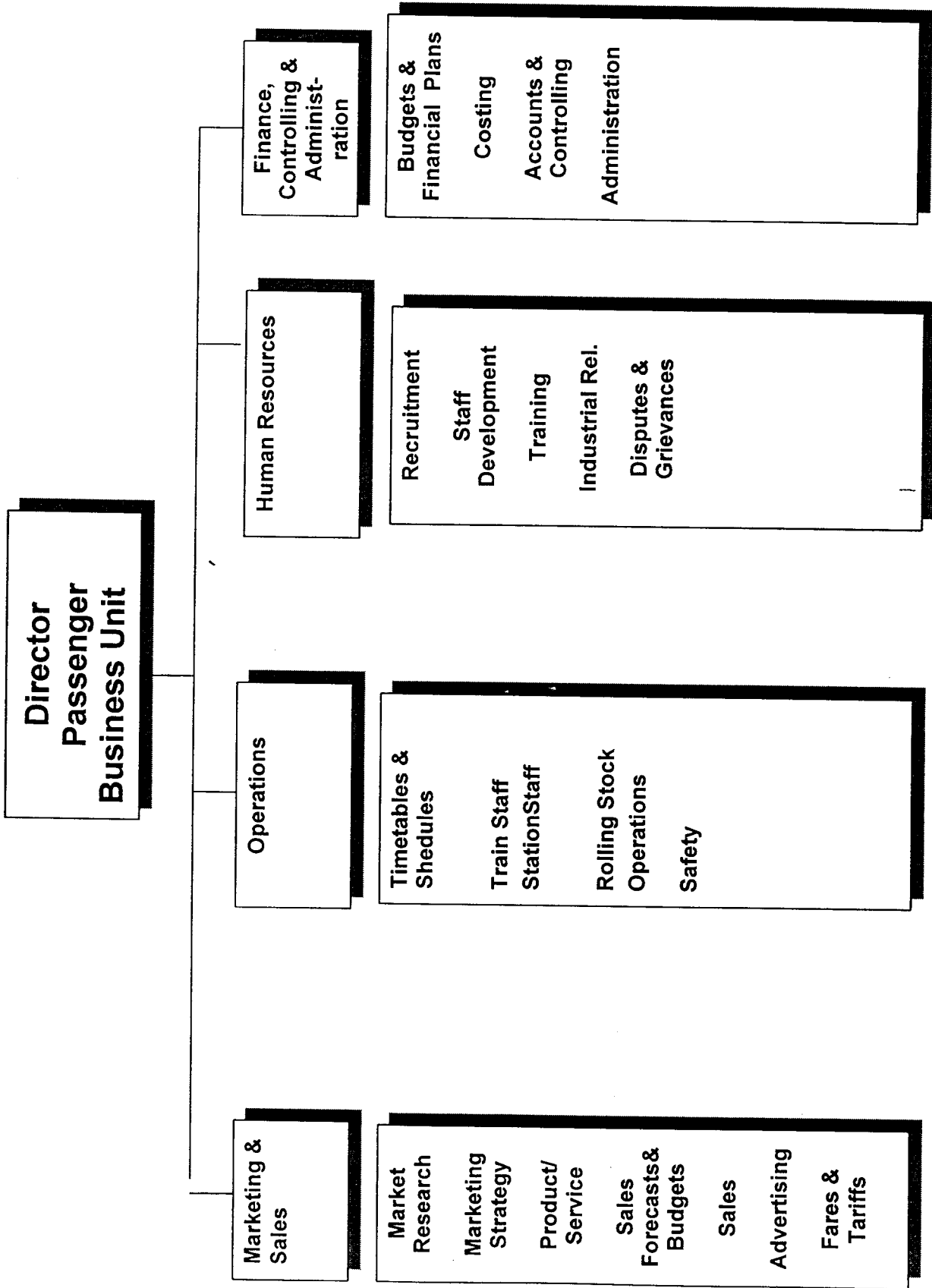
Georgian Railways
Table 9 : Passenger Business Unit : Financial Plan

	Total Cost (000 Lari Current)						
	1997	1998	1999	2000	2001	2002	2003
Passenger Services Revenue	3,100	4,700	5,116	5,672	6,289	6,973	7,732
Public Service Obligation	-	-	-	-	20,000	20,000	20,000
Total Passenger Revenue	3,100	4,700	5,116	5,672	26,289	26,973	27,732
Salaries & Social Insurance	1,204	1,665	2,181	2,618	2,978	3,257	3,563
Materials	62	132	157	185	218	260	309
Diesel - Traction	-	-	-	-	-	-	-
Diesel - Other	89	84	91	97	104	113	122
Electricity - Traction	104	87	94	101	109	118	128
Electricity - Other	-	-	-	-	-	-	-
Capital Repairs	621	712	847	998	1,177	1,399	1,664
Other	390	832	990	1,169	1,380	1,641	1,953
Subtotal Passenger Expenditure	2,470	3,512	4,360	5,169	5,966	6,788	7,739
Operating Surplus/Deficit	630	1,188	757	504	20,323	20,185	19,993
Depreciation	731	2,228	2,241	2,285	2,308	2,353	2,344
Infrastructure Charges	6,270	7,191	7,510	8,323	9,141	9,805	10,603
Rolling Stock Charges	6,032	6,450	7,225	8,034	8,873	9,798	10,820
Administrative Services Charge	1,918	2,409	2,668	2,827	2,932	2,994	3,061
Net Income/Loss	- 14,320	- 17,090	- 18,889	- 20,965	- 2,931	- 4,765	- 6,836

Passenger Unit Plan

Georgian Railways
Table 10 : Passenger Business Unit : Financial Plan

	Total Cost (000 Lari Current)						
	1997	1998	1999	2000	2001	2002	2003
Passenger Services							
Salaries & Social Insurance	572	938	1,229	1,470	1,666	1,823	1,994
Materials	56	122	145	171	201	240	285
Diesel - Other	83	78	84	90	97	105	113
Electricity - Other	75	54	58	63	67	72	78
Depreciation	577	1,812	1,823	1,858	1,877	1,914	1,906
Capital Repairs	564	690	820	967	1,139	1,355	1,612
Other	314	686	816	961	1,133	1,347	1,602
Total	2,241	4,380	4,976	5,580	6,180	6,855	7,591
Traffic Department - Passenger							
Salaries & Social Insurance	315	343	450	545	624	685	751
Materials	6	10	12	14	17	20	24
Diesel - Other	6	6	6	7	8	8	9
Electricity - Other	29	33	36	39	42	45	49
Depreciation	154	416	419	427	431	439	438
Capital Repairs	57	22	26	31	37	44	53
Other	76	146	174	207	247	294	351
Total	643	976	1,123	1,270	1,406	1,537	1,674
Drivers & Assistants - Passenger							
Salaries & Social Insurance	317	384	502	603	688	750	818



RESTRUCTURING OF THE GEORGIAN RAILWAYS

BUSINESS PLAN 1999 - 2003

NETWORK INFRASTRUCTURE

NETWORK INFRASTRUCTURE

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1 NETWORK INFRASTRUCTURE

1.1 Introduction

The Network Infrastructure Services Unit is one of five new entities, which will be established in the management restructuring process of the Georgian Railways (SR).

A number of studies including an analysis of the sector performance of Infrastructure Maintenance have been completed. Recommendations for rehabilitation and upgrading have been developed. The financial effects have been measured. It is envisaged that the unit will charge for track usage so that it will generate a revenue flow enabling it to function on a business basis.

The Business Plan deals with the first 5 years of operation i.e. 1999-2003. Development of the plan necessitates a vision of the business, market potential, planning and the projection of financial results.

The assets of the ISU will comprise all existing assets including associated staff, which support train operations as follows:

- Track
- Signalling systems
- Communications systems
- Electrification systems
- Fixed mechanical handling equipment
- Stations and yards
- Equipment Maintenance Centres
- Stores and offices
- Track maintenance
- Locomotives and wagons

1.2 Mission Statement

Operate and maintain the infrastructure of the SR in a safe, efficient and environmentally responsible manner. Determine fees for track access so that the enterprise is profitable.

Give access to private train operating companies in accordance with commercial practice.

1.3 Strategic Objectives

The key objectives of the Business Unit are

- Improve track condition facilitating better train performance,
- Increase renewal and reduce maintenance
- Increase revenue
- Reduce maintenance costs

To achieve these objectives the NIU will have to:

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- Maintain train time keeping performance
 - Provide adequate and safe train control
 - Maintain track signalling and power supplies to good standard and reduce delays and derailments
 - Modernise infrastructure
-

1.4 Scope

1.4.1 Geographic Area

The ISU will serve the same geographic area as the SR currently. The Regulatory system will allow for the building of new lines and the closure of existing as may be necessary. The business scope will continue to include current traffic levels but will allow for changes in accordance with customer requirements. Access charges for operating on the infrastructure will be charged to the Freight and Passenger Business Units.

The Access charge will be based on line occupancy coupled with tonnage carried, measured in train-kms and tonne-kms. The structure and calculation of charges will be in accordance with the format laid down by the Government. Volume discounts should also be agreed to make it attractive to customers and to increase traffic.

The business will be responsible for the maintenance of all track, structures, signals, power supply and transmission.

In addition it will have responsibility for providing for the safe control and movement of rail traffic.

The business unit will have to develop a commercial ethos in marketing and selling train paths initially to the freight and passenger businesses and perhaps later to third parties who may wish to operate private trains.

1.4.2 Key Assumptions

In drawing up the Business Plans it was assumed that the Institutional changes recommended and detailed in the consultants report would be implemented before proceeding with the Business Plan. A new Railway Law providing for the transformation of the current railway department into a joint stock company or a limited liability company will be enacted. This will separate the policy, regulatory and operating responsibilities of the railway. The railway will become a market and commercially driven organisation.

The analyses and recommendations of the activity reviews of some of the earlier reports were used in the drafting of the Business Plan.

It must be emphasised that implementation of the Business Plans will be unpractical without changing the Institutional position and the managerial structure of the railway. The proposed transformation is fundamental to improving the performance and service of the railway.

The management of change of this magnitude is a major undertaking and will require considerable dedication and application. The extent to which the major tasks can be run in parallel will have to be considered and assessed.

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1.5 Internal Analyses

1.5.1 The Network

The Georgian Railways (SR), with the majority of the railway network constructed at the turn of the century, consists of 1321 km track routes. This length also includes 38 km of narrow gauge track between Borjomi and Bakuriani. The main railway route, which is also part of the Trans-Caucasian line, runs in east-west direction between Beyuk-Kyasik (in Azerbaijan) and port town of Poti on the Black Sea. Except for the three short sections, totalling 15 km in length, the line between Abasha and the Azerbaijan border (309 km long) is of double track construction. At present the work is in progress to construct double track on two sites.

The entire network has 469 km route of main line and 814 km single track branch lines.

The Georgian Railway is built to a broad gauge of 1520 mm with gauge widening on sharp curves in order to reduce rail side cuts and rolling stock wheel wear. All the railway network, except for narrow-gauge section, is electrified at 3.3 kV DC. The Borjomi to Bakuriani narrow gauge track is electrified at 1.5 kV DC. The electrification of SR was completed in November 1967.

The track, including signalling, was designed and constructed to Russian Standards (GOSTs) with a designed maximum train axle load of 23 tonnes. The main line track geometry was designed to accommodate maximum passenger trains speed of 100 km/h with 80 km/h for freight trains. However due to present relatively poor track condition there are many temporary speed restrictions in order to ensure safe passage of trains.

1.5.2 Track Condition

The general track condition is shown below in Table 4.1

Table 4.1

Track District	Total track length [km]	Main line length [km]	Track life expired* [km]	Life expired - main line* [km]	Track with safety risk [km]	Safety risk - main line [km]
Ingiri**	77	-	-	-	-	-
Samtredia	203	138	50	39	60	57
Batumi	120	-	35	-	36	-
Zestaphoni	165	64	51	46	64	21
Khashuri	147	140	26	26	28	28
Borjomi	82	-	20	-	29	-
Tbilisi 1	253	212	85	83	89	74
Tbilisi 2	234	94	80	34	75	16
Gurdjavi	187	-	-	-	145	-
Tsalka	160	-	-	-	150	-
T o t a l	1628 km	648 km	364 km	251 km	691 km	215 km

Notes: -

* - carried more than 500 MGT

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** - new track division set-up after Sukhumi and Ochamchira district were transferred to Russian control
Total track length of 1628 km was 1841km with Sukhumi and Ochamchira

The main line has 30 level crossings and 80 bridges.

1.5.3 Track and Structures

Considering the lack of investment in the railway infrastructure during the last ten years or so the overall general condition of the track is, in a reasonable state of repairs. However due to lack of spare parts and in particular track material such as rails, sleepers, rail fastenings and track maintenance equipment, this has resulted in a considerable backlog in track maintenance and renewal. There are several sections in need of urgent track "repair" and/or track renewal. On the main line of the Trans-Caucasian Railway route there are five sections totalling 39 km where, due to deteriorated track condition, temporary speed restrictions were imposed.

1.5.4 Track Maintenance and Repair

Within the railway system there are also several track sections, with temporary speed restrictions, where main problems are damaged sleepers and loose or broken rail fastening, mostly at the rail joints. The situation can be remedied by replacing defective sleepers and, where required, ballast cleaning. The new sleepers should be of the same design as for the track renewal, i.e. concrete monoblocks with an elastic rail fastenings. In order to improve existing track condition and remove temporary speed restrictions it is estimated that up to 25% of the existing sleepers, both wooden and concrete, need to be replaced at these locations. Part of the track repair work should also be the renewal of fishplates and insulated rail joints. The ballast can be cleaned using one of the existing SCHOM-4 ballast cleaner, subject to availability of spare parts. Delivery and installation of new ballast will be required to supplement the removal of existing ballast spoil.

In order to perform sleeper changing operation efficiently a purchase of a sleeper changing machine is highly desirable.

1.5.5 Signalling and Telecommunications

The entire signalling system was severely damaged during the social unrest in the early 1990's. The section Kaspi to Tibilisi has been restored and full autoblock signalling is now in operation in that section again.

The damage to signalling that took place particularly in the West was total. Most of the equipment was stolen and the cabling was dug up and taken. CTC, apart from the section mentioned, is no longer functional and the centre is used as a dispatcher office.

The Senaki/Poti line is using semi autoblock

Some stations have been restored and much effort is being made to improve the very difficult situation.

The signalling system uses Russian equipment, installed between 1960 and 1991. This was designed to provide an automatic block system with color lights on the main line and to control all stations by relay interlockings.

The whole mainline route was cabled underground between 1980 and 1984. An optic fibre cable was installed in 1995 on the single-tracked sections between Samtredia and Poti and Batumi.

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The trains are equipped with train radio and portable wireless equipment is available.

1.5.6 Operations

SR is predominantly a freight railway. A total of 64% of gross ton-km is for freight. However, a significant number of passenger trains are also operated and these form the majority of train-kms. Trains typically have two locomotives and thus average 3000-3500 trailing tonnes.

Train performance is completely un-acceptable mainly due to deficiencies in the Infrastructure. Overall speeds are currently limited 40km/h with some temporary speed restrictions to as low as 5 km/h. The average commercial speed of freight trains is now 20km/h compared to 28km/hr in 1987. However, this figure has improved from 14km/h as little as two years ago.

Train travel between Tbilisi and Batumi is currently scheduled to take about 11 hours for a distance of 353 kms equivalent to an average speed of 32kms/hour. In many instances it takes far more. These speeds cannot compete with the road at present despite the difficult terrain. The timings are about 50% more than they should be and probably 200% of a really commercial performance.

Slow freight trains are also un-attractive. They are expensive to run in that the slow speeds tie up equipment and staff. Slow and unreliable delivery times are also unattractive to the customer. It costs him money in goods in transit time and can upset his customers.

These problems are mostly caused by deficiencies in the Infrastructure, which the new Service Unit will have to address.

While the system shows a profit, manning levels are high, and with the inevitable increase in real wages the railway will find it difficult to maintain its financial position. Some sections of the system are very lightly loaded and rationalization will have to be carried out. The network will have to be reduced, stations closed and trackwork taken out.

The power supply system has the following deficiencies:

- Corroded catenary supports in coastal areas
- Defective overhead supply network in the Zestaphoni – Samtredia – Batumi and Samtredia – Poti sections
- Worn contact wires
- Defective main and auxiliary sub-stations

To reduce stoppages from power supply failure and breakages these must be addressed in an ongoing renewal programme.

1.6 External Analyses

1.6.1 The Customers

The main customers of the ISU will be the Passenger and Freight business units. Volumes will be price sensitive and will compete with road hauliers and pipelines.

The projected volumes are set out in the Freight and Passenger business plans.

1.6.2 Contracts with Freight and Passenger Business Units

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A selling buying relationship will be set up between the ISU and the Passenger and Freight Business Units and the ISU will enter into contracts with the Passenger and Freight business units which will include the payment of access fees to the infrastructure.

1.6.3 Access Fees

The Access charge will be based on line occupancy coupled with tonnage carried, measured in train-kms and tonne-kms. The structure and calculation of charges will be in accordance with the format laid down by the Government. Volume discounts should also be agreed to make it attractive to the customers and to increase volumes.

Charges for other items will have to be levied as follows:

- Electric energy
- Leasing of stations and freight yards
- Leasing of equipment
- Delay, damage and demurrage

The cost headings should also be considered as follows:

- Fixed costs
- Variable costs
- Administration
- Investment
- Profit

A number of options are available to increase the return on investment in addition to volume discounts already mentioned. These could include increasing the fees, reducing investment, reducing operating costs and increasing the throughput of trains. The last option is the most attractive. The ISU will seek to maximise train frequency as follows:

- Fees will be set at a level attractive to train operatives
- Efficient train operation will be encouraged financially
- Higher volumes will be discounted

Detailed cost analysis will have to be carried out to assess the financial robustness of the ISU. The establishment of the fixed and variable costs and the breakdown between labour and material costs will have to be established.

Fees will be set at a level attractive to train operatives. Efficient train operation will be encouraged financially and high volumes will be discounted.

1.6.4 Service and Cost

(a) 1.6.4.1 Services

The ISU will make a range of services available to the train operators in return for payment. These services will include adequately maintained routes, the dispatching and control of trains, electric power and special services to deal with emergencies. Station and freight facilities will also be provided on a rental basis.

The ISU will also have responsibility to ensure that track maintenance standards are adequate, train control efficient and traffic offered is carried. It will also have a responsibility for loss or damage to third party property.

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(b) 1.6.4.2 Description of Services

- Rail routes
- Train schedules
- Train control
- Communications
- Electric power
- Station and freight facilities
- Emergency response

(c) 1.6.4.3 Responsibilities

- Track standards
- Provision of efficient service
- Liabilities for damage or delay to traffic
- Closure of lines and Public Service Obligations

(d) 1.6.4.4 Service Costs

- Labour
- Materials
- Overheads
- Profit

1.7 Performance Improvement Strategy

1.7.1 Performance Improvement

It is imperative to upgrade the performance of the ISU in the operating and financial areas. Improved operations will lead to lower costs and greater competitiveness in the market place. Increased profits will support investment. The areas which, should be targeted are investment and staff productivity. As is well known the infrastructure is in bad shape. Track maintenance and renewal is in arrears and much of the rails and track components are worn out and in need of replacement. Maintenance equipment is obsolete and the staff organisation needs overhauling. The signalling and communications system is almost non-existent. Most of the equipment has been stolen and vandalized so that only a limited number of sections are operative. The power supply system is old and worn.

The specific areas recommended for immediate attention, baring in mind the cash limitations are set out below:

- Track renewal and repairs
- Track maintenance equipment
- Signalling and telecommunications
- Bridges
- Power wire
- Staff reorganisation and downsizing

In order to improve railway traffic performance the following track renewal and enhancement programme is recommended: -

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1.7.2 Track Renewal

There are several track sections on the main line that are "life expired", i.e. carried more than the recommended standard maximum of 500 MGT, and therefore in need of track renewal. It is therefore suggested that a complete general track overhaul is carried at these locations as soon as finance becomes available. The overhaul should include complete track replacement, including supply and installation of new ballast and re-profiling of track formation to eliminate problem with track drainage in future.

The new rails should be R 65 flat-bottom section compatible with the existing track configuration. One of the major causes of poor track condition is dated existing track fastenings, which in many instances are either broken or loose. Therefore it is recommended that the new sleepers should be of prestressed concrete monoblock design with elastic rail fastenings and with serviceable life of at least 40 years. The associated rail fastening should be easy to install and renew/replace if required.

An opportunity should be taken, once the existing track is removed, to either clean or completely replace existing ballast with new good quality before installation of new track.

Below is a list of the sites recommended for track renewal as identified by the Railways. The location and track length can change depending on the project implementation date. The total length of track that should be renewed is 35 km.

1.7.3 Proposed Track Renewal Sites

Location		Road	From [km]	To [km]	Length [km]	Speed limit [km/h]
Samtredia	Kopitnari	Eastbound	2260	2272	6	25
Kopitnari	Muchiani	Eastbound	2272	2281	8	15
Adjameti	Sviri	Eastbound	2298	2307	7	25
Gomi	Khashuri	Westbound	2384	2394	9	25
Agara	Gomi	Westbound	2394	2403	5	25
T o t a l					35	km

1.7.4 Proposed Track Maintenance Sites

Location		Road	From [km]	To [km]	Length [km]	Speed limit [km/h]
Chaladidi	Poti	-	24	39	15	40
Zestaphoni	Argveta	Westbound	2321	2314	6	40
Landtchuti	Nigoiti	-	76	82	5	60
Kareli	Agara	Westbound	2410	2403	7	25
Kolobani	Abasha	Westbound	2252	2246	5	TSR
Dzirula	Shorapani	Westbound	2334	2324	4	40
Tcipa	Litchi	Both	2367	2375	8	40/50
T o t a l					50	km

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1.7.5 Bridge Timber Sleepers Renew

It has been identified by the previous railway investigation reports that on the main line eight railway bridges need track sleeper replacement. The wooden sleepers are of special type, 200 wide x 240 deep x 3250 mm long placed at 330 mm centres. The total amount needed is 1105.

1.7.6 Bridge Sleeper Renewal Sites

Bridge No.	Location [km]	Length [m]	Quantity [pc]
1	31 + 144m	413	400
2	29 + 700m	41	20
3	21 + 791m	40	20
4	18 + 657m	59	25
10	2241 + 529m	116	100
11	2248 + 179m	119	100
13	2255 + 143m	118	400
65	2455 + 759m	137	40
T o t a l			1105 sleepers

1.7.7 Bridge Rehabilitation

Several previous consultants have identified that some bridge rehabilitation work on the main line is necessary in order to continue safe train operation. Below is a list of bridges that need attention.

Location [km]	River	Bridge span [m]	1.7.8 Comments
2235	Techuri	168	Repair and Repaint
2248 + 179	Nogela	119	Corrosion Protection
2290	Rioni	154	Repair and Repaint
2405	Mtkvari	135	"
2473	Mtkvari	83	"
11	Lochini	66	"

1.7.9 New Track Components

By installing new track form, i.e. new rails, concrete sleepers with an elastic rail fastenings to a proven and acceptable design with new or clean track ballast the selected 35 km of track, proposed for track renewal, should be virtually maintenance free at least for a number of years. The same should apply, to a slightly lesser extent, to the sites proposed for track rehabilitation totalling 50 km of track.

1.7.10 Refurbishment of Existing Equipment

The Georgian Railways owns number of heavy track renewal and maintenance equipment such as Platow track relay machines, SCHOM-4 ballast cleaning machines and VPOR/VPO track alignment and tamping machines. Even though this equipment is dated none the less it is essential to keep it in a working order, at least until finances are available to replace it, so that the track renewal programme could be implemented.

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1.7.11 Purchase of Modern Technology

To assist with an efficient installation of 35 km of track a new, modern ballast tamping machine, capable to tamp at least 1000 sleepers an hour, is essential. The good track geometry alignment will considerably improve passenger ride comfort, have less damaging effect on rolling stock and extend life of track components and as a result reduce future track and rolling stock maintenance costs. Therefore new ballast tamping machine should be equipped with an automatic track line and level equipment.

However to rehabilitate the existing remaining track the purchase of an efficient ballast cleaning machine is highly desirable, especially when so much ballast is solidly compacted and contaminated with dust, clay and other foreign matter. It is highly unlikely that the new continuous tamping machine would be able to perform to its full potential under such difficult circumstances. Therefore, subject to availability of finance one of the priorities must be to purchase new ballast cleaning machine so that new ballast tamping machine could also be used on the existing track rather than only on newly relayed track.

1.7.12 Purchase of Track Maintenance Tools

In order to perform the routine track maintenance tasks efficiently the permanent way districts and sub-districts must be furnished with appropriate tools and track equipment, such as: -

- hand held ballast tamping sets
- rail cutting machine
- rail drilling machines
- rail grinding machines
- coach screwing and spike inserting machines
- portable rail changing cranes
- electric generators
- hydraulic jacks
- sleeper changing machine

1.7.13 Revised Track Installation Methods

The present method employed by the railway on new track installations is time consuming and costly. The 25 m track panels are prefabricated at two track workshops, one in Tbilisi with second being in Samtredia, loaded on a special wagons and delivered to site to be installed by the Platow track relaying machine.

Consideration should be given to direct installation method where sleepers are delivered to site and laid on top of the prepared ballast followed by installation of pre-delivered LWR. This method is far more efficient especially with rail fastening assemblies already installed onto the sleepers at the sleeper factory.

1.7.14 Introduction of New Concepts

As mentioned earlier on most of the track maintenance problems on the Georgian Railways are with rail joints. One of the solutions is to extend, subject to track geometry, existing maximum 750 m LWR into Continuous Welded Rail (CWR) track and thus reduce considerably number of rail joints. To change the existing concept will require new track installation standards such as built up sufficiently strong ballast shoulders to prevent track buckling with change in temperature and also training permanent way district staff in CWR maintenance and rail destressing method. Furthermore an introduction of alumino-thermic rail welding concept would be of a great practical benefit to the Railways so that it does not need to rely purely on long welded rail plant and/or mobile flush-butt rail welding train.

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1.7.15 Signalling and Communications

The overall aims of the proposed upgrading of signalling and telecommunications upgrading include:

- allowing for expected increased traffic in future years
- allowing trains presently required to travel at caution in the absence of signalling to travel at line speed with restored equipment.
- Raising line capacity through increased line speeds and consistent block section lengths
- Reducing delays due to trains slowing down for the present "paper line clear" method.
- Improving safety through less reliance on the human element for observance of rules and regulation in handling traffic.
- Achieving substantial staff reductions through automation, rationalisation and the closure of redundant stations
- Allowing much greater efficiency, monitoring, control and management of railway.

The recommendations are based on minimum investment compatible with safety and adequate performance. In view of the widespread destruction of the existing systems, particularly in the Samtredia region it is recommended that the available investment be used to meet current requirements rather than renewal of the system as a whole.

To increase the length of the block sections and hence the cost it is recommended that 50% of the stations be closed. This would result in a block length of approx 15km, still relatively close for double track and more than adequate for traffic through-put. Stations should be rationalised to reduce trackwork. A reduced autoblock system using intermediate signals should be used on the Tibilisi-Kaspi section.

(a) 1.7.14.1 Telecommunications

Signalling will require communication links between the stations and between stations and the dispatch centre. The communications links should:

- Have sufficient capacity to satisfy short term railway demand
- Be capable of being expanded in accordance with demand
- Be secure

Currently, a 4 fibre optic cable is used between Samtredia and Poti and Batumi. The cable is not armoured and so has proved to be unsatisfactory. It is now proposed to replace this cable and install a Synchronous Digital Hierarchy (SDH) communications system to serve the whole of the main line.

The system will consist of a fibre optic ring (similar to that being considered for the Traceca programme) and will have 12 fibres. It will have spare capacity which will allow commercial use.

The EU propose to fund a fibre optic cable along the TRACECA route which will be of major benefit to the region.

1.7.16 Overhead Power System

A programme of replacement of the most heavily worn sections of the overhead contact section is being carried out to reduce breakage and consequent train delays. It is necessary to purchase additional materials to extend the programme and financial provision is necessary.

This project is financed by the European Union's Takis Programme, which provides grant finance for know-how to foster the development of market economies and democratic societies in the New Independent States and Mongolia.

A programme for replacement of support stanchions, overhead supply wires, sub-stations and breakdown equipment must be carried out.

1.8 Staff Reorganisation and Downsizing

1.8.1 General

The setting up of a separate Service Unit for infrastructure will require that a new internal organisation be installed. The Unit will be commercial in its approach and will have to concentrate on giving a good service to the customer, generating a profit and providing its own investment. The service will have to be well marketed so that train numbers and frequencies are increased. Access charges will have to be calculated and levied.

The changing of the maintenance philosophy towards a more flexible approach and the re-equipment of the track staff will also require organisational changes which will allow for maximum performance. The track must be maintained to the highest possible level and best safety standards ensured.

1.8.2 Proposed Organisation

The proposed organisation is shown in Annexe The Director has three Assistant Directors responsible to him covering the functions of :

- Operations
- Maintenance
- Infrastructure Support

- The Operations Director will develop a marketing strategy for Access and track usage. He will contract with the train operators for the supply of train paths and maintain close contact with them. He will advise on infrastructure investment proposals. He will ensure that Train Control is well managed and monitored.

The Maintenance Director will prepare plans, schedules and budgets for maintenance and renewals of the Permanent Way. He will execute the plans and purchase the necessary materials. He will ensure that all work is done to the highest standards and that safety is a top priority. He will manage the Signalling & Communications and the Traction Power Supply sections in accordance with the standards laid down.

The Infrastructure Support Director will provide a design service to the Maintenance group. He will set the Technical standards and advise on material purchase. In the Accounting area he will prepare budgets and monitor the financial results. The Personnel manager will ensure adequate staffing and the recruitment, training and development of staff.

1.8.3 New Organisation for Maintenance of Way

The organisation is set out in the Annexes. The Divisional Engineer reports directly to the Manager Maintenance and he in turn co-ordinates the Assistant Divisional Engineers for the functions of track maintenance, signalling and electric power. He also directs the Technical Office and the Maintenance of Way Inspectors. The Maintenance of Way Inspectors are responsible for the patrol and mobile gangs. The Offices for Safety and Administration respond directly to the Divisional Engineer.

This project is financed by the European Union's Tacis Programme, which provides grant finance for know-how to foster the development of market economies and democratic societies in the New Independent States and Mongolia.

(a) 1.8.3.1 Downsizing

It is planned to reduce the overall staff by over 1500 over the 5 years in question from the present figure of 4000. It should be possible to achieve this target by employee retirements and natural wastage.

1.9 Investment Proposals

Investment Plan & Sources of Finance				
Project	Cost in US\$ Millions			
	EBRD	TACIS	Local	Total
Track renewal	10.4		2.5	12.9
Track equipment	3.3			3.3
Bridgeworks	1.8		0.5	2.3
Signalling renewal	4.5		2.0	6.5
Telecommunications		6.0	1.0	7.0
Technical Co-operation		1.2		1.2
Total	20.0	7.2	6.0	33.2

The project will be financed by an EBRD Loan of \$20.0 million, and EU grant of US \$7.2 million for the telecommunications component, and US \$6.0 million of local funds.

The financial internal rates of return for the project components have been calculated as part of a previous consultancy project and they are as follows :

Project FIRR by Component (% p.a.)		
Project Component	Cost (US\$ million)	FIRR (%)
Track renewal	12.90	15%
Track equipment	3.30	26%
Bridgeworks	2.30	12%
Signalling renewal	6.50	21%
Telecommunications	7.00	19%
Total	32.00	19%

The main benefits included:

- reduced transit times through increased lines speeds arising from improved track and bridge condition and upgraded signalling;
- reduced track and rolling stock maintenance costs and fuel consumption through improved track condition;
- improved rolling stock utilisation and operating efficiency through the provision of an upgraded communications system.

Other investments by SR to rehabilitated the infrastructure and facilities including power supplies during the period 1999 to 2003 are projected to be as follows:

This project is financed by the European Union's Tacis Programme, which provides grant finance for know-how to foster the development of market economies and democratic societies in the New Independent States and Mongolia.

Year	Millions Lari
1999	28.3
2000	25.3
2001	24.9
2002	19.0
2003	20.5
Total	118.0

1.10 Targets

The main business objective is to ensure that the business is profitable and sustainable. To achieve this it is imperative that a proper depreciation policy be adopted and that there is sufficient investment in the future to ensure the safety of the infrastructure. Track and associated works will have to be upgraded to ensure that traffic can operate at line speed thus making rail travel more attractive to the customer whether it be passenger or freight.

It is necessary to improve track condition, which will facilitate a safer and better train performance. This requirement is catered for in the investment plan, which will allow track to be upgraded or renewed. It should be pointed out the further investment will be required in order to cater for the backlog of track maintenance and renewal which exists.

A cost reduction programme with particular emphasis on track maintenance will be introduced with a more cost effective approach to track maintenance. The purchase of new tampers provided for in the investment plan will assist this process.

It is essential to maximise the revenue from track access charges and this can best be done by responding to the requirements of the main businesses of both Freight and Passenger.

Targets should be challenging but achievable.

- Introduce new management structure within one year.
- Introduce new maintenance specifications and practices within 2 years
- Prepare new track renewal methods and specifications
- Carry out 5 year investment programme
- Reduce number of temporary speed restrictions by 20% per annum
- Review operation of signalling as track condition is upgraded, to identify any remaining system faults. Action to take place over the 5 year period.

1.11 Financial

1.11.1 Key Assumptions

The key planning assumptions used in the preparation of the Infrastructure Business Unit projected income statements were as follows :

This project is financed by the European Union's Tacis Programme, which provides grant finance for know-how to foster the development of market economies and democratic societies in the New Independent States and Mongolia.

Assumptions used in Corporate Financial Computer Model	
Planning Parameter	Modelling Assumption
Track Services	
- labour productivity	Staff reduction (1999 -3%), (2000 -7%), (2001 -8%) (2002 -8%), (2003 -8%)
- unit wages	Real wages increase by 25% in 1999, 20% in 2000, 15% in 2001, and 10% per annum thereafter
- materials	10% increase per annum
- other costs (excluding depreciation)	10% increase per annum
Signalling	
- labour productivity	Staff reduction (1999 -3%), (2000 -7%), (2001 -8%) (2002 -8%), (2003 -8%)
- unit wages	Real wages increase by 25% in 1999, 20% in 2000, 15% in 2001, and 10% per annum thereafter
- materials	10% increase per annum
- other costs (excluding depreciation)	10% increase per annum
Electricity Supply	
- labour productivity	Staff reduction (1999 -3%), (2000 -7%), (2001 -8%) (2002 -8%), (2003 -8%)
- unit wages	Real wages increase by 25% in 1999, 20% in 2000, 15% in 2001, and 10% per annum thereafter
- materials	10% increase per annum
- other costs (excluding depreciation)	10% increase per annum
Buildings	
- labour productivity	Staff reduction (1999 -3%), (2000 -7%), (2001 -8%) (2002 -8%), (2003 -8%)
- unit wages	Real wages increase by 25% in 1999, 20% in 2000, 15% in 2001, and 10% per annum thereafter
- materials	10% increase per annum
- other costs (excluding depreciation)	10% increase per annum

Income Statement

The Infrastructure Business Unit expenditure is projected to increase by 92% during the course of the plan. The bulk of the increase in costs is in the track department reflecting rehabilitation work on track and bridges. As in the other business units labour costs increase significantly due to increases in real wages but the main cost increase is in capital repair work which rises from 10.9 million lari in 1998 to 25.4 million lari in 2003.

Historical depreciation charges rise from 10.7 million lari in 1998 to 13.3 million lari in 2003 due to the impact of capital investment projects.

The Infrastructure Business Unit must bear the costs of the interest charges associated with the EBRD loan which is targeted at Infrastructural improvements.

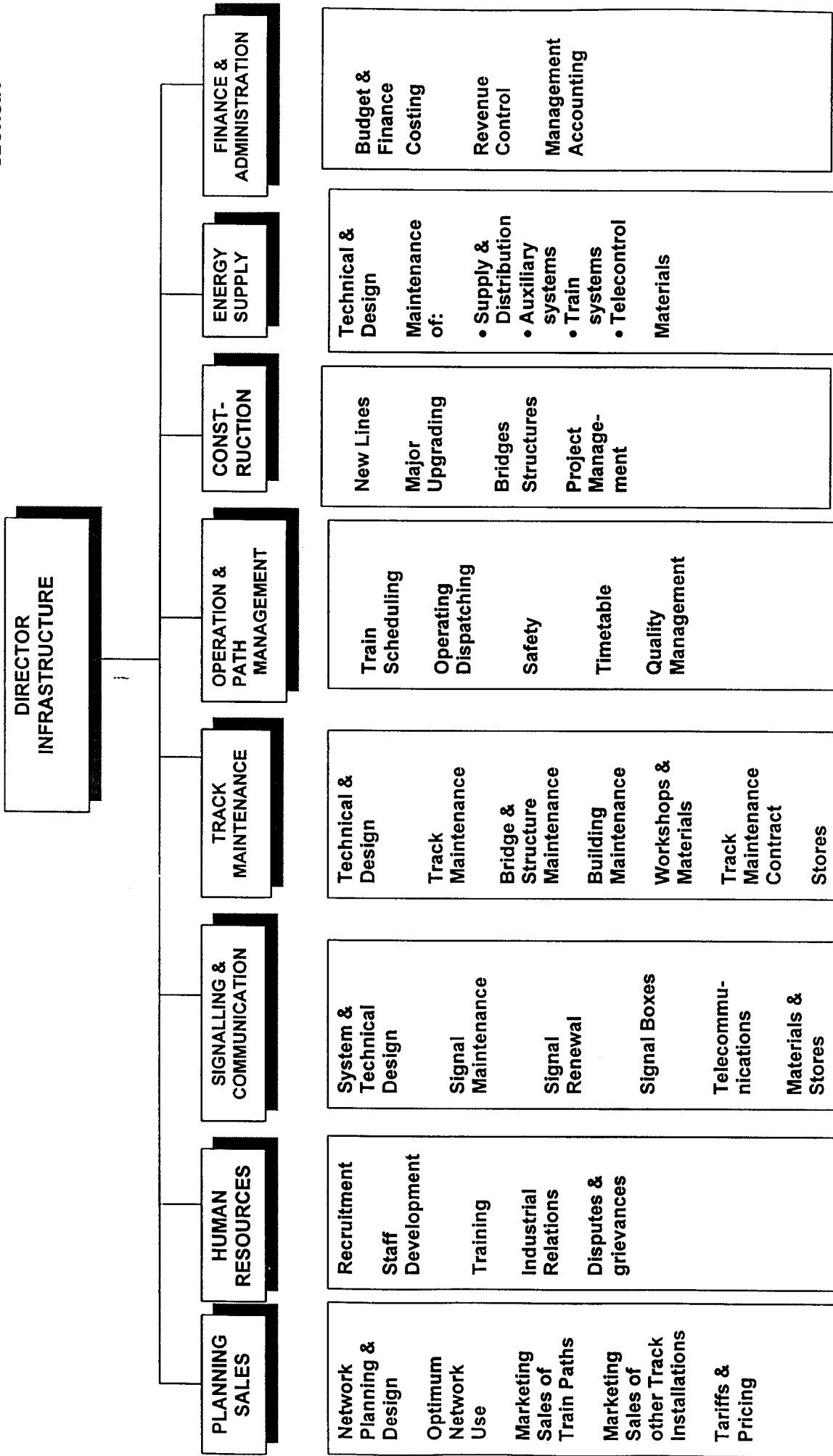
The entire costs of the Infrastructure Unit is charged out to the Passenger and Freight Business Units based on the gross tonne kilometres and train kms calculated for each of those units. The charge out to the Freight Business increases more rapidly due to the increased traffic levels.

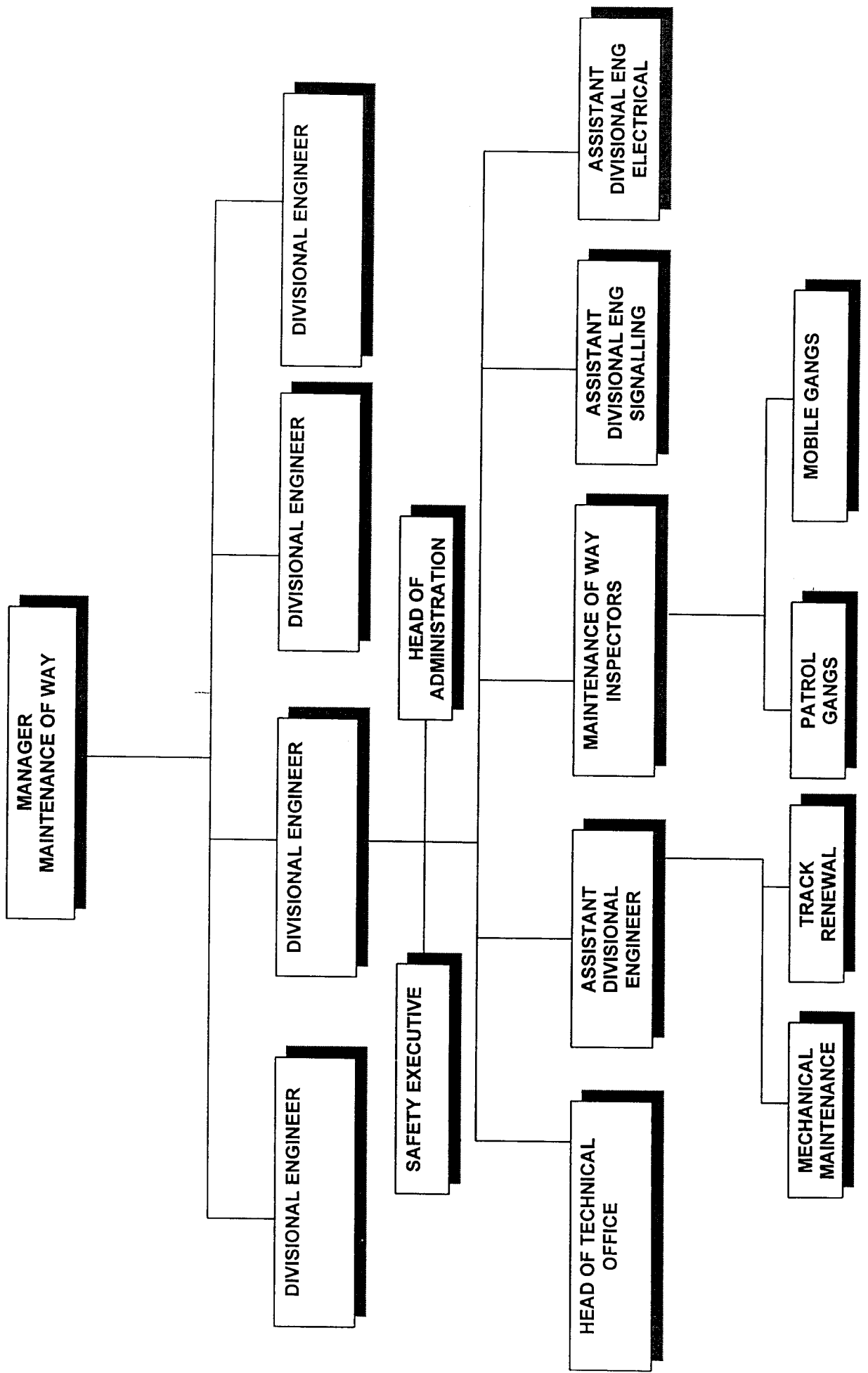
This project is financed by the European Union's Tacis Programme, which provides grant finance for know-how to foster the development of market economies and democratic societies in the New Independent States and Mongolia.

Infrastructure Business Unit

Georgian Railways
Table 16 : Infrastructure Business Unit : Financial Plan

	Total Cost (000 Lari Current)						
	1997	1998	1999	2000	2001	2002	2003
Track							
Salaries & Social Insurance	3036	3378	3598	4369	4963	5380	5818
Materials	1273	1518	1833	2195	2592	3054	3590
Diesel - Other	200	238	261	284	305	327	349
Electricity - Other	33	28	31	33	36	38	41
Depreciation	1552	8466	8673	9990	10866	10774	10559
Capital Repairs	9703	8466	10226	12240	14455	17032	20022
Other	697	1014	1225	1466	1731	2040	2398
Total	16494	23108	25847	30577	34949	38645	42778
Buildings							
Salaries & Social Insurance	69	90	116	137	154	166	178
Materials	0	2	2	3	3	4	4
Diesel - Other	0	0	0	0	0	0	0
Electricity - Other	12	22	23	25	26	28	30
Depreciation	166	656	672	774	842	835	818
Capital Repairs	1383	700	818	955	1116	1304	1523
Other	22	26	30	35	41	48	57
Total	1652	1496	1662	1930	2183	2384	2610
Signalling							
Salaries & Social Insurance	1016	1140	1468	1740	1955	2101	2258
Materials	65	78	91	106	124	145	170
Diesel - Other	31	58	62	65	69	74	78
Electricity - Other	176	178	189	201	213	226	240
Depreciation	292	576	590	680	739	733	718
Capital Repairs	780	350	409	478	558	652	761
Other	199	180	210	246	287	335	392
Total	2559	2560	3019	3515	3946	4266	4618
Electricity							
Salaries & Social Insurance	1226	1306	1682	1993	2239	2407	2587
Materials	143	88	103	120	140	164	191
Diesel - Other	61	66	70.1	74	79	84	89
Electricity - Other	0	86	91	97	103	109	116
Depreciation	0	1036	1061	1222	1330	1318	1292
Capital Repairs	1546	1444	1687	1971	2302	2689	3142
Other	658	488	570	666	778	909	1062
Total	3634	4514	5264	6144	6972	7681	8479





RESTRUCTURING OF THE GEORGIAN RAILWAYS

BUSINESS PLAN 1999 - 2003

ROLLING STOCK BUSINESS

ROLLING STOCK BUSINESS

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1 ROLLING STOCK BUSINESS

1.1 Introduction

It is proposed to establish a Rolling Stock Business Unit as a stand alone unit which will carry out maintenance and overhauls for the Passenger and Freight Business Units on locomotives, passenger carriages, and freight wagons. It will operate as an autonomous enterprise with its own technical, workshops, accounts, sales, and human resource managers. It will negotiate contracts for the supply of maintenance services initially to the Passenger and Freight Business Units.

The option should be kept open for the Rolling Stock Unit to own rolling stock, which it would then lease to the Passenger and Freight Business Units and to other licensed operations.

1.2 Mission Statement

To provide and maintain locomotives, freight wagons & passenger coaches to meet the requirements of the freight and passenger business units at a competitive and profitable price

1.3 Strategic Objectives

The principal objectives of the Rolling Stock Service Unit will include:

- major maintenance and overhaul of rolling stock, including locomotives (electric and diesel), passenger carriages and freight wagons;
 - contract with Passenger and Freight Business Units, and third party customers where profitable, for major maintenance, overhaul and other engineering services;
 - development of best practice methods, systems, equipment and workshops for engineering work;
 - management, training and development of staff;
 - achievement of financial and other targets set by Rolling Stock Unit and approved by Board of SR.
-

1.4 Scope

The Rolling Stock Business Unit will be responsible for all major maintenance of all rolling stock including locomotives, freight wagons, passenger coaches and maintenance rail vehicles. In addition the Unit will have maintenance facilities throughout the country.

While it is envisaged that the Freight and Passenger Business Units should own their own rolling stock the option for the Rolling Stock Unit to own its own rolling stock will be retained. This would allow the Unit to lease rolling stock to third parties in the future.

The Rolling Stock Business Unit will enter into service contracts with the Freight and Passenger Businesses and this will involve the development of a commercial ethos.

1.5 Internal Analysis

1.5.1 SWOT Analysis

There is a popular management tool used in analysing businesses. It examines the strengths, weaknesses, opportunities and threats of the business. This is usually referred to as SWOT analysis. Using this technique the Rolling Stock Business Unit is analysed below:

Strengths

- Management expertise
- Monopoly situation
- Own workshops
- Large fleets
- Dedicated workforce

Weaknesses

- Old locomotive fleet
- Old wagon fleet
- Old passenger fleet
- Lack of spare parts
- Lack of modern management techniques
- Management organisation

Opportunities

- New organisation
- New management technique
- New focus on business
- Autonomy
- Work for third parties
- Less staff
- Bigger profits
- Reduction in fleet size
- Sell off surplus assets

Threats

- New pipe-lines
- Competition from other maintenance businesses
- Loss of business to road haulage

1.5.2 Fleet Conditions

Main Line Electric Locomotives

The SR electric main line fleet consists of 241 locomotives, of which 83 are currently available for traffic. They are divided into a freight fleet and a passenger fleet.

The age profile of the electric locomotives is as follows:-

Type Age	under 5	5-9	10-14	15-19	20-24	25-29	over 30
VL 22	-	-	-	-	-	-	16
VL 8	-	-	-	-	-	8	77
VL 10	-	-	-	18	44	40	-
VL 11	1	30	12	-	-	-	-
Total	1	30	12	18	44	48	93

The age profile is such that approximately half of the electric locomotives have exceeded their 28 year life. The FSU regulations imposed a life limit, but as the locomotives are confined to Georgia, unlike wagons and coaches, SR have the freedom to extend the life span if practicable, and intend to keep some life expired locomotives in service.

SR have issued a design brief to the Locomotive Plant in Tbilisi for the production of a new 4 axle single unit electric locomotive for passenger working. This is to be followed by an order for 20 locomotives for delivery before the end of 2000.

The condition of the locomotives is as follows:

Type	Total	Condition			Operating Daily Requirement
		Downgraded	Repair Required	Serviceable	
VL 22	16	8	8	8	}Branch : 8 }Freight : 45 }Passgr : 18 }Civil eg : 8
VL 8	85	26	2	50	
VL 10	102	67	6	29	
VL 11	42.5	8.5	4	30	
	241.5	178.5	20	117	84

There are in addition 39 VL22 and VL8 locomotives in Abkhazia.

Numbers for main line locomotives are per complete operational locomotive.
i.e. 1 locomotive = 2 permanently coupled units.

There are four crews attached to each locomotive.

Main Line Diesel Locomotives

The SR main line diesel locomotive fleet consists of 10 locomotives, of which only one currently available for traffic. The locomotives were used mainly as substitute locomotives when there were power failures, but these are now much reduced. There is a general shortage of diesel fuel oil.

The age profile of the locomotives is as follows:-

Type Age	under 5	5-9	10-14	15-19	20-24	25-29	over 30
TE3	-	-	-	-	-	-	1
2TE10M	-	-	3	-	-	-	-
2TE10U	-	6	-	-	-	-	-
Total	-	6	3	-	-	-	1

The condition of the diesel main line locomotives is as follows :

Type	Total	Condition			Operating Daily Requirement
		Downgraded	Repair Required	Serviceable	
TE3	1	-	-	1	
2TE10M	3	-	3	-	
2TE10U	6	-	6	-	
	10	-	9	1	0

Shunting Locomotives

The SR shunting diesel locomotive fleet consists of 175 locomotives, of which 63 are currently available for shunting duties :

Type	Age	under 5	5-9	10-14	15-19	20-24	25-29	over 30
TEM2		-	-	-	-	-	-	27
ChME3		-	22	57	48	6	7	17
	Total	-	22	57	48	6	7	44

The condition of the diesel shunting locomotives is as follows :

Type	Total	Condition			Operating Daily Requirement
		Downgraded	Repair required	Serviceable	
TEM2	27	19	3	5	} Freight 27 } Industrial 17 } Hire 12
ChME3	148	58	22	58	
	175	77	25	63	

In addition to the rostered 27 (db 34), there are 17 locos on industrial duties, and 12 shunting locomotives which are hired out to industrial enterprises.

Electric Multiple Units

The SR fleet of electric multiple units consists of 233 EMUs:

Type	Age	under 5	5-9	10-14	15-19	20-24	25-29	over 30
SR3		-	-	-	-	-	-	9
ER2		-	-	-	-	16	78	130
Total		-	-	-	-	16	78	139

The condition of the EMU fleet is :

Type	Total	Condition			Operating Daily Requirement
		Downgraded	Repair required	Serviceable	
SR3	9	6	-	3	3
ER2	222	214	-	106	78
Total	231	220	-	109	81

They operate mainly on local services out of Tbilisi in 6 car sets, but also out of Khasuri and Batumi, in 2, 3 , or in 4 car sets.

There have been no internal improvements made to the railcars to make them attractive to passengers. They are quite basic with slatted wooden seats, and all finishes are in poor condition.

The age profile and condition of the multiple units is such that it is unlikely that their life could be prolonged beyond another 10 years, if even that.

Passenger Coaches

In addition to the above multiple units, SR owns a fleet of passenger coaches, with age profile as follows :

	Age	Under 5	5-9	10-14	15-19	20-24	25-29	over 30	Total
TSM O	Open - 54 seat/36 sleeper	-	32	115	122	167	56	37	529
TSM K	Compartment - 36 sleeper	-	73	74	77	135	52	66	437
SV	Ritz 18 seats and sleeper	-	1	13	2	21	9	-	46
TSM R	Restaurant cars	-	-	13	10	6	-	6	35
TSM V	Postal/Luggage	-	-	-	-	-	10	23	33

Passenger Coach Fleet		
Compartment Cars (2 berth)	18	69
Compartment Cars (4 berth)	36	436
Open Saloon Cars	36/54	516
Restaurant / Kitchen Cars		41
Buffet Cars		3
Luggage Vans		28
Postal Vans		3
Parcel Vans		38
Country Trains		25
Railway Officers Saloons		5
Engineering Inspection Saloons		6
Video Cars		2
Prison Vans		4
TOTAL	1117	1176
Cannibalised for Spares		187
Out of Service (over age)		18
Left in Abkhazia region		405
Operational	505	566

1996

The availability of the coaches at present is 505.

Freight Wagons

The age profile of the SR freight wagon fleet is as follows:

	Type Age	under 5	5-9	10-14	15-19	20-24	25-29	over 30	TOTAL
KR	Covered	1	122	288	670	653	418	68	2220
PL	Platforms	-	78	199	276	247	252	92	1144
PV	Low Side	5	609	107 1	134 5	688	493	34	4245
TS	Tanks	-	82	142	172	114	150	87	747
RF	Refrigerator	1	78	160	123	29	79	3	473
	Other	3	287	728	602	228	179	98	2125
	Total	10	125 6	258 8	318 8	195 9	157 1	382	10954

Source : Head of Wagon Economy Oct 1998

The current actual working wagon fleet of SR is as follows:

Type	Total	Condition		Operating Average Daily Requirement
		Repair Required	Serviceable	
Covered KR	4313	3519	794	550
Platforms PL	2301	1913	388	157
Low Side PV	5699	4111	1588	1164
Tanks TS	2507	764	1743	1470
Refrigerator RF	777	495	282	101
Others	3901	2277	1624	550
Total	19,507	13,076	6,419	3,993

Source ; Statistics Dept. 1998

1.5.3 Maintenance Facilities and Organisation

At the break-up of the FSU, all the facilities in the territory of what has become Georgia, for many locomotives, passenger coaches, and freight wagons, were basically running maintenance facilities only.

The only exceptions to this were the "Lenin" Locomotive Construction Plant, now the "Elmavalmshenebeli" Locomotive Plant, which was the principal source of dc electric locomotives in the centralised soviet system, and the "Stalin" Locomotive, Carriage and Wagon Repair Plant, now the "Electrowagonshemketebeli" Carriage and Wagon Repair Plant, for the overhaul of locomotives, electrical multiple units, metro cars, passenger carriages, and freight wagons. Both factories are in Tbilisi.

As the overhaul of all other types of stock was carried out in what is now other countries, SR has had to either look for hard currency to have the work carried out abroad, or have new type of work taken on by one of the two FSU plants in Georgia, which became the property of the Georgian Government.

All passenger coaches and freight wagons moving outside Georgia must comply with rigid CIS standards of overhaul and inspection. This has not been a major problem to date as the lines to Russia were closed. Locomotives, being confined to Georgia do not, and SR can agree its own standards.

Locomotive Depots

There are seven locomotive running depots on SR at which locomotives are based, as follows

Location	Year of construction	Staff	Type of Repair		Condition
			Electric	Diesel	
Gurjaani	1983	63	TR1	TR1	Good
Tbilisi Passenger	1947	473	TR3	TR3	Reasonable
Tbilisi Marshalling - Freight	1991	350	TR2	-	Good
Khashuiri	1932	570	TR3	TR1	Poor
Kutaisi	1892	168	TR1	TR1	Poor
Samtredia	1996	249	TR1	TR2	Good
Batumi	1954	103	-	TR1	Reasonable
Staff at 2Q 98.		1976			
Total staff					

In addition, there is a heavy lift crane department in Tbilisi with 44 people which is part of the Locomotive Department. SR has 12 Takraf 150 tonne breakdown cranes. Approximately 500,000 Lari (US \$ 380,000) has been spent this year on depot improvements. There are plans for the reconstruction of Batumi Depot.

Locomotive Plant "Elmavalmshenebeli"

The FSU d.c. electric locomotive construction plant, formerly known as "Lenin", occupies a site of 48 ha. in Tbilisi.

At the break up of the FSU it became the property of the Georgian State Property Control Ministry, but since the beginning of 1996 it was re-constituted as the Joint Stock Company "Elmavalmshenebeli". It is now 51% owned by Georgian Railways (SR), and the balance is still owned by the State Property Control Ministry.

Passenger Coach Depot

The maintenance of all passenger vehicles on SR is carried out at a central depot in Tbilisi, which since last year has been a combined Passenger and Freight Wagon Depot, by the incorporation of the adjacent Tbilisi Freight wagon Depot, except for maintenance on electric commuter railcars which is carried out by the locomotive depots.

Passenger coaches are sent to the "Electrowagonshemketebeli" Plant for major repair (KR) every four years. major overhauls (KR1 -4 years) and major rebuilds (KR2 - 20 years) As there is no longer a separate passenger coach depot, details are given under Tbilisi Freight Depot below. There is a Passenger Train Preparation Depot at a separate location in Tbilisi which prepares and makes up train sets for operation, and washes trains, at which the train conductors are based. Until last year it was part of the Passenger Coach Depot, but is now part of the Passenger Traffic Department.

Wagon Repair Plant "Electrowagonshemketebeli",

The FSU locomotive and wagon repair plant, formerly known as "Stalin", occupies a site of 19 ha. near the centre of Tbilisi. "Electrowagonshemketebeli" is a separate enterprise, and is

owned by the state, and operates as a subsidiary of SR, and is run as an independent enterprise with independent finances.

Freight Wagon Depots

The SR freight wagon fleet is maintained by four depots, three being responsible for running maintenance of wagons and technical examination units in a section of the main line as well as on other lines in their area., plus a depot for tank wagon repair:

Location	Year of construction/improvement	Staff	Capacity/year	Condition Type of work
Batumi	1893 1968	362	1100 DR 69 KR	Poor conditions. DR and also major overhaul (KR) of Tank wagons
Samtredia	1935 1956	400	1856 DR	Extremely poor condition. Running repairs to all wagons west of Zestafoni. DR hopper, side dump open and covered wagons.
Khashuri	1984	375	2100 DR	Bad condition. Running repairs to all wagons east of Zestafoni. DR covered & open wagons
Tbilisi	1970	732 (including 140 passenger)	450 DR (including 200 DR passenger)	Poor condition. Running repairs to all wagons. DR refrigerator wagons and container repair. DR passenger coaches

Staff at 2Q 98

Each depot has facilities for Depot Repair (DR).

There are 25 Technical Examination Units (TEU) based throughout Georgia, with a nominal attachment to a wagon depot. Each Unit consists of approximately 50 men in 4 shifts of about 12. Their purpose is to examine every wagon in traffic visually at stopping places or wagons are attached or detached, and carry out greasing etc. reporting back to their respective depots. Units are located as follows:

Batumi :

Samtredia : Chiatura, Samtredia I, Samtredia II, Tkibuli, Zestaponi and Kutaisi I & II.

Khashuri : Khashuri, Gori, Akhaltsikhe.

Tbilisi: Rustavi-freight, Tbilisi-sorting, Tbilisi-junction, Tbilisi-freight, Marabda, Akhalkalaki, Marneuli, Dedoplis Tskaro, Kaspi, Gardabani, Gurjaani, Tsalka, Tetri Tskaro.

The Rolling Stock Unit will be encouraged to provide engineering services to third parties on a commercial basis.

1.6 External Analyses

1.6.1 Contracts with Freight and Passenger Business Units

Rolling Stock Requirements

A selling buying relationship will be set up between the Rolling Stock Business Unit and the Passenger and Freight Business Units. It is the responsibility of the Rolling Stock Business Unit to provide rolling stock to the operating business units to the specification laid down by these business units.

The specification will include:

Locomotives

- the number of locomotives required during the daily cycle
- trailing load
- max speed
- journey time required
- type of locomotive
- location

Of course this would be agreed between the Rolling Stock Business Unit and the Freight and Passenger Business Units.

Freight Wagons

- number of wagons
- wagon type
- location
- max speed
- journey times
- braking characteristics

Like the locomotives these would be agreed in advance in discussions.

Passenger Coaches

- number of passenger coaches required
- location
- max speed
- quality
- heating
- catering cars
- sleeping cars

It is quite clear that the number of units of locomotives, passenger coaches, and freight wagons available exceeds what is required in the foreseeable future.

This will present a dilemma both for the operating units and the Rolling Stock Business Unit. On the one hand the Freight and Passenger Business Units will want the flexibility of having additional rolling stock available to them if and when required. There will of course be a cost associated with this.

1.7 Performance Improvement Strategy

1.7.1 Main Line Electric Locomotives

Based on operational recommendations for increased efficiency and forecast increased tonnage, the fleet size, including operational and maintenance spares, should be as follows:

Main Line Electric Locomotives

Year	1	2	3	4	5
Passenger	24	24	24	24	24
Freight	45	44	42	41	40
Civil	8	8	8	8	8
Spares	15	15	15	15	15
Total	92	91	89	88	87

It should be possible to reduce the number of spare locomotives during the plan period if the new Rolling Stock Unit can agree a rationalisation of the number of depots in use with the other business units. The 8 VL22 and the 50 VL8 locomotives still in service are well beyond their book life, and it is intended to phase out these old locomotives, rather than attempt to keep them in service.

Most of the 75 more modern VL10 / VL11 which are out of service are beyond economic repair, as they have been stripped entirely internally for copper and other valuable items etc., by vandals, leaving little more than a shell.

This would reduce the total fleet size from 241 to 65. which is insufficient to meet SR operational needs. It is estimated that it will be cheaper to purchase more modern second hand locomotives from Russia, rather than attempt to rebuild the vandalised units. Discussions have been started regarding the purchase of around 50 locomotives.

Provision should be made as far as practicable for the backlog of major overhauls (KR) of mainline electric locomotives to be reduced., as this work can be carried out within Georgia. An additional 1.3 m Lari (US \$ 970,000) should be allowed for this.

SR have issued a design brief to the "Elmavalmshebeli". Locomotive Plant in Tbilisi for the production of a new 4 axle single unit electric locomotive for passenger working. This is to be followed by an order for 20 locomotives for delivery before the end of 2000.

Price is stated to be approximately one third of a similar western locomotive.

The costs of this development will have to be carefully monitored, as it is difficult to see how a new design of locomotive can be developed on the basis of such an order.

1.7.2 Main Line Diesel Locomotives

There are sufficient modern diesel main line locomotives to meet the requirements of SR, which are mainly stand by locomotives for use in the event of shortages of electrical energy, the reliability of which has considerably improved in the last year. In such circumstances it is assumed that SR will continue to keep the present small fleet of modern locomotives in reserve. There is no justification for setting up the facilities for the major overhaul (KR) of main line diesel locomotives within Georgia, due to the small size of the fleet.

However as much work as possible should be done within SR, by the use of component exchange with the manufacturers of the locomotives. Provision will however have to be made for finance for reducing the backlog of major overhauls (KR) , which should continue to be carried out abroad. Around US \$ 200,000 pa. should be allowed. Consideration should also

be given in the longer term to the replacement of the existing fuel inefficient, high maintenance, and high polluting engines in the TE10 locomotives with the new Kolomna D49 engine with a modern control system.

The General Electric replacement engine as installed experimentally in Kazakstan in the 2TE10 should also be evaluated. The introduction of world market technology could considerably reduce operating costs, both by the use of re-engining in existing locomotives, and by the purchase of new locomotives.

1.7.3 Shunting Locomotives

It is recommended that the fleet size of operational shunting locomotives during the plan period for the business units is as follows:

Shunting locomotives

Year	1	2	3	4	5
Passenger	not allocated	not allocated	not allocated	not allocated	not allocated
Freight	27	27	27	27	27
Industrial	17	17	17	17	17
Hired out	12	12	12	12	12
Spares	12	12	12	12	12
Total	68	68	68	68	68

The effective current fleet total is 98 - about 40 of the ChME3 locomotives are beyond repair, and the balance are beyond their useful life. The age profile shows that no investment in new shunting locomotives is required within the next ten years. The small number of life expired TEM2 locomotives remaining in service should be phased out.

However to do so it will be necessary to carry out the KR1 overhaul of the Czech ChME3 shunting locomotives abroad. Around US \$750,000 p.a. should be allowed for this. It is particularly important that the opportunity should be taken to re-introduce a programme of major overhauls with the known unreliability of the ChME3 units.

1.7.4 Electric Multiple Units

The entire fleet of multiple units is approaching the end of its working life, and it is difficult to see how many of the vehicles can be kept serviceable for more than 8-10 years as a maximum. The effective fleet is now 109 vehicles, with 81 rostered on a daily basis.

Unless steps are taken to obtain more modern second hand vehicles, it is likely that it will be necessary to reduce suburban services.

1.7.5 Passenger Coaches

The condition of passenger coaches is not attractive to passengers as practically all maintenance funds are required to maintain the basic safety features of running the coaches.

It is recommended that coaches should have their passenger amenities upgraded by additional work on interior surfaces, floor coverings, fabrics and fittings during KR. Materials will be required for this, and around US \$30,000 per coach should be allowed. The new Passenger Business Unit should give consideration to the conversion of sleeping coaches to seated coaches, which would increase capacity, particularly with average journeys in SR around 200 km.

Consideration should be given to a joint agreement with Azerbaijan, similar to the agreement for freight wagons, to enable joint operation of coaches outside the limits imposed by the CIS agreement.

There are facilities to undertake the major overhaul (KR1) of all passenger coaches in Georgia at the "Electrowagonshemketebeli" Wagon Repair Plant. This work should be undertaken on a purely arms length commercial arrangement, and alternative quotations should be obtained from other countries. Fleet size should be restated excluding the 400 wagons in Abkhazia.

The present fleet of 500 is in excess of anticipated requirements.

1.7.6 Freight Wagons

The current size of the freight wagon fleet is far in excess of the current requirements and all anticipated growth of traffic. No purchases of new freight wagons are foreseen in the plan period. I

The age profile of the wagon fleet is such that a replacement programme should be started. However the wagon conditions are such that it is considered that there is no need to commence a replacement programme at present if the life of the wagons can be extended. The obstacle to this is the CIS regulations, which place an absolute limit on the life of a wagon irrespective of its usage and condition. Every effort should be made to have the regulations changed so that suitable wagons can be repaired and kept in service.

There are facilities within Georgia to carry out the major overhaul (KR) of all freight wagons.

1.7.7 Maintenance Procedures

The reorganisation of SR into business units should include a revision of maintenance procedures. The old system, where everything was decided centrally and detailed instructions sent, out meant that by sticking to "the plan" there was no taking of individual responsibility. Maintenance procedures were laid out at a time when the objective was to provide employment for everyone. Part of the introduction of Business Units should be educating management in accepting responsibility for change, and in the delegation of authority.

For example, there is too much inspection of vehicles in service. However there seem to be no easily available records of what is found, and it will be very difficult to find anyone who will accept responsibility to increase intervals because of the perceived reduction in safety. It is an identifiable area for staff reductions.

1.7.8 Improvement of Workshops

Locomotive Depots and Workshops

The number of Locomotive Depots is greater than required for both current and future operational and maintenance needs. The new Rolling Stock Business Unit should review the necessity to have the present number of Locomotive Depots.

Consideration is being given to combining the Tbilisi Freight and Passenger Locomotive Depots on one site. Other locations outside Tbilisi are required mainly for operational reasons. Running maintenance depots will be kept purely to suit operational requirements, with running maintenance transferred accordingly. This would retain depots at Samtredia and Kashuri as bases for drivers, locomotives and running maintenance up to TR1, TR2.

The Rolling Stock Unit and the Business Units should review the need for outlying depots other than Samtredia and Kashuri. The maintenance work carried out at the other depots could be transferred to these depots or to Tbilisi. The need to retain other depots and sub depots should be determined by the Freight and Passenger Business Units. Inspections (TO1 drivers daily inspection, TO2 three day inspection over pit, TO3 seventeen day or 12,000 km inspection and component check) and running maintenance (TR1 - 25,000 km servicing of electrical machines, brakes etc.) should all be carried out wherever the locomotive is relocated.

The Rolling Stock Unit should centralise the overhaul of components, with most maintenance being carried out by exchange of unit on the locomotive. Centralised specialised units for component overhaul for the whole of SR should be set up in one depot, and exchange components supplied to other depots. One under-floor wheel lathe is sufficient to meet the needs of SR for regular in situ wheel turning. If TR3 overhauls of main line electric locomotives should be centred on one depot. An investment of US \$ 500,000 should be allowed for upgrading depot facilities, including lifting.

All major overhauls (KR) to electric main line locomotives, formerly carried out in other CIS countries should be undertaken in Georgia at the "Elmavalmshenebeli" Locomotive Plant, but purely on an arms length commercial basis. Comparative quotations should also be obtained from other suppliers, including the "Elmavalmshenebeli" Carriage and Wagon Repair Plant, if suitable investment is made.

No provision should be made for the major overhauls (KR) of diesel main line or shunting locomotives, which should continue to be sent abroad.

Generally depots are structurally in reasonable condition, but annually \$0.2 m should be allowed for general maintenance, structural repairs, power and lighting improvements.

1.7.9 Passenger Coach Depot

To ensure that the work is carried out efficiently, a satisfactory stock of spare parts should be held, and stock levels kept high enough to avoid any interruption to the work flow. A stockholding of around US \$ 1.0 m will be required to be held at all times.

Parts requirements should be forecast in detail 12 months in advance, and the forecast reviewed at 3 monthly intervals. Improvements are required in facilities for overhaul of electrical and electronic components, and a new compressor is required. The practice of painting coaches every year at DR should be discontinued, and a two pack epoxy paint applied at KR, which should last until the vehicle is due KR again.

Maintenance procedures for passenger coaches are still strictly regulated through the CIS Council of Railway Administration. It is consequently unlikely that one country could deviate from the laid down requirements, because of the control of coach condition at border crossings. However, the possible move to kilometre based passenger coach maintenance from time based maintenance should be perused.

1.7.10 Wagon Depots

All KR major overhaul of freight wagons, except tank wagons, should be carried out independently of SR by contracting to the "Electrowagonshemketebeli" Carriage and Wagon Repair Plant, but alternative prices should be obtained from abroad for comparison.

The effectiveness of repairs to Tank Wagons at Batumi should be evaluated by the Freight Business Unit against sending the wagons for repair to Baku Tank Wagon Works in Azerbaijan. The need for the wagon depot in Tbilisi should be evaluated by the Rolling Stock Unit, and in fact the feasibility should be investigated of centralising all DR repairs on one depot, with other depots reduced to concentrate on the running aspects of wagons, with in service failures dealt with by unit exchange, including wheel-sets, and sent to the one depot for repair.

The specialised parts of the above depot for repairs of air brake components, wheel-sets and bearings, couplers and draft gear, should be set up as separate cost units. This is in line with the TRACECA Rolling Stock Report recommendation for component reconditioning to be carried out by 4th level independent units.

Maintenance procedures for wagons are still strictly regulated through the CIS Council of Railway Administration. It is consequently unlikely that one country could deviate from the laid

down requirements because of the control of wagon condition at border crossings. However, the possible move to km. based wagon maintenance from time based maintenance should be perused. In addition changes in the present centrally applied CIS rules are essential if major investment in new wagons by SR is to be deferred. The life assigned to both wagons and bogie frames is conservative and could be extended by 5-10 years. This will be perused.

The need to have wagons examined at frequent intervals will be reviewed. SR stop and examine wagons about every 150 km, whereas European practice is to examine wagons only as the commencement of the journey.

1.7.11 Scrap Materials

There are considerable quantities of scrap materials lying around in all depots ,amounting to several tens of thousands of tonnes. The sidings of all depots are filled with complete and partially dismantled vehicles which will clearly never operate again, including steam engines.

As well as this, depots have what is clearly scrap heaps, both in areas outside the shops, and in many instances actually within the shops. In addition, due to the abundant over supply of the former system, there are vast supplies of spare units lying around, such as traction motors, which are either beyond their economic life or in need of repair. The problem apparently is that the State will not permit the export of scrap, and there is a negligible market for it within Georgia.

It is essential, if the Rolling Stock Business is to make any semblance of efficiency, that if the problem of sale of scrap is not solved that the material is cut up and taken away to a storage site away from the depots. As well as making the use of depots more efficient, it will have a considerable effect on morale.

The Government should be lobbied to permit the sale of this scrap, which would provide a considerable source of income for the Business Units. Any units which are serviceable should be documented and considered for factory unit exchange before investing in new equipment.

1.7.12 Improvement of Workshop Techniques

World Class Manufacturing Techniques

This involves setting up teams including management and operatives into teams to decide on the best method of carrying out maintenance work on all rolling stock. Generally work teams are set up to carry out the work and they work as a **team**.

The fact that the people who are involved in the actual work on the ground are consulted and decide the best method will give them a feeling of being involved in the decision making process and will improve the morale of the staff concerned.

It is suggested that if it is decided to introduce such techniques that this be introduced initially as on a shop by shop basis.

Productivity

There is a common practice in the west whereby production targets are set in advance and agreed with the workforce. If these targets are exceeded, then the workforce benefit by enhanced payment.

In this way both the enterprise and the workforce gain. The enterprise gains by increased production and the workforce by improved payments.

Quality

The introduction of Quality Management Systems can be expected to give benefits in both output and quality.

Safety Systems

Safety is paramount importance to all railway operations. Railways for too long have been very inward looking. This has changed in recent years where the experience gained in the Nuclear and Chemical Industries has been used to good effect in the railway industry.

Leaders in the chemical field have been ICI Imperial Chemical Co in the UK. They have developed their own Safety Rating System. Some railways have adopted an international Safety Rating System, which was developed in the United States. Similar systems have been introduced in British Railways and Irish Railways.

This allows the railways concerned to measure their management of safety in a logical manner and is subject to external audit. There are different levels of competencies which can be aspired to on a year by year basis and this method introduces a discipline which benefits the railway in the long term by the reduction in accidents and fatalities and represents a good return in time and effort.

To implement such a system requires a big commitment from management and staff. The level of safety required under this system is not easy to attain.

1.7.13 Operating Issues to be addressed

Some issues to be addressed include

- through running of locomotives
- transfer of drivers and assistants to the Freight and Passenger Business Units

Through Running of Locomotives

Currently locomotives operate in confined areas with frequent changing of locomotives during the journey. This causes additional delays and reduces the availability and utilisation of the locomotive fleet.

It is proposed that this practice be changed in order to improve the availability and effectiveness of the service.

Transfer of Drivers and Assistants to Freight and Passenger Business Units

In order to give as much control as possible to the operating business units it is proposed to transfer drivers and their assistants to the Passenger and Freight Business Units. This will allow the units to roster more effectively and to improve the overall cost effectiveness.

Consider should be given in the future to the introduction of one person operation of locomotives. This will involve close liaison with the Safety to ensure that safety in operation is not impaired.

1.7.14 Operating Requirements

The operating requirements should be set out by the Freight and Passenger Business Units and agreed with the Infrastructure and Rolling Stock Business Units. It is up to the Rolling Stock Business Unit to respond to their requirements.

For instance if the Business customer requires one hundred per cent locomotive availability it may be necessary for the Rolling Stock Business Unit to provide additional locomotives to achieve this requirement. Of course this requirement would be taken into account in the contract tariff.

1.7.15 Performance Requirements

As far as the Performance Requirements are concerned this calls for close liaison between the Service and the Operating Business Units. Issues such as speed of locomotives trailing loads of freight trains have to be agreed, and its incumbent on the Service Unit to respond to the requirement.

Management Information System

In looking at MIS it is recommended that a proven system be adopted rather than spending time trying to develop its own system.

1.8 Staff Reorganisation and Downsizing

1.8.1 Staff Levels

The considerable reduction in both the freight and passenger traffic since 1990 has not been reflected by a corresponding reduction in staff numbers, although some effort has been made to reduce numbers by natural means. The age profile of the shop floor staff is high. The people are old, there are too many, and young people of any ability have left for better paid work. Staff productivity is very low, and a considerable increase in productivity, as well as a considerable increase in wage levels, can only be achieved by a reduction in numbers. It is recognised that in setting up Business Divisions with accountability, there will be considerable scope for staff reductions in the Rolling Stock Unit.

It should at least be possible to obtain staff reductions as follows, with no adverse effect on operations, based on an initial 3% the first year during reorganisation, then 7% then following year, and subsequently 8% reduction per annum along the following lines :

Rolling Stock Maintenance Staff

Year	1	2	3	4	5
Locomotive Department	2123	1975	1817	1671	1538
Pass. And Fgt. Wagon Dept.	1826*	1718*	1598*	1486*	1382*
Allocated staff	78	72	66	61	56
Total	4027	3765	3481	3218	2976

*This figure includes Wagon Technical Examination Unit staff, most of whom will have to be transferred to Freight.

*Refrigerator Attendants are also included.

It is assumed that all locomotive drivers, assistants and train crew are assigned to either the Freight or Passenger Business Units, but still undertake TO1 examinations and report back to the Rolling Stock Unit. The drivers and assistant drivers have been removed from the above numbers. Other locomotive department staff such as shunters, fuellers etc to be transferred to the Business Units will have to be agreed.

SR employs refrigerator train attendants who travel with the vehicles. It is assumed that they will be transferred to the Freight Business Unit, and will have to be taken out of the above

figures. In addition there are Wagon Technical Examination Units throughout the country, for shunting, examination etc. Their numbers are still included in the above Wagon Dept. staff, and the allocation must be agreed between the Rolling Stock Unit and the Freight Business Unit. It is also assumed that staff will be allocated to the Rolling Stock Unit as follows:

ex Regional Management	30
ex Railway Department	50

Staff Reductions

Rationalisation will bring with it staff reductions and this coupled with the introduction of new workshop practices will inevitably lead to a surplus staff situation.

At present legislation does not assist reducing staff numbers the only solution may be to introduce a voluntary redundancy programme and a non recruitment policy.

Reorganisation

The re-organisation proposals present an unique opportunity to introduce real business focus into the organisation.

The three main areas of locomotives, freight wagons and passenger rolling stock will have their own managers who will carry the responsibility for their area of the business. Details of the new management organisation is shown in the Annexes.

1.8.2 Training

The main training needs of the SR Rolling Stock Unit will not be technical, but in relation to modern management skills, and western accounting and costing systems, and the creation of a commercially driven work ethos. Western costing systems should be introduced, where costs are based on actual time taken for jobs, instead of costs derived from predetermined FSU "norms" giving standard times.

Materials management and stores stockholding is an area where training could be of great benefit. The old system was producer driven and has for example created considerable quantities of used spare units lying around all depots, when what was required was a system of unit exchange with the producer. There is no central system of control of spare parts, and even within depots control and housekeeping of parts leaves a lot to be desired.

The supply system in CIS does not appear to have adopted to meeting customer requirements, and having parts available for sale to support products, rather than producing parts as directed for distribution to a central plan.. This may be an area where the EC could provide assistance in formulating better buyer / seller relationships by providing training in purchasing techniques.

Training in modern production control would also be required. Main control systems at present are based on hand written notebooks kept by individuals. There would be considerable benefit in exposing SR staff to training with European railways for periods of, say, three to six months.

1.8.3 Management of Change

The Rolling Stock Business Unit faces a big challenge in changing from engineering orientated organisation to one that has now to embrace in addition new business skills. It will require retraining personnel in the most up-to-date management techniques which will ensure the development of a most competitive, profitable, and more particularly sustainable Business Unit. To improve the efficiency of the Business Unit new management techniques and new systems such as a Management Information System should be implemented.

1.9 Targets

In setting targets for the future it is important to be able to measure if progress is being made in the various areas of the business. Targets should be challenging but achievable and offer a great opportunity to staff to accomplish.

The following list of targets should be considered by the business unit. It is based from the time approval is given for the restructuring.

- Introduce new organisation-within 3 months
- Introduce Project Implementation Units-4 months
- Prepare contacts for Freight and Passenger Business Units-12 months
- Agree allocation of offices and maintenance facilities-6months
- Introduce International Safety Rating System or equivalent –18 months
- Achieve Level 4 of International Safety Rating System or equivalent within 5 years
- Produce rolling 5 year Business Plan within 12 months
- Plan for introduction of MIS including coding system-4 years
- Improve locomotive availability to 85% within 5 years
- Reduce cost of maintenance by 30% within 4 years
- Improve locomotive reliability by 10% within 2 years
- Introduce through working of locomotives –1 year
- Dispose of surplus rolling stock 10% per year
- Improve availability of freight wagons 10% per year
- Improve availability of passenger coaches 10% per year.
- Introduce World Class Manufacturing techniques within 3 years

1.10 Investment proposals

There are no major EBRD supported proposals for the Rolling Stock Business Unit in the current 5 year business plan.

1.11 Financial

Key Assumptions

The key planning assumptions used in the preparation of the Rolling Stock Business Unit projected income statements were as follows. The Passenger Services department has responsibility for the maintenance of Passenger Rolling stock and these costs are therefore included in the Passenger Business Unit Cost projections.

Assumptions used in Corporate Financial Computer Model	
Planning Parameter	Modelling Assumption
Locomotive Department	
- labour productivity	Staff reduction (1999 -3%), (2000 -7%), (2001 -8%) (2002 -8%), (2003 -8%)
- unit wages	Real wages increase by 25% in 1999, 20% in 2000, 15% in 2001, and 10% per annum thereafter
- fuel (diesel & electric traction)	constant in real terms
- materials	10% increase per annum
- other costs (excluding depreciation)	10% increase per annum
Wagon Department	
- labour productivity	Staff reduction (1999 -3%), (2000 -7%), (2001 -8%) (2002 -8%), (2003 -8%)
- unit wages	Real wages increase by 25% in 1999, 20% in 2000, 15% in 2001, and 10% per annum thereafter
- materials	10% increase per annum
- other costs (excluding depreciation)	10% increase per annum

Rolling Stock Business Unit Projected Income Statement

Revenue from the hire of locomotives to external parties and demurrage charges have been included in the rolling stock business unit income statement. These have been projected to rise in line with inflation.

Expenditure is projected to increase by 131% during the period of the plan. The increase is predominantly due to increases in real wages and higher expenditure on materials and capital repair due to a combination of local inflation, growth in the level of traffic which results in higher levels of activity and an assumed increase in expenditure of 10% per annum in real terms. The backlog of maintenance activity has resulted in artificially low unit costs and these need to be adjusted upwards. It should be noted that SR increased its expenditure on wagon maintenance during the first six months of 1998

Passenger coach maintenance costs are not reflected in the income statement as these are currently included in the costs of the passenger service department by SR.

The locomotive fleet and the rolling stock fleet are much larger than required and therefore the costs of operations are based on operating requirements rather than existing levels of vehicle ownership. Scrapping or disposal of surplus vehicles needs to be addressed by SR during the period covered by the business plan.

Fuel costs rise by 72% during the period of the plan however it has been assumed that fuel prices remain constant in real terms. The increase in expenditure is due to a combination of inflationary increases and higher levels of activity.



The expenditure of the rolling stock business unit is charged out to the Passenger and Freight Business Unit without any mark-up and the net surplus shown in the projected income statement reflects the revenue from external locomotive hire and demurrage charges only.



This project is financed by the European Union's Tacis Programme, which provides grant finance for know-how to foster the development of market economies and democratic societies in the New Independent States and Mongolia.

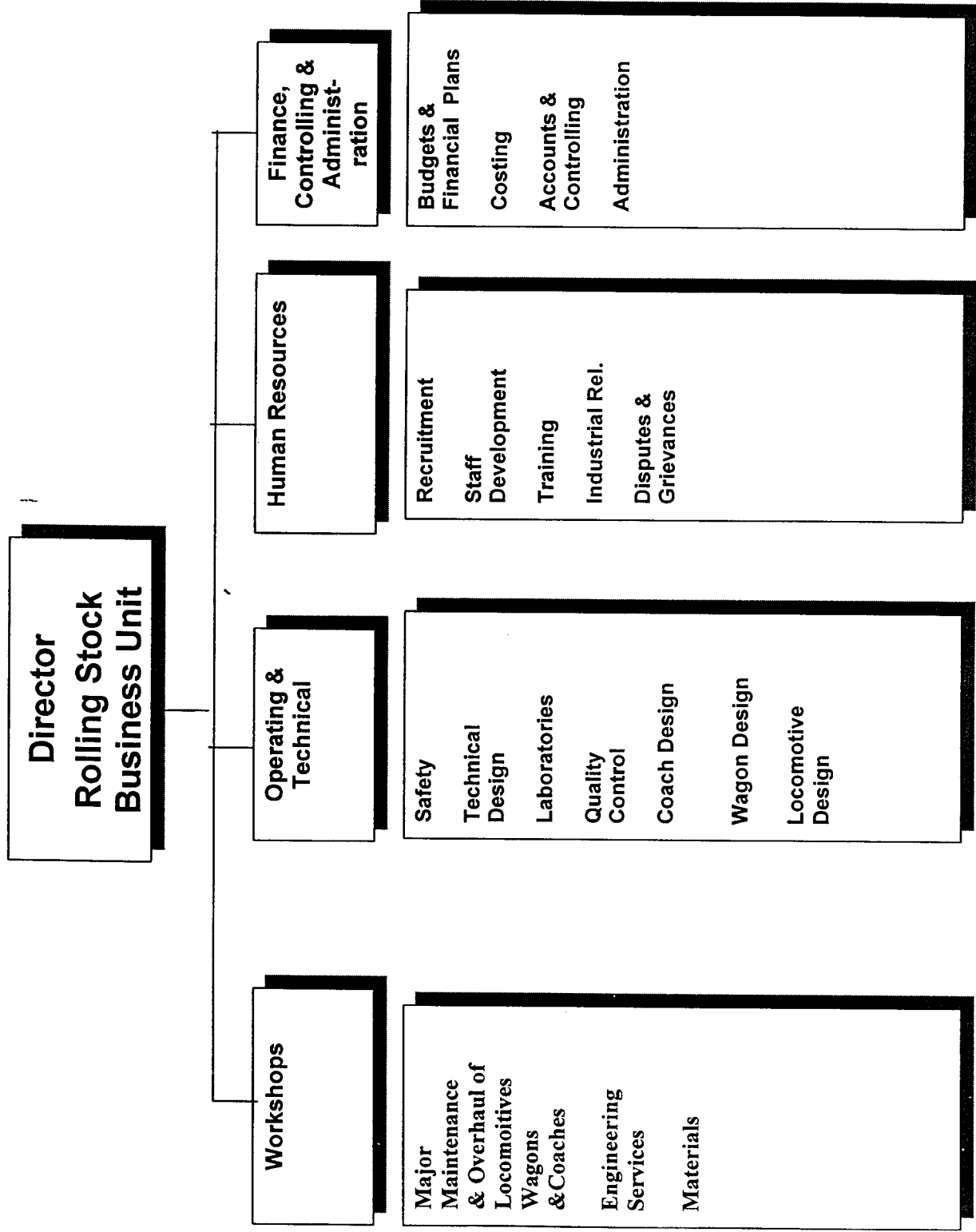
Rolling Stock Business Plan

Georgian Railways
Table 13 : Rolling Stock Business Unit : Financial Plan

	Total Cost (000 Lari Current)						
	1997	1998	1999	2000	2001	2002	2003
Rolling Stock Revenue							
External Loco hire/demurrage etc	6,900	7,000	7,644	8,347	9,115	9,954	10,870
Salaries & Social Insurance	3,611	3,443	5,009	6,508	7,629	8,500	9,375
Materials	2,459	1,492	1,929	2,435	2,947	3,549	4,235
Diesel - Traction	886	846	979	1,111	1,220	1,336	1,454
Diesel - Other	120	86	107	127	143	159	174
Electricity - Traction	4,122	4,534	5,249	5,954	6,537	7,159	7,795
Electricity - Other	74	30	37	44	50	55	61
Depreciation	2,615	5,420	5,453	5,559	5,614	5,724	5,701
Capital Repairs	3,965	2,866	3,797	4,876	5,951	7,214	8,655
Other	2,395	6,658	9,016	11,751	14,445	17,610	21,220
Total Expenditure	20,247	25,375	31,576	38,365	44,535	51,306	58,670
Passenger Business Unit Charges	6,032	6,450	7,225	8,034	8,873	9,798	10,820
Freight Business Unit Charges	14,215	18,925	24,351	30,332	35,662	41,508	47,850
Total Charges	20,247	25,375	31,576	38,365	44,535	51,306	58,670
Net Surplus/Deficit	6,900	7,000	7,644	8,347	9,115	9,954	10,870

Georgian Railways
Table 14 : Rolling Stock Business Unit : Financial Plan

	Total Cost (000 Lari Current)						
	1997	1998	1999	2000	2001	2002	2003
Locomotives Department - Passenger							
(excl Drivers & Assistants)							
Salaries & Social Insurance	675	815	1,065	1,280	1,460	1,591	1,735
Materials	558	551	653	774	917	1,087	1,289
Diesel - Traction	461	440	475	509	546	589	637
Diesel - Other	-	-	-	-	-	-	-
Electricity - Traction	2,143	2,358	2,546	2,729	2,926	3,159	3,412
Electricity - Other	-	-	-	-	-	-	-
Depreciation	572	1,242	1,249	1,274	1,286	1,312	1,306
Capital Repairs	1,195	606	718	851	1,009	1,196	1,417
Other	428	438	519	615	729	864	1,024
Total	6,032	6,450	7,225	8,034	8,873	9,798	10,820
Locomotives Department - Freight							
(excl Drivers & Assistants)							
Salaries & Social Insurance	623	752	1,117	1,464	1,707	1,892	2,067
Materials	516	509	686	886	1,074	1,294	1,537
Diesel - Traction	425	406	504	602	674	746	818
Diesel - Other	-	-	-	-	-	-	-
Electricity - Traction	1,979	2,176	2,703	3,224	3,612	4,000	4,383
Electricity - Other	-	-	-	-	-	-	-
Depreciation	528	1,146	1,153	1,175	1,187	1,210	1,205
Capital Repairs	1,104	560	754	975	1,182	1,424	1,691
Other	395	404	544	703	853	1,027	1,220
Total	5,570	5,953	7,461	9,030	10,289	11,593	12,920
Wagons Service							
Salaries & Social Insurance	2,313	1,876	2,928	3,763	4,463	5,017	5,573
Materials	1,385	432	591	775	955	1,168	1,410
Diesel - Other	120	86	107	127	143	159	174
Electricity - Other	74	30	37	44	50	55	61
Depreciation	1,515	3,032	3,050	3,110	3,140	3,202	3,189
Capital Repairs	1,666	1,700	2,325	3,049	3,760	4,595	5,547
Other	1,572	5,816	7,953	10,432	12,863	15,719	18,976
Total	8,645	12,972	16,890	21,302	25,374	29,915	34,930



RESTRUCTURING OF THE GEORGIAN RAILWAYS

BUSINESS PLAN 1999 - 2003

CORPORATE AND OTHER ACTIVITIES

CORPORATE AND OTHER ACTIVITIES

BUSINESS PLAN 1999 - 2003

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1 INTRODUCTION

The Government of Georgia with the support of Tacis and the EBRD decided to undertake a major restructuring study of the railway in 1998. This restructuring, would include not only the assets and operations but would also require that the Institutional and Organisational position of the railway be looked at and Corporate proposals for improvement developed and implemented.

C.I.E. Consult carried out an assignment in the Caucasus in 1997, at the request of EBRD and made recommendations for investment in the infrastructure and in certain workshops. The Georgian Railways requested a loan from the EBRD to carry out this work. The present study is defining and specifying in more detail the work involved. The servicing of the loan is a major issue. It will be necessary for SR to adopt a commercial approach in its activities and this will require a fundamental change in its management structure and institutional base.

In response to the ToR a Business Plan for the 5 years 1999/2003 to cover Corporate and other Activities was developed. This plan deals with legal and institutional issues, transport policy and proposes a new management organisation for SR. It includes a Financial Model which was developed to project the financial position of the railway in accordance with predicted changes in revenue and expenditure.

A special study on the legal position of the Railways was undertaken. The recommendations of similar studies in other railways were considered and discussed. The Policies of the Ministry with regard to the railway and its position in the national transport scene were closely examined. Recommendations were made as seen to be appropriate.

The Management Organisation was reviewed and proposals made for improvement. A change of such magnitude is a big undertaking and will require legal support. This is included in the legal recommendations. It will also have a fundamental effect on the management and will call for careful implementation.

IT was seen as critical to the development of MIS and to increasing efficiency in administration, particularly at Corporate level. Recommendations for a new organisation, and the setting up of study groups were made. However, there are no investment allocations at this stage.

Business Plans for the 5 years 1999/2003, to cover the major activities, have been prepared for the different businesses as follows:

- Passenger
- Freight
- Rolling Stock
- Infrastructure

In addition a Plan was developed for:

- Ancillary Activities

Commentaries were prepared on the above and are included in the overall report. In addition commentaries on Legal Considerations, State/Railway Relationships, Internal Re-Organisation, IT, the Environment and Human Resources were completed.

2 STRATEGIC OBJECTIVES

- Assist the Ministry in the drafting of a new Railway Code
- Develop a new relationship with the Ministry/Government
- Install a modern management organisation based on Business Units
- Introduce a business ethic based on a commercial approach
- Negotiate financing of Social Services

3 MISSION STATEMENT

SR is committed to providing services which meet customers needs by providing a national and international rail transport service which is safe, customer oriented, reliable, competitive and cost effective. Social services will be provided in accordance with Government requirements.

4 LEGAL CONSIDERATIONS

4.1 Introduction

The task of the legal expert requires an assessment of the legislative environment and the provision of guidance on the drafting of a new railway law. The existing legal framework in Georgia has been studied and a suggested draft law has been prepared; the latter is a new document as the model based upon the TRACECA legal and regulatory framework project was considered not to be suitable.

4.2 Legal Framework - Summary

- 4.2.1 Railways in Georgia are part of the network developed by the former Soviet Union and were regulated accordingly. With independence an entirely new situation arises; based upon an examination of the legal instruments referred to below and interviews with the Head of the Legal Department of the Ministry of Transport and discussions with local lawyers, the developments since independence are described in outline in this report.
- 4.2.2 In the former USSR railways were divided into 27 separate administrations, which reported to Moscow. One of these administrations, Caucasus Railways, was located in Georgia and Armenia; the significant and greater part of that railway network is in the territory of Georgia and now comprises Georgian Railways.
- 4.2.3 Following independence, a law dealing with railways was enacted on the 12th May 1994. The present Constitution of Georgia dates from 1995, and in order to comply with its requirements, the law on railways was amended in 1997.
- 4.2.4 Central to the organisation of enterprise in Georgia are the laws "On Entrepreneurs" (1994) and "On the Structure and Activities of Executive Power" (1997). These laws have been studied as has the Constitution of Georgia.
- 4.2.5 A new draft railway law based on the TRACECA model code had been worked upon within the railways administration for over a year and it is believed has been proposed by the railways administration for enactment. However, this has been done independently of the Ministry of Transport. This draft is reviewed later.
- 4.2.6 The law "On the Structure and Activities of Executive Power" envisages the existence of a railways department - Article 15.4 provides that the head of the Georgian Department of Railway Transport shall be appointed to and released from office by the President of Georgia. An agency of this kind would either report directly to the President of Georgia or to a Minister of the Government of Georgia. The railways presently *de facto* function entirely independently of the Ministry. Organisationally, the functions of the Ministry having to do with railway transport may be grouped in a structural unit; however it is strongly recommended that these should be regulatory in nature and have nothing to do with the commercial or technical management of railways.
- 4.2.7 The law "On Entrepreneurs" (Article 2.5) declares that the registration of enterprises is necessary, and lists the various kinds of enterprise. Where the present railway administration is concerned, it is clear that a joint stock company is appropriate.

- 4.2.8 The present railways administration should be viewed as an *ad hoc* one, since no charter has been put in place determining the management and structure of the railways administration, or its relationship with the Ministry of Transport. This needs to be rectified through legislation and the railways need to be given the necessary foundation to operate as a commercial enterprise. If the railways were to be a state agency, governed by the law "On the Structure and Activities of Executive Power" it would not enjoy commercial freedom; it would not be independent of the state, being part of the state, and would be little different from the type of administration which existed in the former Soviet Union.
- 4.2.9 International traffic is dealt with within the general structure of the present CIS. The technical regulations consist of the former rules of the Soviet Union Railways. While the present railway law refers to a charter for railways, none has been put in place.
-

4.3 Monopoly and Price Control Issues

- 4.3.1 Under the present railway law, all tariffs (passenger and freight) are confirmed by the Ministry of Transport with the agreement of the Ministry of Finance. International tariffs are determined on the basis of relevant contracts and agreements.
- 4.3.2 Under Article 1 of the present railway law, railway transport is a monopoly - it envisages railway transport as a single system; however it acknowledges some participation by private enterprise.
-

4.4 Review of the present draft railway law based on the TRACECA Model

- 4.4.1 The Georgian railways administration revised and amended the TRACECA model and sought to submit it to parliament for enactment. A copy is set out in the attached commentary. There is also a review which takes the form of introductory remarks followed by detailed comment on the articles as contained in the revised draft. The position is summarised below.
-

4.5 Proposed "SKW" Rail Transport Code

The Scott Wilson Kirkpatrick ("SWK") model Rail Transport Code is one of a series of model laws developed for use in the TRACECA countries. As SWK acknowledges, the models do not have to be slavishly followed and will require adaptation in order to suit national policy. The draft now under consideration for enactment in Georgia is an adaptation of the model.

The model developed by SWK is loosely based on that for French railways (SNCF) with the addition of much of the COTIF/CIM provisions coupled with substantial elements from the previous Georgian Railways statutes.

The position may be summarised as follows:

- a model based on that for French railways SNCF is unlikely to sit easily with what is needed in the TRACECA countries. SNCF is probably the most technically advanced railway in the world, it consumes a vast quantity of investment funds and enjoys the support of the population as representing the excellence of French scientific and technical development. This, rather than any particular attractive quality of French Railway Law, is the reason for its success. In the case of the TRACECA countries, a

model based on the legislation enacted in Germany after unification to deal with the railways of the former East German state might be more appropriate;

- international conventions such as COTIF consist of a set of rules subscribed to and supported in national legislation by the authorities of the countries concerned, following development by representatives of railway transport in those countries, often at the prompting of international agencies. The need for legislation arises because without legislation, the railway enterprises of a small number or even one of the countries might disregard the terms. Legislation is therefore needed to promote confidence in the convention. Where national rather than international considerations apply, this is not necessary, or even desirable, since it leads to rigidity and inflexibility, and can result in a conflict of laws within the national jurisdiction. It is better by far for the Civil Law to apply in contractual matters, with the railway enterprises also free to develop suitable contractual regimes with customers, subject to control by the State, where necessary, to curb abuse of monopoly or dominant positions;
- while overnight change from the practices of the former Soviet Union is not possible, only to the extent that a country sees it to be necessary is it advisable to continue with elements of Georgian Railways statutes.
- as a general principle, laws should not be any longer than necessary;
- in a developing situation, it is a better approach to provide a framework permitting transition and development at a pace which is sustainable. If the law is too elaborate, it will not be fully observed, for reasons of practicality, and this will tend to undermine the law as a whole.
- The draft developed by the present railway administration in Georgia is an adaptation of the SWK model. The changes to the SWK model do not represent a move towards commercially orientated principles.

4.6 Discussion and conclusion on the requirements for a new railway law

4.6.1 Amendment of the existing Railway Law to take into account the recommended changes will have the following effects:

- the railway law will be kept relatively short;
- it will be in a form which is reasonably familiar to the Ministry and Georgian Railways;
- pressure of time will be kept to a minimum.
- These are all positive effects, however it must be borne in mind that the text will be entirely new which may lengthen the evaluation time. However, the concerns expressed by the EBRD will be addressed by reference to the principles of Railway Restructuring and Commercialisation described in the EBRD letter of 14 October 1997, and the evaluation process is unlikely to be lengthened unduly.

4.6.2 Amendment of the draft based on the SWK model to take into account the recommended changes will have the following effects:

- the railway law will be in a form which may have similarities with that in other TRACECA countries;
- it will be in a form with which the EBRD is familiar.

These are positive effects; against them must be weighed the following negative effects:

- even omitting the articles dealing with contractual and operational matters, the railway law will be very long;
 - the process of drafting will be very difficult because of incompatibilities, causing delay which cannot presently be quantified;
 - the form will be unfamiliar within the Ministry;
 - evaluation within the Ministry and Parliament will take longer;
 - time pressures will be aggravated.
-
- Balancing the effects, the advantage of the similarity of railway law with that in other TRACECA countries is more apparent than real. A law based on an amendment of the existing law will not cause any incompatibility, since the contractual and operating procedures will be the same for international traffic and international agreements and conventions will apply.

4.6.3 In all the circumstances, the clear preference is to amend the existing law.

4.7 New draft railway law

4.7.1 Based upon the above conclusions, a new law on railways has been drafted. It is still in the nature of a discussion document; discussions are ongoing with the railways personnel. It also has been submitted by the Ministry of Transport to the parliamentary sub-committee on transport issues of the Committee of Branch Economy. It is currently being studied; a meeting has taken place attended by the Chairman of the sub-committee, the head of the railways legal department and the legal expert in the project team. Preliminary discussion has taken place at which a request for a further meeting was made by the Chairman.

4.7.2 The text of the draft law is contained in the Commentary and there follows an article by article commentary on this draft.

4.7.3 Preamble

The preamble in the existing law has been retained.

Article 1.

The existing Article 1 has been retained.

Article 2.

The new Article setting out definitions has been incorporated. This deals with railway as a system of transport allowing for a multiplicity of railway enterprises. Most importantly, it contains a definition of railway infrastructure - this is based upon the definition contained in EU Council Directive 91/440.

It also incorporates a definition of "public service obligations".

Article 3.

This set out a number of transitional provisions. It envisages the railways being formally constituted as a structural unit within the Ministry of Transport for a transitional period, pending the incorporation of a joint stock company pursuant to the law "On Entrepreneurs" not later than 6 months after the enactment of the law. It envisages the separation of ministerial functions from the functions of the railway joint stock company (Article 3.5) and the stripping out of non-transport social activities (Article 3.6).

Discussion following the preparation of this draft law suggests that it would be more appropriate for the transition to be achieved through an order of the President rather than through legislation - for parliament to legislate as envisaged in Article 3 of this draft might have constitutional implications. The draft was a suggestion on how the transition might be achieved; the important issue is that a transition of the kind envisaged will be necessary.

Article 4.

This provides that the Law on Entrepreneurs shall apply to the railway joint stock company; that the state owned shares in that company be under the power of management of the Ministry of Transport and allows for an ongoing and developing system of re-organisation on commercial principles.

Article 5.

This retains Article 3 of the present law.

Article 6.

This declares that the railway infrastructure shall always be the property of the state; it envisages the infrastructure being managed by a railway enterprise in accordance with a contract entered into with the Ministry of Transport. In the context of the present re-organisation, the contracting railway enterprise will be the present railway administration when established as a joint stock company.

Article 7.

This incorporates Article 5 of the present railway law.

Article 8.1.

This follows the principles enshrined in EU Council Directive 91/440 in providing independence in the direction management and administration of railways. It recognises the need for Georgian railways to be managed according to commercial principles and for transparent accounting in respect of infrastructure, passengers and freight.

Article 8.2.

This envisages a formal business planning process requiring Georgian Railways to operate on the basis of 5 years, "rolling" business plans.

Article 9.

This deals with public service obligations and non-commercial services imposed by the state. It recognises that the government should be made liable to pay compensation for the losses thus imposed.

Article 10.

This provides freedom to railway enterprises to set tariffs in respect of freight transport save only where protection is needed where monopoly situations arise.

Article 11.

This deals with the management and operation of the railway infrastructure; it sets out the functions of the Ministry of Transport, the system of management of the infrastructure on the basis of contracts entered into with railway enterprises and a regime of charging fees for the use of the infrastructure. It provides for the licensing of railway operators and the provision of access to the infrastructure to railway operators on a non-discriminatory basis. By comparison, EU Council Directives 95/18 and 95/19 (as well as 91/440) adopt a like approach.

Article 12

This Article provides for the supervision of railway safety to be undertaken on behalf of the state by the Ministry of Transport. Arrangements made for the appointment of inspectors and for the making of regulations. This Article incorporates elements of the present railway law - for example, Article 7.

Article 13

This Article incorporates the provisions of Article 8 of the present railway law.

Article 14

This Article incorporates the provisions of Article 9 of the present railway law.

Article 15

This Article corresponds with Article 10 of the present railway law.

Article 16

This incorporates the provisions of Article 11 of the present railway law applying the legislation of Georgia to the terms of employment of staff. It also provides for the making of regulations by the Ministry concerned with the training of specific categories of employees and the certification of their competence and compliance with medical standards.

Article 17

This Article incorporates the provisions of Article 12 of the present railway law.

Article 18

This applies TBILISI time to railway activities.

Article 19

This deals with delay and follows the provisions of Article 15 of the present railway law.

Article 20

This deals with compulsory insurance in respect of injury to passengers and follows Article 16 of the present railway law.

5 STATE/RAILWAY RELATIONSHIPS

5.1 The need for External Restructuring

The external restructuring of SR will be necessary in order to survive and perform well in the growing and competitive national and international transport market. This can only be achieved if the relationship between the state and SR is completely reshaped.

At the moment Georgian Railways established as a state enterprise with its own charter;

Works to old Soviet norms

Lacks autonomy

In addition to rail transport is a provider of social services-education, hospitals.

Lacks entrepreneurial spirit

Provider of uneconomic passenger services

5.2 Appraisal of Present Situation

5.2.1 Need to save public money

As the experience in other parts of the world has shown railway restructuring and streamlining can essentially reduce the financial burden on the government (and the tax payer) and set free capital that might be used to develop the railway system faster or spent for other purposes.

5.2.2 Need to attract private capital

It would also be a benefit for the government budget if private capital could be attracted to investing into some of the rail activities. Prerequisites for interesting private capital are efficiency and business profitability or at least a solid prospect for it.

5.2.3 Role of banks

Generally development banks will lend money to organisations if they are satisfied that there is a sufficient return on investment and the investment meets the strategic objectives in the development of the economy of the country.

5.2.4 Present monopoly position of SR

The present monopoly of Georgian Railways will not last as the market economy develops. Road infrastructure will improve, essentially under the pressure of the owners of private cars, and the emerging freight truckers. The increasing vehicle numbers will, provide real competition for the railways. It is therefore essential that SR transforms itself into an efficient, market driven organisation ready to compete with road operators.

5.2.5 International dimension.

The railways form a vital link between east and west and vice a versa. The route between Baku in Azerbaijan and Poti in Georgia is part of the main TRACECA corridor and connects with the EU CORRIDOR No 4. While connections to Armenia are currently closed due to the political unrest hopefully this will be resolved in due course.

SR will continue to play a strategic role in Corridor 4 and this role must be recognised.

6 POLICY ISSUES

There are a number of major Policy Issues which will have to be considered as part of the restructuring process. These are set out below:

6.1 Harmonisation of competition

It is in the state interest to have competition in the transport sector in such a way as hidden subsidies are eliminated and that there is a "level playing field" for all transport modes.

This is particularly true for road and rail. The cost of road infrastructure is often carried and hidden in a central budget, and is not recovered from trucks, cars, and buses which use the road infrastructure. On the other hand the cost of renewing, and maintaining the railway infrastructure is clearly identifiable and is charged in full to the railway. This is a matter which should be addressed taking into account the external costs of both road and rail transport modes.

6.2 Government managed enterprise

The experience in the countries of Western Europe with a tradition of state owned companies and heavy state participation in the economic activity of the country has shown that in the long run this is not only very costly but also very often inefficient. State run enterprises have enormous difficulties to compete with private ones in the deregulated market.

6.3 Incompatibility of government's and railway's interests

The hierarchical subordination of the railways under the government can lead and mostly does lead to management decisions that are not compatible with the entrepreneurial, particularly commercial, interests of the railways, which will have to obey the rules of the rising transport market.

6.4 Public service obligations

One of the objectives of the state should be to ensure the continuing availability of social passenger services at an affordable price in certain circumstances. The service should be provided in a cost-effective way by means of a Public Service Obligation contract.

6.5 Price Control

While it is recognised that Government have a role in fare determination Tariff levels are a commercial matter and should be left to the Freight Managers. Concession fares are on the other hand also commercial.

6.6 Human Resources

Restructuring will inevitably give rise to staff downsizing. In an organisation like Addy it is a social problem. It is a matter for the state to deal with. It will be necessary to finance early retirement, training and retraining. There will have to be a "Social Safety Net " to deal with redundancies.

6.7 Third Party Access

This would allow private or state railway companies to operate with their own trains on the state infrastructure and compete for business. The new Railway Code should provide for this.

6.8 Freight Forwarders

It is understood that most traffic movements with an international dimension is organised by freight forwarding enterprises and this role has passed from being operated directly by the railways to private limited companies. These play an important role in developing business for the railways, and is an example of part privatisation. The number of freight forwarders operating will ensure a competitive situation.

7 PROPOSALS FOR A NEW STATE/ RAILWAY RELATIONSHIP

7.1 Existing Situation

As was the case in West European countries before the restructuring of their railways it seems that the Georgian Government plays a multi-functional role vis-à-vis SR, namely as :

- the requirer of services of public interests from the railway;
- the owner of the railway
- approves SR's capital needs;
- the political institution getting involved in railway matters on behalf of the general interest of the country.

These four functions are carried out arbitrarily in daily administrative management. The result is a lack of transparency in the relationship between state and railways, which makes it difficult to fix business responsibility, and prevents a clear answer to question whether SR as a whole or its individual performances are micro-economically profitable or not. It also bears the heavy risk that public money is wrongly allocated.

The existing relationship between state and railway should be changed in the sense that entrepreneurial and state functions should be clearly separated and excessive involvement of the state in the business management of railways eliminated.

7.2 The Future role of Government

The future role of Government initially would be that of

- 7.2.1** The owner, of the railway enterprise (not the operator which will be operated under commercial principles).
- 7.2.2** The railway sector supervisory authority, particularly concerning safety, guaranteeing fair competition between the modes, licensing railway enterprises and deciding on transport policy in general.
- 7.2.3** The purchaser of all services which are in the national interest and defined in private law contracts between SR and the purchasing bodies,.
- 7.2.4** The provider of finance for the investments into the transport infrastructure

It is also recommended that not all of the remaining state functions should be performed by the same government body, like for example the Transport Ministry, but by several.

7.3 The Role of the State with Respect to Infrastructure

The railways are of vital importance to the economy of the country. The railways forms the main transport link between east and west. For these reasons it is the consultants view that the infrastructure should always remain the property of the state.

7.4 Fair Competition

At present the Government is responsible for the development of the road system. It seems only logical that in order to provide fair competition that the Government should have the responsibility for developing and maintaining the railway infrastructure.

Part or all of the cost of this investment should come from charges, which would be imposed on the railway operators as will be described later

7.5 Regulation of the Railway

Nowadays most of the World's Railways are regulated and supervised by a Railway Department in the Ministry of Transport. It is recommended that the Government give consideration to the setting up of such a Division.

7.6 Further Restructuring Options Proposed - Third Party Access

As the political aim should be to discourage monopolies but to encourage efficient rail transport on a general basis, third parties should not only be allowed to build and operate access lines but to operate freight and passenger trains on the main network. There they would be in competition with SR. They would have to pay the same user fees as the Business Units (discussed later) and should not be discriminated against in any way.

7.7 Accompanying Measures Needed

It is recommended that other modes, particularly road traffic (private car and truck) should bear infrastructure costs to the same extent as the railways in the medium and long term. This could be achieved via the existing road tax, a fuel tax or other means of taxation. External costs should for all modes be included as far as possible in order to avoid wrong allocation of scarce investment money in the interest of the country as a whole. Noise, pollution, need of land, energy consumption, accidents etc have to be taken into account.

8 INTERNAL REORGANISATION OF SR

8.1 Introduction

The re-structuring of SR cannot be achieved satisfactorily unless a new management organisation structure is put in place. The present organisation has served the railway well over the past few years since the break-up of the former Soviet railway system in laying the basis for a separate independent national railway administration of Georgia.

The existing organisation must be adapted to future needs and challenges. SR must be made more efficient and customer-oriented, must reduce its production costs, and reach a higher degree of transparency in its decision making process in order to be prepared for the growing transport market in an increasingly deregulated economy.

It is generally considered desirable to have separate funding, accounting and management for infrastructure, which may be a public-funded asset, in the general interest.

There is a need for greater commercial freedom and separate accountability in the provision of passenger and freight services.

8.2 Present Organisation Structure

The present organisation structure of SR is characterised by a strict top down management. The railway organisation is formally headed by the Director General who co-ordinates the different services. The Director General is appointed by the Cabinet of Ministers with the agreement of the President. The organisation is of the functional type with over fourteen people reporting directly to the Director General.

It is largely influenced by the existing state-railway relationship. There is significant scope for rationalisation of activities and functions within the present structure. Re-organisation can, above all, lead to more transparency in the management process and define responsibilities better. The establishment of a new relationship between state and railway organisation as proposed above is, however, a prerequisite for a successful re-organisation.

Though the organisation of SR could be significantly improved, while retaining a functional structure, we do not consider that this approach would be sufficient to meet the challenge of the future. Our proposals for a new organisation are based on a structure, which will provide a base for future development.

8.3 Proposed Organisation Structure

8.3.1 The proposed new organisation structure is shown in the included chart. It is based on the principle of separate Business Units for passenger and freight services with Service Units for both the rolling stock and infrastructure. There will be a Corporate Group for headquarters activities. In addition an ancillary business unit to look after all non core activities is proposed. The Organisation chart is attached.

8.3.2 Business and Service Units

The separate establishment of the Infrastructure Service Unit will introduce costing transparency in this sector and will facilitate potential third party operator access in the future. We propose that many functions be devolved to the Service and Business Units; however

This project is financed by the European Union's Tacis Programme, which provides grant finance for know-how to foster the development of market economies and democratic societies in the New Independent States and Mongolia

there are other tasks which should be retained at headquarters outside the Business/Service Units because they can be provided centrally more economically and effectively, or because they are essential to enable SR to operate as a single corporation. For this purpose we recommend the establishment of a unit for Corporate Services.

Each Unit should be responsible for its own marketing and sales, be they performed within or outside the corporation, for the operation of its services, the management of its own staff and its own accounting and controlling. This will create specific cost consciousness, will allocate profit responsibility to each Unit for the services it provides, and also give control over the resources it needs to achieve profitability.

Each S/BU will operate very much like a private commercial company. The guiding principle for a new organisation structure in detail must be that the Management has a maximum influence on the development of costs related to its performance output.

Another leading principle to be applied is that decisions should be taken as far as possible at the level on which the value is added.

8.3.3 Supervisory Board

The new proposals call for the setting up of a Supervisory Board. This Board of Directors would be appointed by the government (as the shareholder) and generally consist of about ten people who would have a variety of skills including business people, an accountant, a person with marketing skills. These would be all non executive directors.

Traditionally in western Europe the Chief Executive and Director Finance also sit as members of the Board but we understand under present legislation this may not be possible in Georgia. It is also common to have trade union representation on the Board.

8.3.4 Executive Board

We propose that each of the Business/Service Units, and the Headquarters Unit be led by a Director. These Directors under the Chairmanship of the General Director, will constitute the Executive Board. The Executive Board should meet regularly in order to co-ordinate the activities of SR.

The Executive Board - chaired by the Director General - will be the supreme executive organ responsible for overall direction of SR in accordance with the corporate mission, strategy, policy and budget as established by law or as agreed with the Cabinet of Ministers.

The Executive Board will co-ordinate the activities of the Business Units and the Services Units, monitor their performance and take corrective action where necessary.

8.3.5 Corporate service unit.

The services which we propose to be grouped in the Corporate Services Unit are:

- Corporate Planning,
- Finance & Controlling,
- Computer Systems,
- Procurement and Real Estate.
- Organisation,
- International Relations,
- Human Resources,
- Legal Services and Audit.

8.3.6 Freight Business Unit

The Freight Business Unit will have its own marketing and planning, sales, stations as well as operating and technical, finance/controlling/administration and human resources functions with corresponding managers. It will develop and sell freight services in the national and international markets.

It will employ, manage and develop its own staff. It will prepare its own financial plans and budgets, and define its products/services. It will operate as a self-contained business with profit responsibility, within the overall corporate goals and strategies of SR, and in collaboration with the other Business and Services Units in SR.

8.3.7 Passenger Business Unit

Like the Freight Business Unit, the Passenger Business Unit will be independent and self-contained. It will be structured in a similar way with managers responsible for marketing and planning, sales, stations, operating and technical, human resources and finance/controlling/administration.

8.3.8 Infrastructure Service Unit

We propose that all infrastructure activities and functions should be grouped together in an Infrastructure Service Unit. This will facilitate separate accounting for the infrastructure and its separate funding from public sources and thus make it much easier to prevent cross-subsidisation between the different functions in the Corporation. . This facilitates an equal treatment of all modes and thus permits harmonisation of competitive conditions. The establishment of a separate Infrastructure Service Unit will also facilitate charging for use of the infrastructure and access of third party operators, if that is considered desirable at some time in the future.

The Unit will be self-contained with its own managers for planning and for sales of train paths, for path management and operating, construction, track maintenance, signalling and communications, human resources, and finance/controlling/administration.

The Infrastructure Operations Manager will carry responsibility for central dispatching, controlling track capacity and train running for both passengers and freight. He will be responsible for the overall timetable and will have a neutral position with respect to selling train paths to the Freight Business and Passenger Business Units of the Corporation or to third party operators.

8.3.9 Rolling Stock Service Unit

We propose the establishing of Rolling Stock Service Unit, which will carry out maintenance and overhauls for the Passenger and Freight Business Units on locomotives, passenger carriages, and freight wagons. It will operate as an autonomous enterprise with its own technical, workshops, accounts and human resource managers. It will negotiate contracts for the supply of maintenance services to the Passenger and Freight Business Units.

The option should be kept open for the Rolling Stock Unit to own rolling stock, which it would then lease to the Passenger and Freight Units to other licensed operators.

The Rolling Stock Unit will be encouraged to provide engineering services to third parties on a commercial basis. There should be potential for expansion of profitable business, especially from industrial railways and other adjoining railways.

8.3.10 Management Relationships with SR

It is recommended there should be a selling/buying relationship between the Business Units. One of the main selling/buying relationships will be that between the Freight and Passenger Business Units on one hand, and the Infrastructure Service Unit on the other. The latter will be responsible for a well functioning railway network, setting up train paths and selling them to the operating units, who will pay user fees on a train-km basis. The Rolling Stock Service Unit will



lease the rolling stock to the Freight and Passenger businesses and provide heavy maintenance.

9 CORPORATE BUSINESS OBJECTIVES 1999/2003

- Assist Ministry of Transport and Government in enacting new Transport Legislation.
- Consult with Ministry on a new approach to State/Railway Relationships
- And the introduction of policies to govern the emerging changes in the transport area.
- Assist and advise Minister and Ministry on setting up of new Board
- Set up Executive Board
- Agree with the Ministry the basis of a PSO contract
- Complete the internal management reorganisation of the railway by 2001
- Develop the investment plans on an ongoing basis
- Reduce Corporate Services Staff from 386 to 271 over the period
- Reorganise the IT section as recommended. Make plans to computerise all the major administrative activities. Develop MIS and TMIS.
- Monitor the progress of the Business and Service Units in relation to their objectives. Roll over the targets of their business plans annually.
- Check on corporate staff movements and costs on an ongoing basis.
- Introduce Training Programmes at all levels starting with management
- Monitor the progress made by the Ancillary Business Unit in divesting itself of social services and in privatisation.

10 CORPORATE BUSINESS FINANCIAL PLAN

The consultants have developed a corporate financial computer model in order to achieve two objectives :

- To demonstrate the impact of specific recommended measures on the financial performance of the railway;
- To make the economics/accounting personnel of the railway familiar with the techniques of financial modelling in order that they may develop their own financial projections in future.

The key assumptions used in the preparation of the financial forecasts are set out in a separate section of this document. The draft financial projections that are presented in this report will form the basis of future discussions with the railway at which time the consultants will seek to involve railway managers in the preparation of a revised financial projections. This process of communication is an essential part of gaining local management acceptance of the changes proposed and also provides an opportunity for the railway to become actively involved in the preparation of the plan.

The structure of the corporate model is discussed in detail in a separate report and a brief summary of output from this model is provided as part of this corporate plan for SR.

- **Output from the Corporate Financial Model**

Income Statements

- **Projected Business Unit Income Statements** : Projected income statements are produced for the Freight and Passenger Business Units, and projections of costs for the Rolling Stock Business Unit, the Infrastructure Business Unit, and Administrative Services Unit. The costs of the Rolling Stock Business Unit, the Infrastructure Business Unit and the Administrative Services Unit have been charged to the Freight and Passenger Business Unit. These costs have been charged out in the cost projections in order to establish the principle that the freight and passenger units will pay for the services they receive. The exact size of the charges will have to be determined through a process of negotiation between the business units.
- **Projected Consolidated Income Statements**: The model also produces a consolidated income statement for the total railway. Even after the restructuring of the railway into separate business units it will still be necessary to produce consolidated or "group accounts" for the railway which summarises the overall financial results for all of the business units.

Cash Flow Statements

The model produces projected cashflow statements for the total railway. To produce meaningful cashflow statements for the new Business Units it would be necessary to have opening balance sheets for each unit and these are not currently available. The cashflow statement reflects the impact of the investment programme and the repayment of the EBRD loan which at this time is deemed to be the responsibility of "the railway" and not of individual Business Units.

Consolidated Balance Sheets

The model produces projected balance sheets based on the opening balance sheet position as at 01.01.1998. The balance sheets are completely automated and any changes made to the corporate model will be carried through to the balance sheet.



When the railway has had an opportunity to determine the split of assets and liabilities between the business units and produce individual balance sheets for them, then the model should be updated to project these business unit balance sheets.

11 ASSUMPTIONS USED IN CORPORATE FINANCIAL COMPUTER MODEL

11.1 Key Assumptions

Assumptions used in Corporate Financial Computer Model	
Planning Parameter	Modelling Assumption
General economic parameters - Inflation - Exchange rate	- inflation of 6.2% per annum from 1999 to 2003 - base 1.34 to US\$ in 1998, declining to 1.46 in 2001 and to 1.55 in 2003
Freight Traffic and Revenue	
Freight Volumes - import/transit oil - other international freight - local freight	(1999 +20.9%),(2000 +14.6%), (2001 +4.0%), (2002 - 1.0%), (2003 -1.0%) (Tariff elasticity -0.5) (1999 +13.2%),(2000 +9.0%), (2001 +5.8%), (2002 +6.2%), (2003 +6.5%) (Tariff elasticity -0.2) (1999 +5.4%),(2000 +5.5%), (2001 +5.5%), (2002 +5.6%), (2003 +5.7%) (Tariff elasticity -0.3)
Freight Tariffs - import /transit oil - other international freight - local freight	reducing by 3% per annum in real terms reducing by 3% per annum in real terms reducing by 3% per annum in real terms
Passenger Traffic and Revenue	
Passenger Volumes - international/long distance - suburban services	2.48% per annum (tariff elasticity -0.5) 2.48% per annum (tariff elasticity -0.5)
Passenger Tariffs - international/long distance - suburban services	increasing at 5% per annum in real terms increasing at 5% per annum in real terms
Freight Operating Resources - loco fleet - loco's per train - wagon fleet - wagons per train	Requirement for 55 loco's increasing to 68 by 2003 1.6 loco's on average per freight train 3993 wagons increasing to 4892 wagons in 2003 38.8 wagon per train increasing to 42 in 2003
Passenger Operating Resources - loco fleet - loco per train - EMU's - passenger coach fleet - passenger coaches per train	requirement for 25 loco's declining to 21 by 2003 average of 1 remaining constant 28 EMU's remaining constant 405 declining to 352 by the year 2003 average of 8.3 declining to 8.1 by 2001
Operating Costs	
Passenger Services - labour productivity - unit wages - materials - other costs (excluding depreciation)	Staff reduction (1999 -3%), (2000 -7%), (2001 -8%) (2002 -8%), (2003 -8%) Real wages increase by 25% in 1999, 20% in 2000, 15% in 2001, and 10% per annum thereafter 10% increase per annum 10% increase per annum
Freight Services - labour productivity - unit wages	Staff reduction (1999 -3%), (2000 -7%), (2001 -8%) (2002 -8%), (2003 -8%) Real wages increase by 25% in 1999, 20% in 2000, 15% in 2001, and 10% per annum thereafter

- materials	10% increase per annum
- other costs (excluding depreciation)	10% increase per annum
Traffic Department	
- labour productivity	Staff reduction (1999 -3%), (2000 -7%), (2001 -8%) (2002 -8%), (2003 -8%)
- unit wages	Real wages increase by 25% in 1999, 20% in 2000, 15% in 2001, and 10% per annum thereafter
- materials	10% increase per annum
- other costs (excluding depreciation)	10% increase per annum
Locomotive Department	
- labour productivity	Staff reduction (1999 -3%), (2000 -7%), (2001 -8%) (2002 -8%), (2003 -8%)
- unit wages	Real wages increase by 25% in 1999, 20% in 2000, 15% in 2001, and 10% per annum thereafter
- fuel (diesel & electric traction)	constant in real terms
- materials	10% increase per annum
- other costs (excluding depreciation)	10% increase per annum
Wagon Department	
- labour productivity	Staff reduction (1999 -3%), (2000 -7%), (2001 -8%) (2002 -8%), (2003 -8%)
- unit wages	Real wages increase by 25% in 1999, 20% in 2000, 15% in 2001, and 10% per annum thereafter
- materials	10% increase per annum
- other costs (excluding depreciation)	10% increase per annum
Track Services	
- labour productivity	Staff reduction (1999 -3%), (2000 -7%), (2001 -8%) (2002 -8%), (2003 -8%)
- unit wages	Real wages increase by 25% in 1999, 20% in 2000, 15% in 2001, and 10% per annum thereafter
- materials	10% increase per annum
- other costs (excluding depreciation)	10% increase per annum
Signalling	
- labour productivity	Staff reduction (1999 -3%), (2000 -7%), (2001 -8%) (2002 -8%), (2003 -8%)
- unit wages	Real wages increase by 25% in 1999, 20% in 2000, 15% in 2001, and 10% per annum thereafter
- materials	10% increase per annum
- other costs (excluding depreciation)	10% increase per annum
Electricity Supply	
- labour productivity	Staff reduction (1999 -3%), (2000 -7%), (2001 -8%) (2002 -8%), (2003 -8%)
- unit wages	Real wages increase by 25% in 1999, 20% in 2000, 15% in 2001, and 10% per annum thereafter
- materials	10% increase per annum
- other costs (excluding depreciation)	10% increase per annum
Buildings	
- labour productivity	Staff reduction (1999 -3%), (2000 -7%), (2001 -8%) (2002 -8%), (2003 -8%)
- unit wages	Real wages increase by 25% in 1999, 20% in 2000, 15% in 2001, and 10% per annum thereafter
- materials	10% increase per annum
- other costs (excluding depreciation)	10% increase per annum

Administrative Services - labour productivity - unit wages - materials - other costs (excluding depreciation)	Staff reduction (1999 -3%), (2000 -7%), (2001 -8%) (2002 -8%), (2003 -8%) Real wages increase by 25% in 1999, 20% in 2000, 15% in 2001, and 10% per annum thereafter constant in real terms constant in real terms
Ancillary - labour productivity - unit wages - materials - other costs (excluding depreciation)	Staff reduction (1999 -0%), (2000 -14%), (2001 -82%) Real wages increase by 25% in 1999, 20% in 2000, 15% in 2001 constant in real terms to 2001 constant in real terms to 2001
Working Capital - accounts receivable - accounts payable - inventory	130 days in 199 reducing to 90 days by 2003 112 days in 1999 reducing to 90 days by 2003 135 days stock reducing to 120 days by 2003
Investment - project investment (US\$ 1998) - other investment (lari 1998) - rolling stock refurbishment	\$15 million in 1999, \$11 million in 2000 25 million lari in 1998, 28.3 million in 1999, 25.2 million in 2000, 24.9 million in 2001, 19 million lari in 2002, 20.5 million lari in 2003 refurbishment as required by freight and passenger business units
Funding - Sources of Funds - Borrowing Terms - Government Contribution Public Service Payments	EBRD \$20 million (1999-2001) Other Foreign Loans 3.3 million lari (1998 - 2000) EBRD 7% for 15 years (3 years grace) Other 7% for 15 years (3 years grace) Local loan facility 22% reducing to 12% None 20 million lari in 2001, 2002,2003

11.2 Financial Statements

Consolidated Income Statement

The financial statements produced as part of the draft business plan for SR must be regarded as a starting point for further discussions with management on the future of the railway. They are baseline projections which will be modified once senior management have had the opportunity to review the document and comment of the changes that have been proposed by the consultants.

The traffic and revenue projections are consistent with data prepared for the EBRD by CIE Consult and presented as part of the Trans-Caucasian Rail Link Project report. The projections used are those contained in the Base Case scenario of that document.

The financial projections for SR are based on the departmental expenditure data provided to the consultants for the period January to June 1998. The base for the projections is a full year estimate for 1998 which is based on a doubling of the departmental costs reported by SR for the half-year.

Passenger Revenue: Growth in passenger traffic up to 2003 of 10.0% is modest and the increase is largely a reflection of the application of a real increase in passenger fares of 5% per annum throughout the period of the plan. Cost recovery on passenger services is very low and a decision to increase tariffs in real terms will begin the process of shifting some of the burden for the cost of the services back to the customers. Cross subsidisation of passenger services from profitable freight services must be phased out. Support from the State will be required for essential social services and based on the preliminary allocations of costs to the Passenger Business Unit a figure of 20 million lari per annum has been included from the year 2001. Rationalisation of services is essential if SR is to eliminate any residual losses in the passenger business that remain after the payment of the PSO.

Freight Revenue : Growth in freight traffic between 1998 and 2003 is set at 52% and this is consistent with earlier projections prepared for the EBRD. Tariffs on all traffic carried by Georgian Railways is set in either US\$ or Swiss francs and as a consequence of this the local currency yields will vary inversely with changes in the lari exchange rate. The assumption that local yields are adjusted to maintain a constant rate in lari whilst international rates are set to reduce by 3% per annum in real terms, has been retained. Export oil yields (revenue/ntkm) have also been assumed to reduce by a further 5% in real terms in 1998 as a result of low world crude oil prices and competition from Russian rail routes for Tengiz crude.

Domestic traffic is forecast to increase by between 6% and 8% per annum over the period of the plan in line with forecast growth in GDP. Short haul domestic traffic may be lost to competition from road haulage but this represents only a small proportion of SR traffic in total.

Exports are a relatively minor part of total traffic and growth in this area has been set at between 5% and 10% per annum.

Imports of refined oil products are held constant for the period of the plan as increased demand for energy may be met by local production as well as imports through the Black Sea ports. Grain and flour imports are assumed to be constant. Other semi-bulk freight is assumed to grow by 5% per annum with manufactured goods, foodstuffs and imported fuel growing by 10 per cent per annum.

Transit oil traffic is forecast to grow by 10% per annum over the period to 2003 with almost all of the growth occurring in the first three years on the plan. After the initial growth the volumes will stabilise as the reduction in crude oil transport is off-set by increasing volumes of refined products for regional markets.

Ancillary/Other revenue : It has been assumed that ancillary revenue will grow in 1999 but that as the restructuring process takes effect the revenue from ancillary activities will be phased out and it will disappear completely by 2002. Other revenue from loco hire and demurrage has been assumed to remain and it increases in line with inflation.

Georgian Railways operating costs, expressed in current prices, grow by 89% between 1998 and 2003.

Staff numbers are projected to decline by 30% over the period of the plan spread across all of the Business Units but the financial impact of this is eroded by the projected increases in real wages. Salaries are assumed to increase in by 25% in 1999, by 20% in 2000, by 15% in 2001 and by 10% per annum thereafter. These increases are in addition to inflationary adjustments and are consistent with the level of increases contained in the financial projection produced for the EBRD and presented as part of the Trans-Caucasian Rail Link Project report. The success of a voluntary staff reduction programme may be impeded by the awarding of large salary increases as it reduces the incentive to opt for voluntary severance. SR will need to make a policy decision in this area regarding the granting of salary increases and the improvement in working conditions during the period of the restructuring.

Expenditure on materials and capital repair grow by 149% during the period of the plan. The increase is due to a combination of local inflation, growth in the level of traffic which results in higher levels of activity and an assumed increase in expenditure of 10% per annum in real

terms. The backlog of maintenance activity has resulted in artificially low unit costs and these need to be adjusted upwards.

The locomotive fleet and the rolling stock fleet are much larger than required and therefore the costs of operations are based on operating requirements rather than existing levels of vehicle ownership. Scrapping or disposal of surplus vehicles needs to be addressed by SR during the period covered by the business plan.

Fuel costs rise by 66% during the period of the plan however it has been assumed that fuel prices remain constant in real terms. The increase in expenditure is due to a combination of inflationary increases and higher levels of activity.

Ancillary activity costs are assumed to be phased out by 2002 in line with the restructuring proposals in this area.

The costs of other activities increases in line with inflation.

Based on asset values shown in the SR balance sheet and the projected levels are consistent with the figures contained in the EBRD financial projections. The increased charges for depreciation reflect the impact of the proposed investment.

The projected net income shown in the Business Plan is positive through the period 1999 to 2003 however it is assumed that the Government is contributing to the support of socially necessary passenger services from 2001 onwards.

Consolidated Cash Flow

Operating cashflow is positive for the period of the plan which will allow SR to fund a significant amount of maintenance activity to clear the backlog that has arisen in recent years. This rehabilitation work will supplement the investment programme that is being funded by the proposed EBRD loan. The growth in freight traffic provides the funds to support the projected increases in wage rates and higher levels of expenditure on materials and capital repairs. The assumed funding of passenger services by the State contributes 60 million lari cumulatively to the cash flow and overall cashflow would remain positive at a significantly reduced level of contribution.

Consolidated Balance Sheets

Current assets increase from 65.2 million lari in 1998 to 129.8 million lari in 2003 mainly due to the accumulation of a large cash surplus. The cash position is contingent upon the payment of the PSO and in the event that SR does receive a substantial contribution from the State it is likely that the additional cash would be used to fund additional investment. It has been assumed that there will be a significant reduction in the level of accounts receivable with receivable days reducing from 155 days in 1998 to 90 days in 2003. The value of inventory increases due to inflationary prices increases and the assumed increase in the level of expenditure on materials. Improved inventory management practices, however, are assumed to reduce the number of inventory days from 145 days in 1998 to 120 days in 2003.

The increase in the value of fixed assets reflects the investment programme funded by the EBRD and SR's own rehabilitation/investment programme.

Current liabilities increase from 36.1 million lari in 1998 to 48.0 million lari in 2003 largely as a result of the increasing quantity and cost of materials purchased. It has been assumed that the payable days figure is reduced during the period of the plan from an initial figure of 123 in 1998 to 90 days outstanding in 2003.

Long term debt increases from 19.2 million lari in 1999 to 28.1 million in 2003 and the equity and reserves balances grows mainly as a result of accumulated operating surpluses. The debt to equity ratio increases from 5% in 1999 to 8% in 2000 and then declines to 7% by 2003.

11.3 Investment

The investment plan of SR has been the subject of extensive study and evaluation as part of the Trans-Caucasian Rail Link Project and the proposals have been incorporated into the Corporate Financial Model. Brief details of the investment components are given in the table below.

Investment Plan & Sources of Finance				
Project	Cost in US\$ Millions			
	EBRD	TACIS	Local	Total
Track renewal	10.4		2.5	12.9
Track equipment	3.3			3.3
Bridgeworks	1.8		0.5	2.3
Signalling renewal	4.5		2.0	6.5
Telecommunications		6.0	1.0	7.0
Technical Co-operation		1.2		1.2
Total	20.0	7.2	6.0	33.2

The project will be financed by an EBRD Loan of \$20.0 million, and EU grant of US \$7.2 million for the telecommunications component, and US \$6.0 million of local funds.

The financial internal rates of return for the project components have been calculated as part of a previous consultancy project and they are as follows :

Project FIRR by Component (% p.a.)		
Project Component	Cost (US\$ million)	FIRR (%)
Track renewal	12.90	15%
Track equipment	3.30	26%
Bridgeworks	2.30	12%
Signalling renewal	6.50	21%
Telecommunications	7.00	19%
Total	32.00	19%

The main benefits included:

- reduced transit times through increased lines speeds arising from improved track and bridge condition and upgraded signalling;
- reduced track and rolling stock maintenance costs and fuel consumption through improved track condition;
- improved rolling stock utilisation and operating efficiency through the provision of an upgraded communications system.

Other investments by SR to rehabilitated the infrastructure and facilities during the period 1999 to 2003 are projected to be as follows:

Year	Millions Lari
1999	28.3
2000	25.3
2001	24.9
2002	19.0
2003	20.5
Total	118.0

****** FINANCIAL TABLES TO BE INSERTED AFTER THIS SECTION ******
Tables 1 to 8

Consolidated Income

Georgian Railways : Financial Plan

	Total Cost (000 Lari Current)						
	1997	1998	1999	2000	2001	2002	2003
Passenger Business Unit Total							
Salaries & Social Insurance	1,204	1,665	2,181	2,618	2,978	3,257	3,563
Materials	62	132	157	185	218	260	309
Diesel - Traction	-	-	-	-	-	-	-
Diesel - Other	89	84	91	97	104	113	122
Electricity - Traction	104	87	94	101	109	118	128
Electricity - Other	-	-	-	-	-	-	-
Depreciation	731	2,228	2,241	2,285	2,308	2,353	2,344
Capital Repairs	621	712	847	998	1,177	1,399	1,664
Other	390	832	990	1,169	1,380	1,641	1,953
Total	3,201	5,740	6,601	7,454	8,274	9,141	10,082
Freight Business Unit Total							
Salaries & Social Insurance	2,795	3,264	4,856	6,382	7,459	8,277	9,062
Materials	35	52	70	91	112	135	161
Diesel - Traction	-	-	-	-	-	-	-
Diesel - Other	29	30	37	44	48	53	57
Electricity - Traction	-	-	-	-	-	-	-
Electricity - Other	133	147	180	212	234	257	278
Depreciation	618	1,684	1,694	1,727	1,744	1,778	1,771
Capital Repairs	326	102	138	178	217	262	311
Other	312	-692	935	1,212	1,475	1,780	2,120
Total	4,248	5,971	7,911	9,847	11,288	12,541	13,761
Rolling Stock Business Unit Total							
Salaries & Social Insurance	3,611	3,443	5,009	6,508	7,629	8,500	9,375
Materials	2,459	1,492	1,929	2,435	2,947	3,549	4,235
Diesel - Traction	886	846	979	1,111	1,220	1,336	1,454
Diesel - Other	120	86	107	127	143	159	174
Electricity - Traction	4,122	4,534	5,249	5,954	6,537	7,159	7,795
Electricity - Other	74	30	37	44	50	55	61
Depreciation	2,615	5,420	5,453	5,559	5,614	5,724	5,701
Capital Repairs	3,965	2,866	3,797	4,876	5,951	7,214	8,655
Other	2,395	6,658	9,016	11,751	14,445	17,610	21,220
Total	20,247	25,375	31,576	38,365	44,535	51,306	58,670
Infrastructure Business Unit Total							
Salaries & Social Insurance	5,347	5,914	6,863	8,240	9,312	10,054	10,841
Materials	1,481	1,686	2,030	2,424	2,860	3,367	3,956
Diesel - Traction	-	-	-	-	-	-	-
Diesel - Other	292	362	393	424	454	485	517
Electricity - Traction	-	-	-	-	-	-	-
Electricity - Other	221	314	334	356	378	402	427
Depreciation	2,010	10,734	10,996	12,666	13,776	13,660	13,388
Capital Repairs	13,412	10,960	13,139	15,643	18,431	21,676	25,448
Other	1,576	1,708	2,035	2,413	2,838	3,332	3,908
Total	24,339	31,678	35,792	42,166	48,049	52,976	58,485

Consolidated Income

Corporate Services Total

Salaries & Social Insurance	990	1,474	1,898	2,250	2,528	2,716	2,920
Materials	117	76	78	77	76	74	72
Diesel - Traction	-	-	-	-	-	-	-
Diesel - Other	33	34	35	35	34	33	32
Electricity - Traction	-	-	-	-	-	-	-
Electricity - Other	154	96	99	98	95	93	91
Depreciation	442	256	258	263	265	270	269
Capital Repairs	220	136	140	138	135	132	129
Other	1,879	2,746	2,829	2,795	2,731	2,669	2,609
Total	3,835	4,818	5,337	5,655	5,864	5,988	6,122

Railway Expenditure Total

Salaries & Social Insurance	13,947	15,760	20,808	25,997	29,906	32,804	35,761
Materials	4,154	3,438	4,265	5,213	6,212	7,384	8,732
Diesel - Traction	886	846	979	1,111	1,220	1,336	1,454
Diesel - Other	563	596	663	727	783	842	903
Electricity - Traction	4,226	4,621	5,343	6,055	6,646	7,277	7,922
Electricity - Other	582	587	651	711	758	808	857
Depreciation	6,416	20,322	20,642	22,500	23,707	23,786	23,473
Capital Repairs	18,544	14,776	18,060	21,834	25,911	30,683	36,208
Other	6,552	12,636	15,805	19,340	22,868	27,033	31,810
Total	55,870	73,582	87,216	103,487	118,011	131,954	147,121

Consolidated Income

Georgian Railways : Financial Plan
Table 1 : Consolidate Income Statement

	(Lari million/current prices)						
	1997	1998	1999	2000	2001	2002	2003
Volume (million)							
Passenger (pass-km)	572	468	467	465	464	463	461
Freight (tonne -km)	2,006	2,394	2,811	3,172	3,361	3,507	3,628
Total Traffic Units	2,578	2,862	3,277	3,637	3,825	3,970	4,089
Traffic Units/core employees (000's)	164	182	215	257	293	331	370
Revenue							
Transport							
- Passenger	3.1	4.7	5.1	5.7	6.3	7.0	7.7
- Freight	61.1	81.7	99.0	115.2	126.0	135.8	145.1
- PSO Compensation	-	-	-	-	20.0	20.0	20.0
- Subtotal	64.2	86.4	104.1	120.9	152.3	162.8	172.8
Ancillary/other	14.1	15.0	16.4	16.6	10.7	10.0	10.9
Total Revenue	78.3	101.4	120.5	137.5	163.0	172.7	183.7
Expenditure							
Transport							
- Salaries	13.9	15.8	20.8	26.0	29.9	32.8	35.8
- Materials/other	29.3	30.9	38.1	46.4	55.0	65.1	76.8
- Fuel & Energy	6.3	6.7	7.6	8.6	9.4	10.3	11.1
- Subtotal	49.5	53.3	66.6	81.0	94.3	108.2	123.6
Ancillary/Other	15.0	10.0	12.0	13.2	10.2	10.0	10.9
Total Working Cost	64.5	63.3	78.6	94.2	104.5	118.1	134.5
Depreciation	6.4	20.3	20.6	22.5	23.7	23.8	23.5
Total Operating Cost	70.9	83.6	99.2	116.7	128.2	141.9	158.0
Net Operating Income	7.4	17.8	21.3	20.8	34.8	30.8	25.7
Interest Charges	-	0.2	1.4	2.3	2.3	2.2	2.0
Exchange adjustment EBRD Loan				0.5	0.8	0.9	0.8
Net Income before Tax	7.4	17.6	19.8	18.0	31.7	27.7	22.8
Income Tax	1.5	3.5	4.0	3.6	6.3	5.5	4.6
Net Income After Tax	5.9	14.1	15.9	14.4	25.3	22.2	18.3
Memo only :							
Distribution of net revenue:							
- Reserves	4.1	9.7	11.0	9.9	17.5	15.3	12.6
- SR General Reserve (69%)	1.5	3.5	4.0	3.6	6.3	5.5	4.6
- Social benefits	0.4	0.8	1.0	0.9	1.5	1.3	1.1
Performance Ratios							
Working Ratio (%)	82%	62%	65%	69%	64%	68%	73%
Operating Ratio (%)	91%	82%	82%	85%	79%	82%	86%

Consolidated Income

Georgian Railways : Financial Plan
Table 2: Cashflow Statement 1998 -2003

	(Lari million/current prices)					
	1998	1999	2000	2001	2002	2003
RECEIPTS						
Freight Revenue	81.7	99.0	115.2	126.0	135.8	145.1
Passenger Revenue	4.7	5.1	5.7	6.3	7.0	7.7
Auxiliary Income/Other	15.0	16.4	16.6	10.7	10.0	10.9
Operating Subsidy	-	-	-	20.0	20.0	20.0
Decrease in Accounts Receivable	2.5	-0.6	-3.3	0.5	0.8	1.4
Increase in Accounts Payable	3.0	2.8	3.2	1.3	2.1	2.4
Capital Grant - Repayment of Loans						
Other Grants						
Loans received - EBRD	-	16.5	11.4	-	-	-
Loans received - Other Foreign	0.6	1.3	0.6	-	-	-
Loans received - Local Banks						
Total	107.5	140.6	149.4	164.8	175.6	187.5
PAYMENTS						
Working Expenses	63.3	78.6	94.2	104.5	118.1	134.5
Increase in Inventory	-	0.0	2.0	2.7	3.2	3.3
Capital Investment	25.0	49.0	40.9	24.9	19.0	20.5
Own Uses	4.4	4.9	4.5	7.9	6.9	5.7
Interest - EBRD Loan & Commitment Fee	0.1	1.2	2.0	2.0	1.9	1.8
Interest - Foreign Loans	0.1	0.3	0.3	0.3	0.2	0.2
Loan Repayments - EBRD		-	-	-	2.5	2.6
Loan Repayments - Foreign Loans	-	-	0.3	0.3	0.3	0.3
Interest - Bank Borrowings						
Profit Tax Paid	3.5	4.0	3.6	6.3	5.5	4.6
Total	96.4	139.9	148.6	148.8	157.7	173.4
Cash Increase / (Decrease)	11.2	0.7	0.9	16.0	17.9	14.1
Balance Previous Year	4.4	15.6	16.2	17.1	33.1	51.0
Cash at Year End	15.6	16.2	17.1	33.1	51.0	65.1
Debt Service Coverage (Times) (Available Cash/Interest + Repayments)	66.0	11.4	6.7	12.7	10.3	13.3

Consolidated Income

Georgian Railways : Financial Plan
Table 3 : Consolidated Balance Sheet 1997 -2003

	(Lari million/current prices)						
	1997	1998	1999	2000	2001	2002	2003
Assets							
Current Assets							
Cash	4.4	15.6	16.2	17.1	33.1	51.0	65.1
Receivables	37.2	34.7	35.3	38.5	38.0	37.2	35.8
Inventories	14.9	14.9	16.9	19.7	22.4	25.6	28.9
Subtotal	56.5	65.2	68.4	75.3	93.5	113.8	129.8
Fixed Assets							
Book Values	310.7	335.7	384.7	425.6	450.5	469.5	490.0
Less: Accumulated Depreciation		20.3	41.0	63.5	87.2	111.0	134.4
Net Book Value	310.7	315.4	343.7	362.1	363.3	358.5	355.6
Other Assets	0.3	0.3	0.3	0.3	0.3	0.3	0.3
Total Assets	367.5	380.8	412.4	437.8	457.1	472.6	485.6
Current Liabilities							
Short term Debts	1.8	1.8	1.8	1.8	1.8	1.8	1.8
Accounts Payable	18.3	21.3	24.1	27.4	28.6	30.7	33.2
Other	13	13	13	13	13	13	13
Subtotal	33.1	36.1	38.9	42.2	43.4	45.5	48.0
Long Term Debts							
EBRD	0	0	16.5	28.4	29.2	27.6	25.9
Other	0.8	1.4	2.7	3.0	2.8	2.5	2.2
Equity & Reserves - opening	333.6	333.6	333.6	333.6	333.6	333.6	333.6
Profit/Loss - current		9.7	11.0	9.9	17.5	15.3	12.6
Profit/loss - cumulative		9.7	20.7	30.6	48.1	63.4	76.0
Total Liabilities	367.5	380.8	412.4	437.8	457.1	472.6	485.6
Current Ratio	1.7	1.8	1.8	1.8	2.2	2.5	2.7
Acid Test Ratio	1.3	1.4	1.3	1.3	1.6	1.9	2.1
Debt/Equity Ratio	0%	0%	5%	8%	8%	7%	7%

Consolidated Income

Reconciliation

Passenger Business Unit							
Revenue	3,100	4,700	5,116	5,672	26,289	26,973	27,732
Costs	2,470	3,512	4,360	5,169	5,966	6,788	7,739
Depreciation	731	2,228	2,241	2,285	2,308	2,353	2,344
Result	- 101	- 1,040	- 1,485	- 1,781	18,015	17,832	17,649
Freight Business Unit							
Revenue	61,100	81,700	98,991	115,248	126,041	135,805	145,079
Costs	3,630	4,287	6,217	8,120	9,544	10,763	11,990
Depreciation	618	1,684	1,694	1,727	1,744	1,778	1,771
Result	56,852	75,729	91,081	105,400	114,753	123,264	131,318
Rolling Stock Business Unit							
Revenue (loco hire/demurrage)	6,900	7,000	7,644	8,347	9,115	9,954	10,870
Costs	17,632	19,955	26,124	32,806	38,922	45,582	52,969
Depreciation	2,615	5,420	5,453	5,559	5,614	5,724	5,701
Result	- 13,347	- 18,375	- 23,932	- 30,018	- 35,420	- 41,353	- 47,800
Infrastructure							
Revenue	0	0	0	0	0	0	0
Costs	22,329	20,944	24,795	29,500	34,273	39,316	45,098
Depreciation	2,010	10,734	10,996	12,666	13,776	13,660	13,388
Result	- 24,339	- 31,678	- 35,792	- 42,166	- 48,049	- 52,976	- 58,485
Administrative services							
Revenue	0	0	0	0	0	0	0
Costs	3,393	4,562	5,079	5,392	5,599	5,718	5,853
Depreciation	442	256	258	263	265	270	269
Result	- 3,835	- 4,818	- 5,337	- 5,655	- 5,864	- 5,988	- 6,122
Ancillary Services/other Costs							
Revenue	7,200	8,000	8,736	8,204	1,568	-	-
Costs	15,000	10,000	12,000	13,209	10,174	9,954	10,870
Result	- 7,800	- 2,000	- 3,264	- 5,004	- 8,606	- 9,954	- 10,870
Total Revenue							
	78,300	101,400	120,487	137,472	163,014	172,732	183,680
Total Costs							
	64,454	63,260	78,574	94,196	104,479	118,121	134,517
Depreciation							
	6,416	20,322	20,642	22,500	23,707	23,786	23,473
	0	0.0	0	-	0	0	0
Operating Costs							
	70,870	83,582	99,216	116,696	128,186	141,907	157,990
	0	0.0	-	-	-	-	-

Consolidated Income

Interest Charges	-	236	1,426	2,787	3,142	3,090	2,859
	0	0	0	0	0	0	0
Net Income before tax	7,430	17,582	19,845	17,989	31,686	27,735	22,830
	0.0	0.0	-	-	-	-	-

Working Capital

Georgian Railways
Table 4 : Working Capital Calculation

	1997	1998	1999	2000	2001	2002	2003
Receivables Days	166	155	130	122	110	100	90
Inventory Days	143	145	135	131	127	124	120
Payables days	124	123	112	106	100	95	90
Millions lari							
Receivables	37.2	34.7	35.3	38.5	38.0	37.2	35.8
Inventory	14.9	14.9	16.9	19.7	22.4	25.6	28.9
Payables	18.3	21.3	24.1	27.4	28.6	30.7	33.2
Working Capital	33.8	28.3	28.1	30.9	31.8	32.1	31.5
Change in working capital	-	5.5	- 0.2	2.8	0.9	0.3	- 0.6
Decrease in receivables		2.5	- 0.6	3.3	0.5	0.8	1.4
Increase in Inventory	-	0.0	2.0	2.8	2.7	3.2	3.3
Increase in Payables		3.0	2.8	3.2	1.3	2.1	2.4

Investment & Depreciation

Georgian Railways
Table 5 : Consolidated Depreciation Schedule 1998 - 2003

	1998	1999	2000	2001	2002	2003	
Opening Value (million Lari)							
Land and Improvements	163.6	167.9	193.4	210.3	208.6	204.4	
Machinery and equipment	117	119.3	124.0	127.2	131.8	132.6	
Office and workshop equipment	1.5	1.4	1.3	1.2	1.1	1.1	
Other Assets	4.2	3.9	3.7	3.4	3.2	3.0	
WIP	24.4	22.8	21.3	19.9	18.6	17.4	
Total	310.7	315.4	343.7	362.1	363.3	358.5	
Additions (millions lari current)							
Land and Improvements	15.0	36.5	29.6	12.0	9.5	10.1	
Machinery and equipment	10.0	12.5	11.3	12.9	9.5	10.4	
Office and workshop equipment	0.0	0.0	0.0	0.0	0.0	0.0	
Other Assets	0.0	0.0	0.0	0.0	0.0	0.0	
WIP	0.0	0.0	0.0	0.0	0.0	0.0	
Total	25.0	49.0	40.9	24.9	19.0	20.5	
Rate							
Depreciation (million Lari)							
Land and Improvements	6.55%	10.7	11.0	12.7	13.8	13.7	13.4
Machinery and equipment	6.55%	7.7	7.8	8.1	8.3	8.6	8.7
Office and workshop equipment	6.50%	0.1	0.1	0.1	0.1	0.1	0.1
Other Assets	6.50%	0.3	0.3	0.2	0.2	0.2	0.2
WIP	6.50%	1.6	1.5	1.4	1.3	1.2	1.1
Total		20.3	20.6	22.5	23.7	23.8	23.5
Cumulative Annual		20.3	41.0	63.5	87.2	111.0	134.4

Loans

Georgian Railways
Table 6 : Loan Schedule 1998 - 2003

EBRD Loan (US\$)		1997	1998	1999	2000	2001	2002	2003
Facility (Us\$ million)	20							
Term - years	15							
Grace period	3							
Loan Drawdown US\$ (million)			-	12.0	8.0	-	-	-
Cumulative Drawdown			-	12.0	20.0	20.0	20.0	20.0
Loan Repayment -US\$ (million)							1.7	1.7
Loan Balance - Us\$ (million)				12.0	20.0	20.0	18.3	16.7
EBRD Loan (Local Currency Equivalent)								
Loan Drawdown (lari million)				16.5	11.4	0.0	0.0	0.0
Cumulative Drawdown			-	16.5	27.9	27.9	27.9	27.9
Loan Repayment -(lari million)				-	-	-	2.5	2.6
Loan Balance - (lari million)				16.5	27.9	27.9	25.4	22.8
Restated loan balance at current exchange rates				16.5	28.4	29.2	27.6	25.9
Exchange adjustment on loan				-	0.5	1.3	2.2	3.1
Annual exchange write-off required					0.5	0.8	0.9	0.8
Interest on EBRD Loan	Rate 7.00%			1.2	2.0	2.0	1.9	1.8
Commitment fee								
Commitment fee (EBRD) (million \$)	0.50%	0	0.1	0.0	0.0	0.0	0.0	0.0
Commitment fee (EBRD) (million lari)		0.0	0.1	0.0	0.0	0.0	0.0	0.0
Other Foreign Loans								
Facility (million lari)	3.3							
Term - years	15							
Grace period	3							
Loan Drawdown (lari million)		0.8	0.6	1.3	0.6	-	-	-
Cumulative Drawdown		0.8	1.4	2.7	3.3	3.3	3.3	3.3
Loan Repayment - (lari million)		-	-	-	0.3	0.3	0.3	0.3
Loan Balance - (lari million)		0.8	1.4	2.7	3.0	2.8	2.5	2.2
Interest on Foreign Loans	Rate		7.0%	9.9%	10.0%	9.9%	10.1%	10.0%
Interest on Foreign Loans - Paid (million lari)			0.1	0.3	0.3	0.3	0.2	0.2
Total Interest payment (Lari Millions)		-	0.1	1.4	2.3	2.3	2.2	2.0
Exchange Rate adjustment		-	-	-	0.5	0.8	0.9	0.8
Commitment Fee		0.0	0.1	0.0	0.0	0.0	0.0	0.0
Total Loan Interest & Charges (to Infrastructure Unit)		-	0.2	1.4	2.8	3.1	3.1	2.9

Input Data - Investment

Georgian Railways
Table 7 : Summary of Investment 1998 - 2003

	Cost	1997 WDV	Investment					
			1998	1999	2000	2001	2002	2003
Project Investment (\$ million)								
Land and Improvements			0	15	11	0	0	0
Machinery and equipment			0	0	0	0	0	0
Office and workshop equipment			0	0	0	0	0	0
Other assets			0	0	0	0	0	0
WIP			0	0	0	0	0	0
Total (\$m)			0	15	11	0	0	0

Project Investment (Lari Million)

Land and Improvements	0	20.7	15.6	0.0	0.0	0.0	0.0
Machinery and equipment	0	0	0	0	0	0	0
Office and workshop equipment	0	0	0	0	0	0	0
Other assets	0	0	0	0	0	0	0
WIP	0	0	0	0	0	0	0
Total (lari million)	0	20.7	15.6	0.0	0.0	0.0	0.0

Other Investments (Lari million)

Land and Improvements	6.75%	163.6	15.0	15.8	14.0	12.0	9.5	10.1
Machinery and equipment	6.75%	117	10.0	12.5	11.3	12.9	9.5	10.4
Office and workshop equipment	6.75%	1.5	0.0	0.0	0.0	0.0	0.0	0.0
Other assets	6.75%	4.2	0.0	0.0	0.0	0.0	0.0	0.0
WIP	6.75%	24.4	0.0	0.0	0.0	0.0	0.0	0.0
Total		310.7	25.0	28.3	25.3	24.9	19.0	20.5

Total Investment (1998 Lari million)

Land and Improvements	15.0	36.5	29.6	12.0	9.5	10.1
Machinery and equipment	10.0	12.5	11.3	12.9	9.5	10.4
Office and workshop equipment	0.0	0.0	0.0	0.0	0.0	0.0
Other assets	0.0	0.0	0.0	0.0	0.0	0.0
WIP	0.0	0.0	0.0	0.0	0.0	0.0
Total	25.0	49.0	40.9	24.9	19.0	20.5

Rolling Stock Investment

	Available Fleet	Price (1998 lari 000)
Linehaul locomotives	75	400
Carriages	250	100
EMU	60	200
Wagons (oil)	1000	10
Wagons (other)	1400	10

External source of funds

EBRD (US\$ million)	0	0	12	8	0	0	0
EBRD (million lari current)	0	0	16.5	11.4	0	0	0
Other foreign loans (1998 million lari)	0.7	1.3	1.4	0	0	0	0
Local bank Loans (1998 million lari)	0	0	0	0	0	0	0

Borrowing terms

	Term	Grace Period	interest rate					
EBRD loan	15	3	7%	7%	7%	7%	7%	7%
Other foreign loans	15	3	7.0%	9.9%	10.0%	9.9%	10.1%	10.0%
Local bank loans	15	0	22.0%	18.0%	15.0%	12.0%	12.0%	12.0%
EBRD commitment fee			0.50%					
Interest earned			10.0%	8.0%	7.0%	6.0%	6.0%	6.0%
Government equity contribution			0	0	0	0	0	0
PSO contribution (1998 million lari)						1.0	2.0	3.0

Distribution of net income

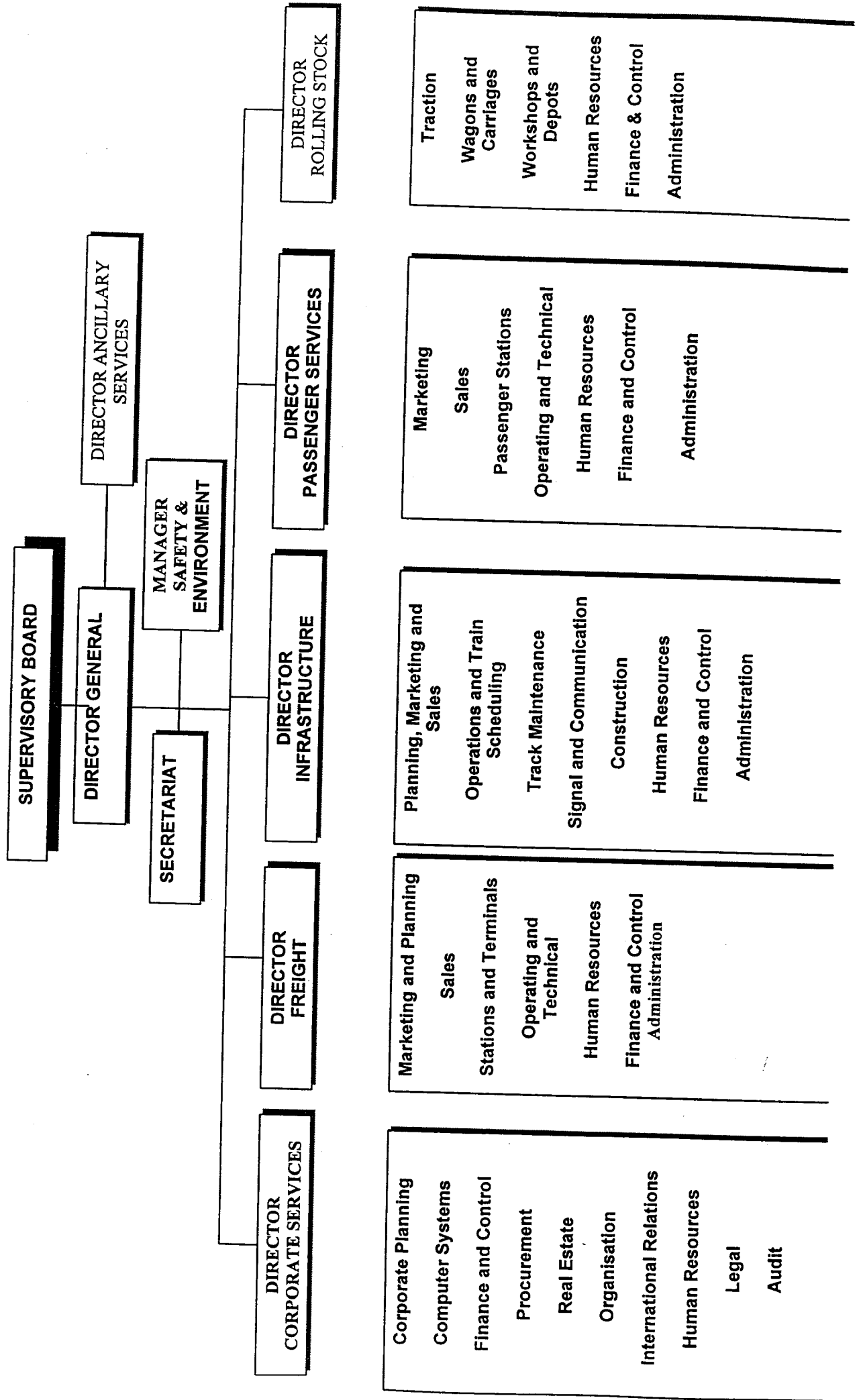
Taxes	20%
Reserves	69%
SR - General Reserve	25%
- social benefits	6%
total	100%

Traffic Forecasts

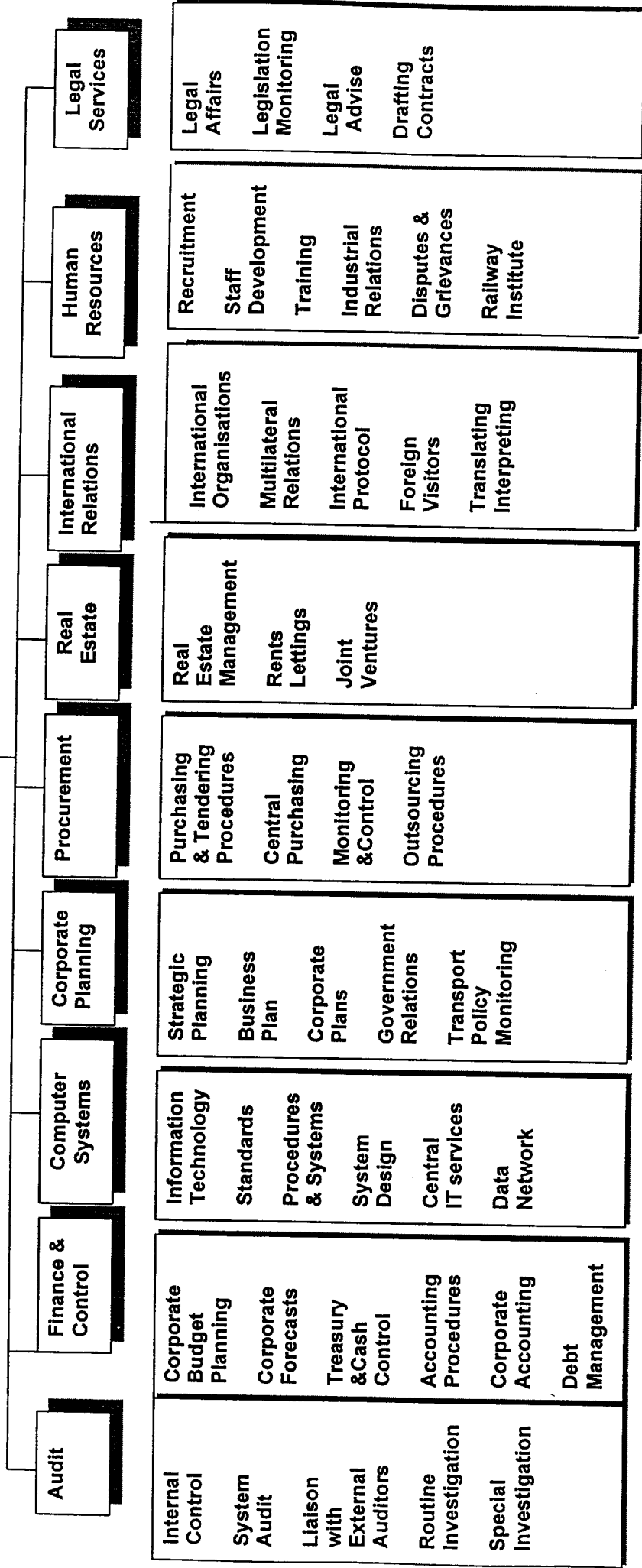
Georgian Railways
Table 8 : TRAFFIC FORECASTS

	1997	1998	1999	2000	2001	2002	2003	1998	1999	2000	2001	2002	2003
Factor for Elasticity Effect													
Passengers (000's)													
International/long distance	1,936	1,921	1,919	1,918	1,916	1,915	1,913	0.975	0.975	0.975	0.975	0.975	0.975
Suburban	2,429	1,731	1,713	1,695	1,678	1,660	1,643	0.975	0.975	0.975	0.975	0.975	0.975
Total	4,365	3,652	3,632	3,613	3,594	3,575	3,556						
Passenger -km (million)													
International/long distance	344	363	363	362	362	362	362	189	189	189	189	189	189
Suburban	228	105	104	103	102	101	100	60.7	60.7	60.7	60.7	60.7	60.7
Total	572	468	467	465	464	463	461						
Passenger Revenue (millions lari)													
Total	3.1	4.7	5.1	5.7	6.3	7.0	7.7	0.9860	1.0964	1.2192	1.3558	1.5076	1.6765
Suburban	-	-	-	-	-	-	-						
Total	3.1	4.7	5.1	5.7	6.3	7.0	7.7						
Average tariff (current tetra per passenger km)													
Freight													
Tonnes(000)													
Import/Transit Oil	3,251	4,088	5,018	5,836	6,161	6,314	6,346	1.02	1.02	1.02	1.02	1.02	1.02
Other international	2,305	2,695	3,068	3,364	3,581	3,825	4,099	1.01	1.01	1.01	1.01	1.01	1.01
Other Domestic	1,675	1,759	1,870	1,990	2,119	2,259	2,409	1.01	1.01	1.01	1.01	1.01	1.01
Total	7,231	8,542	9,956	11,190	11,861	12,397	12,854						
Tonne-km (millions)													
Import/Transit Oil	995	1,251	1,536	1,786	1,885	1,932	1,942	306	306	306	306	306	306
Other international	681	796	906	994	1,058	1,130	1,211	295	295	295	295	295	295
Other Domestic	330	347	369	393	418	446	475	197	197	197	197	197	197
Total	2,006	2,394	2,811	3,172	3,361	3,507	3,628						
Average length of haul													
Freight Revenue (Million Lari)													
Import/Transit Oil	29.3	41.8	52.9	63.5	69.2	73.2	76.0	3,341	3,448	3,559	3,672	3,790	3,911
Other international	22.3	29.1	34.2	38.7	42.5	46.8	51.8	3,656	3,773	3,893	4,018	4,147	4,279
Other Domestic	9.5	10.8	11.9	13.0	14.3	15.7	17.3	3,112	3,212	3,315	3,421	3,530	3,643
Total	61.1	81.7	99.0	115.2	126.0	135.8	145.1						
Average tariff in current tetra per net tkm													
Other revenues (million Lari)													
Ancillary services	7.2	8.0	8.7	8.2	1.6	0.0	0.0						
Other operating (Loco hire, demurrage)	6.9	7.0	7.6	8.3	9.1	10.0	10.9						
Other businesses	-	-	0.0	0.0	0.0	0.0	0.0						
Subtotal	14.1	15.0	16.4	16.6	10.7	10.0	10.9						
Public Service Obligation													
Total Revenue (million lari current)	78.3	101.4	120.5	137.5	163.0	172.7	183.7						
Inflation factor													
Unit labour factor	100%	100%	106%	113%	120%	127%	135%						
Exchange rate	1.34	1.34	1.38	1.42	1.46	1.51	1.55						

GEORGIAN RAILWAYS ORGANISATION CHART



**Director
Corporate
Services Unit**



Internal Control
System Audit
Lialson with External Auditors
Routine Investigation
Special Investigation

Corporate Budget Planning
Corporate Forecasts
Treasury & Cash Control
Accounting Procedures
Corporate Accounting
Debt Management

Information Technology
Standards
Procedures & Systems
System Design
Central IT services
Data Network

Strategic Planning
Business Plan
Corporate Plans
Government Relations
Transport Policy Monitoring

Purchasing & Tendering Procedures
Central Purchasing
Monitoring & Control
Outsourcing Procedures

Real Estate Management
Rents Lettings
Joint Ventures

International Organisations
Multilateral Relations
International Protocol
Foreign Visitors
Translating Interpreting

Recruitment
Staff Development
Training
Industrial Relations
Disputes & Grievances
Railway Institute

Legal Affairs
Legislation Monitoring
Legal Advise
Drafting Contracts

**Director
Freight
Business Unit**

**Finance &
Admin**

Budgets
Financial Plans
Costing
Accounts & Control
Administration

**Marketing
Sales**

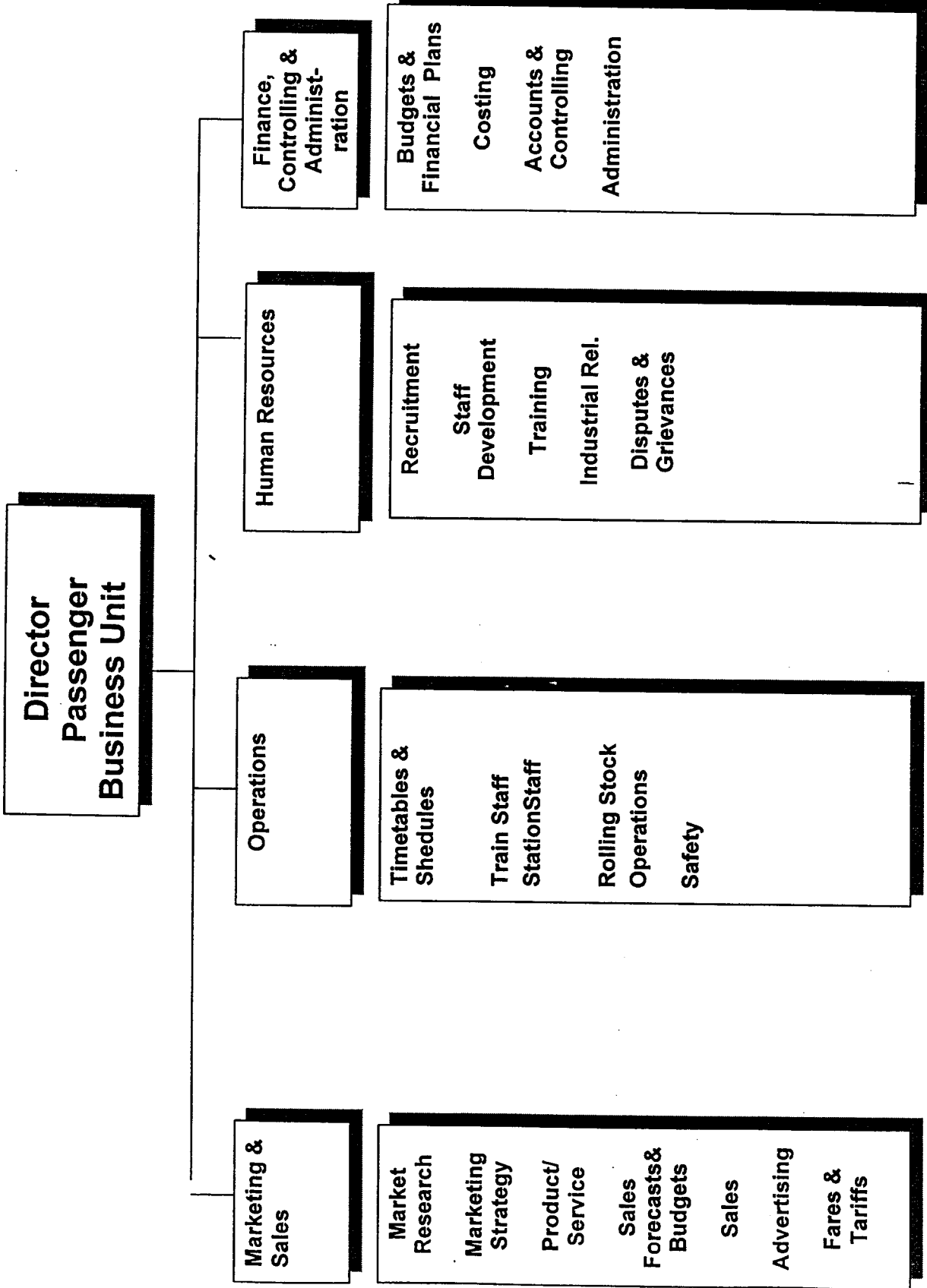
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Product Development
Sales Forecasts & Budgets
Sales
Customer Relations
Rates & Tariffs
Negotiations & Quotations
Claims

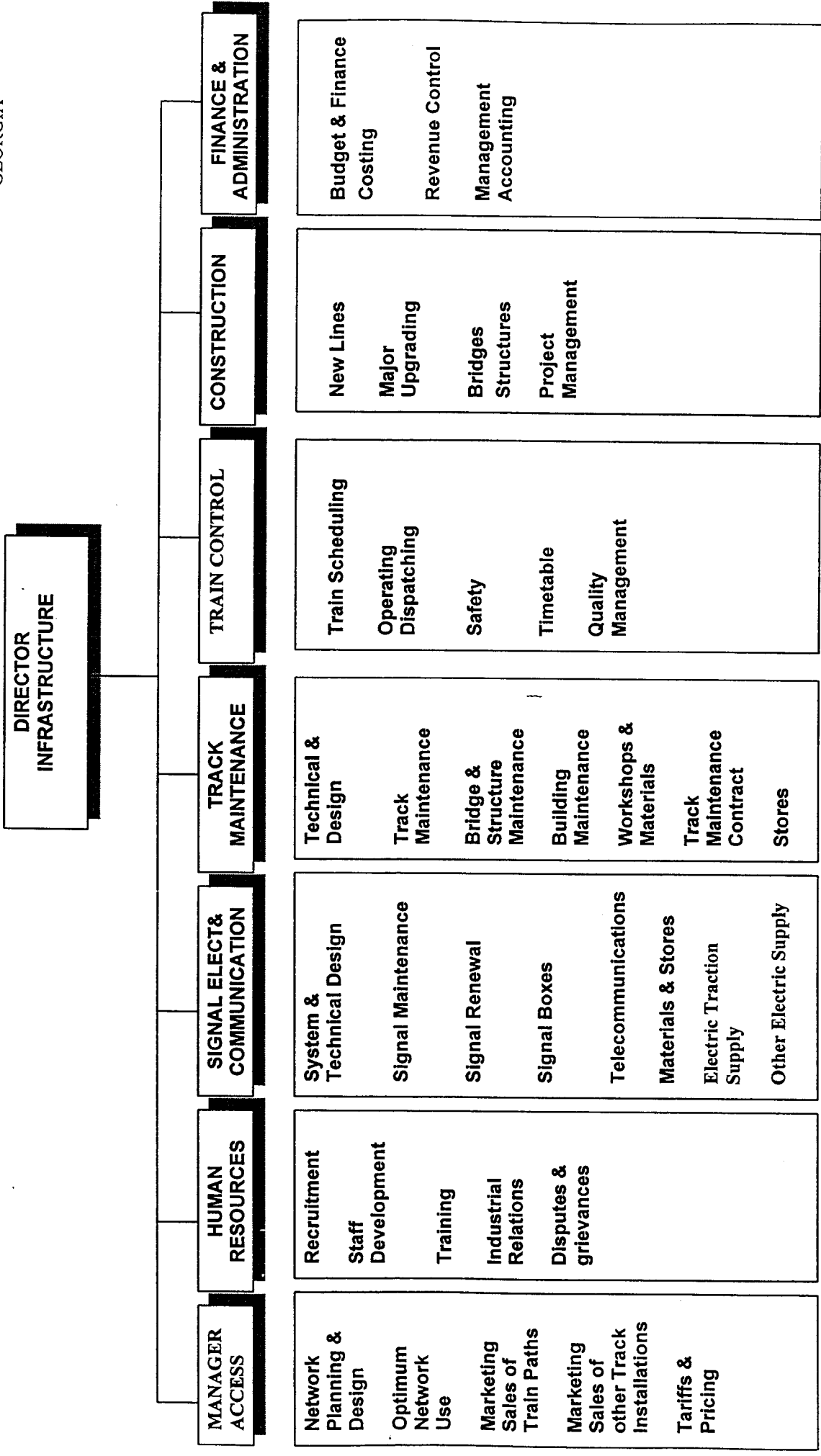
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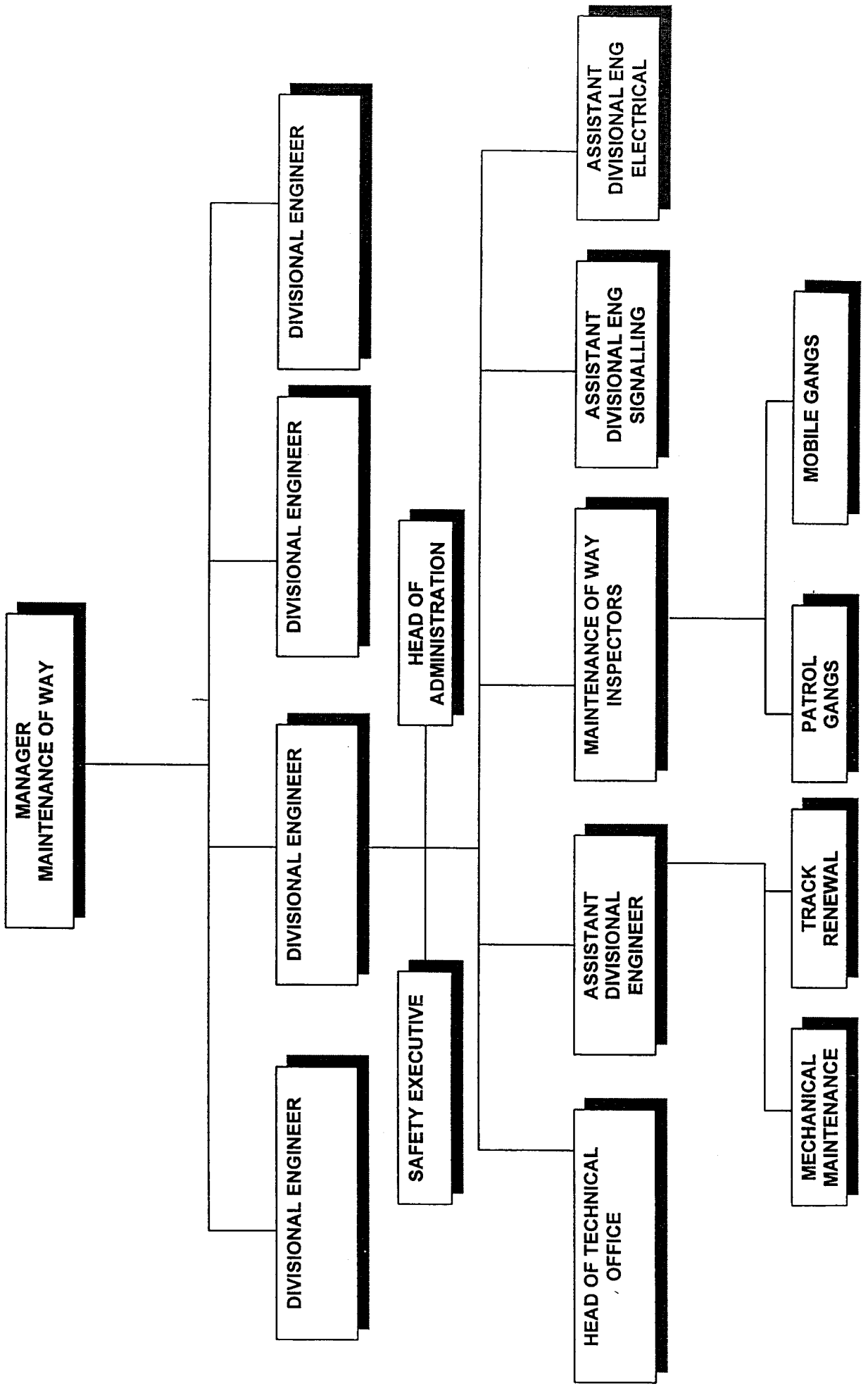
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Rolling Stock
Routine Maintenance of Rolling Stock
Operations Logistic evaluation of new traffic
Mechanical Handling
Safety

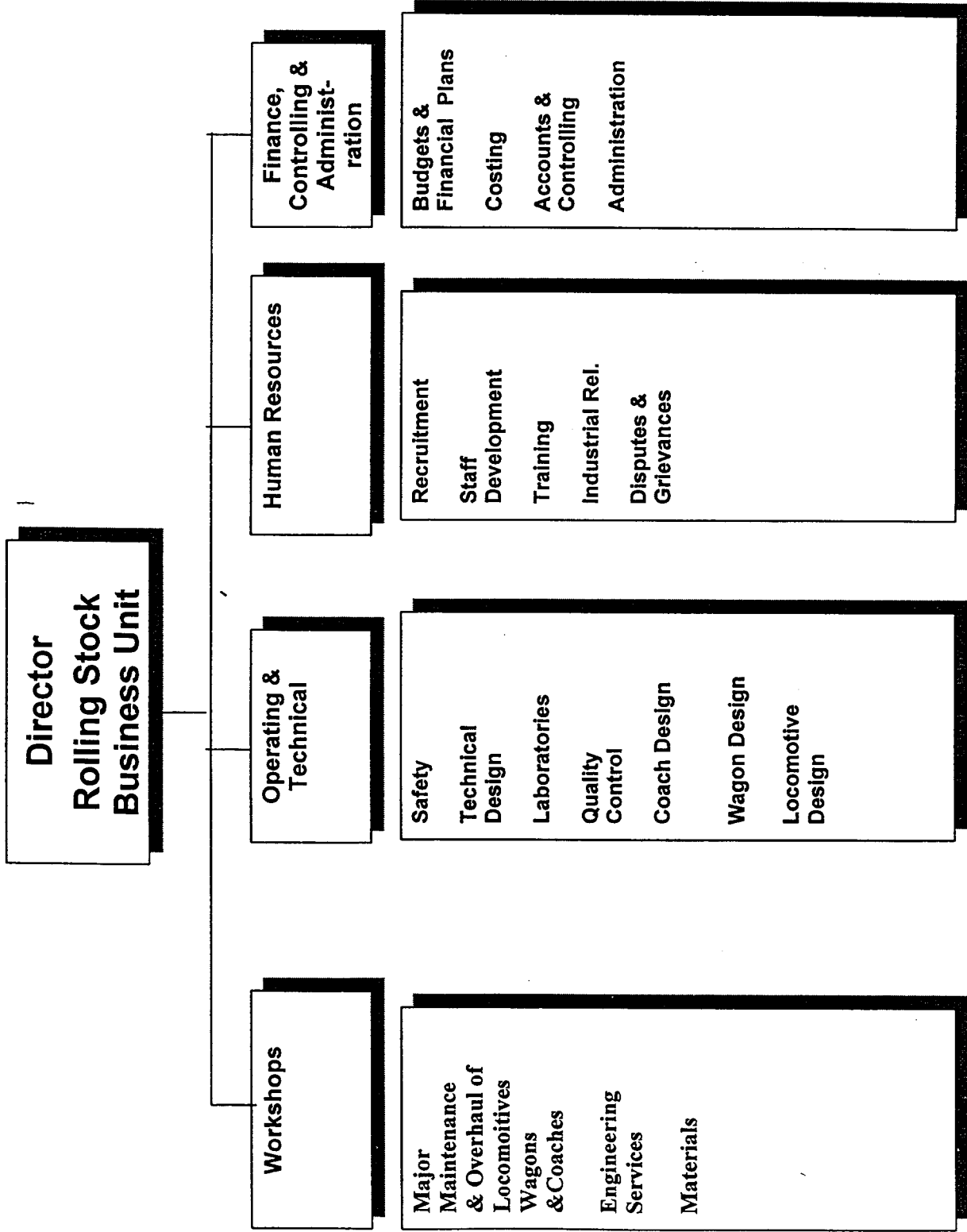
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Resources**

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Staff Development
Training
Industrial Relations
Disputes & Grievances
Railway Institute

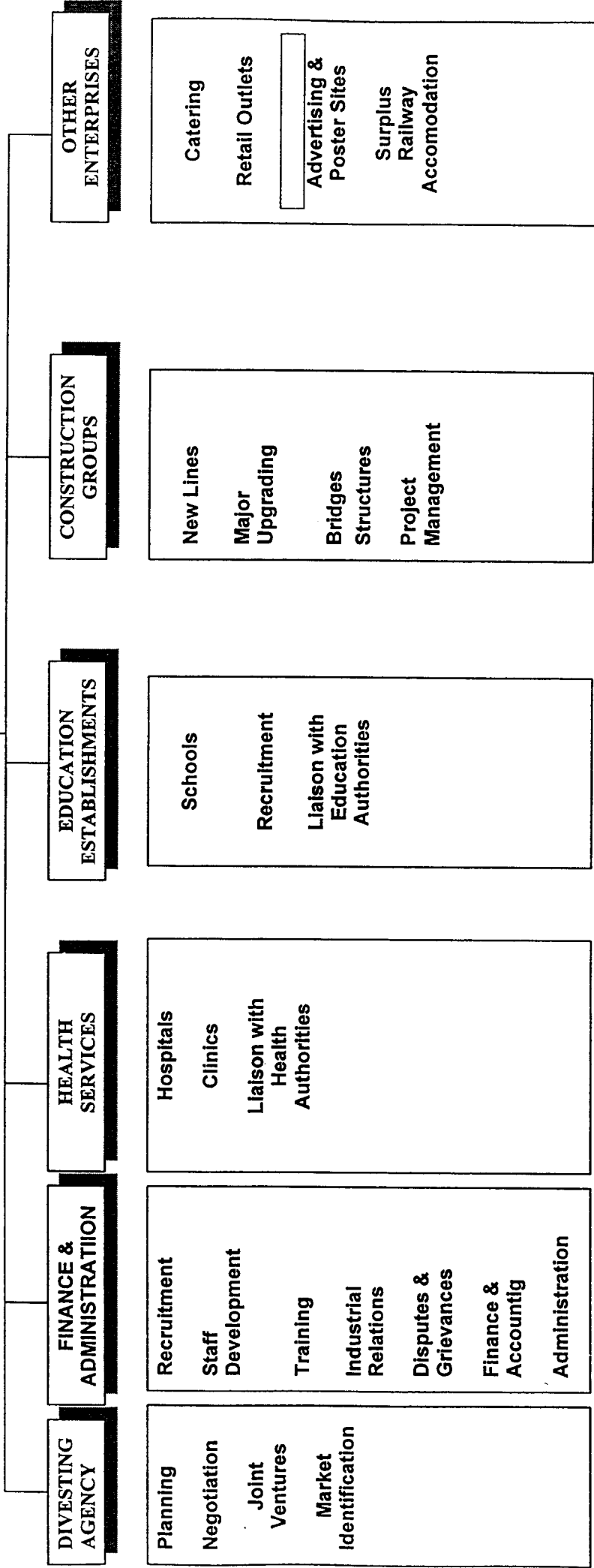




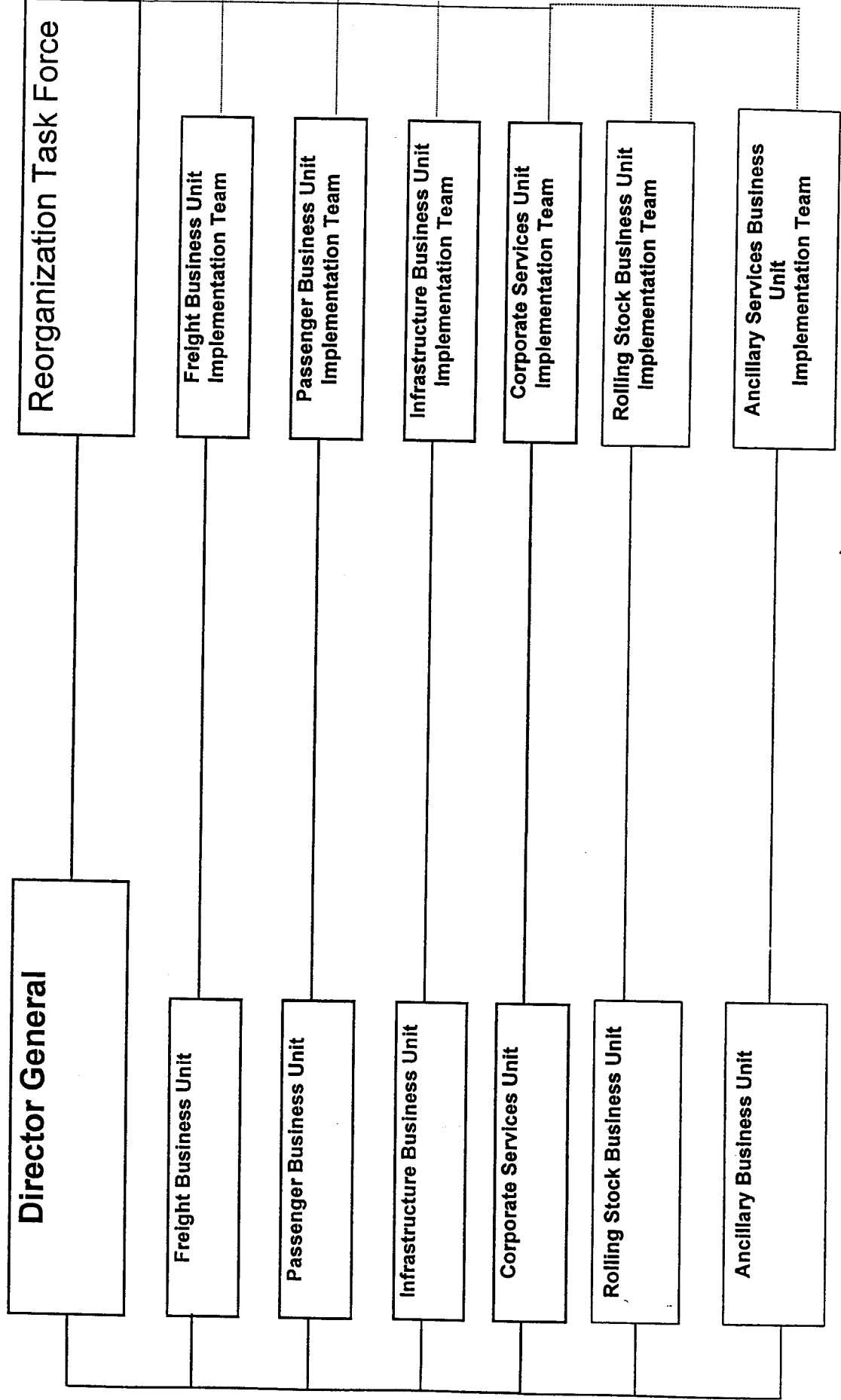




**DIRECTOR
ANCILLARY SERVICES**



Re-Structuring Implementation Organisation



RESTRUCTURING OF THE GEORGIAN RAILWAYS

BUSINESS PLAN 1999 - 2003

FINANCIAL CORPORATE MODEL

FINANCIAL CORPORATE MODEL

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1 INTRODUCTION

1.1 The Corporate Planning Process

The development of a Corporate Business Plan is a vitally important part of the process of transforming the railway into a commercially focused organisation. The Business Plan should reflect how the management of the railway intend to develop the business over a predefined period of time, usually five years. The starting point for the Business Plan will be a Mission Statement which will set out the aspirations of the management team. The Mission Statement will be accompanied by a set of strategic objectives which will focus attention on key business issues and areas where improvements are required.

Business Plans have four essential components and these are as follows :

- A Marketing Plan, which specifies the target market of the business, the desired market share, the potential for growth, and the possible impact of competitor action. It also sets out the pricing policy of the organisation and the extent to which specific market segments are influenced by price.
- An Operations Plan, which sets out how the organisation plans to meet the needs of its existing customers and how it plans to attract new business. The operations plan will contain the details of the resources required by the operating departments if they are to meet the targets set down in the Marketing Plan.
- An Investment Plan, which specifies the additional resources required by the organisation if it is to deliver the quantity and quality of service required by the customers.
- A Financial Plan, which sets out the revenues and expenditures of the organisation for the duration of the plan, the level of capital investment that is required and the sources of finance that will be used to fund the investment programme.

The preparation of the Business Plan is a vitally important management task which requires the active participation of all of the senior and middle management team. All managers are expected to contribute to the planning process and they must communicate effectively with each other . Modern commercial organisations engaged in the development of Strategic Business Plan use a technique known as “top down planning”. This technique allows the senior management team to set targets for the Strategic Business Units in terms of revenue growth required, expenditure limits, and desired profitability. Detailed Action Plans or Implementation Plans are then developed by middle management to show how they will achieve the objectives set out in the Strategic Business Plan and they are provided with the opportunity to suggest modifications to the Plan as required.

Modern commercial organisations use corporate financial computer models to assist them in the development of the Business Plan. These computer models are designed to provide management with an assessment of the impact of the changes in the business that are proposed in the Marketing Plan, the Operations Plan, the Investment Plan and the Financial Plan. The corporate financial computer model also provides management with an opportunity perform sensitivity analysis whereby they can assess the impact of changes in key variables such as traffic volumes, wage rates, exchanges rates etc., on the financial results of the organisation.

The corporate financial computer model is essentially a communications tool which allows management to draw together the various strands of the business plan into a simple set of financial statements. In most organisations the first year of the corporate business plan forms the basis for the preparation of corporate budget.

The Business Plan is revised annually in the light of changes in the business environment.

1.1.1 Preparation of the Corporate Financial Computer Model

The consultants have developed a corporate financial computer model in order to achieve two objectives :

- To demonstrate the impact of specific recommended measures on the financial performance of the railway;
- To make the economics/accounting personnel of the railway familiar with the techniques of financial modelling in order that they may develop their own financial projections in future.

The key assumptions used in the preparation of the financial forecasts are set out in a separate section of this document. The draft financial projections that are presented in this report will form the basis of future discussions with the railway at which time the consultants will seek to involve railway managers in the preparation of a revised financial projections. This process of communication is an essential part of gaining local management acceptance of the changes proposed and also provides an opportunity for the railway to become actively involved in the preparation of the plan.

The corporate financial model also draws on the knowledge of the railway's economics and accounting departments to present a set of integrated financial statements. The economics department has confined itself to projections of revenues and expenditure, and the necessity to prepare projected cashflow statements and balance sheets is a significant development which will expose railway personnel to modern financial management techniques and highlight the need for improved cash management and improved management of working capital.

1.1.2 The Structure of the Corporate Financial Computer Model

During the two day management seminar conducted in the railway, the consultants introduced the participants to the concept of financial computer models. The structure of a generic model was illustrated using the diagram below.

Inputs to the Corporate Financial Model

Economic Variables

- **Projected inflation rates** : The model provides the facility to produce financial forecasts in current prices by allowing the user to enter projected inflation rates. If projections are required in constant prices then the inflation rate can be set to zero.
- **Projected exchange rates** : The local currency exchange rate to the US\$ must be entered for the period covered by the financial projections. Although the majority of the model inputs are in local currency the US\$ exchange rate is important in calculating the local currency equivalent of projected capital investments and the local currency value of foreign currency loans.

Financial Data

The model uses existing railway financial data in a format that is recognisable to the management of the railway. This basically consists of revenue data for freight and passenger traffic, department expenditure data extracted from the railways accounts, and the current railway consolidated balance sheet. One of the challenges facing the railway is the initial separation of its existing revenue and costs into separate streams to reflect the activities of the new Strategic Business Units. In addition the railway will have to allocate the assets and liabilities to the new business units. This is a major task which will require a more fundamental review of the accounting information in the railway as part of the ongoing restructuring process.

- **Revenue data:** The model contains traffic forecasts for the freight and passengers business units. Freight traffic is expressed in terms of tonnes and net tonne kilometres and revenue is calculated at the average tariff per tonne kilometre for the major traffic types. Passenger traffic is expressed in terms of passenger numbers and passenger kilometres and revenue is calculated using the average tariff per passenger kilometre for international, local and suburban traffic.
- **Expenditure data:** The model uses the departmental costs splits that are produced by the existing accounting systems. Expenditure is therefore shown according to the existing departmental structure but an initial reallocation of costs to the new business units has been prepared by the consultants. These expenditure splits are tentative and will need to be reviewed by the management of the railway and modified as required. It must be stressed that the preparation of meaningful costs projections for the new business units is heavily dependent upon the introduction of a new management accounting system which uses a coding structure designed to separate the costs of the business units into different streams at the time the transactions are being recorded in the books of accounts.
- **Consolidated balance sheet:** The existing consolidated balance sheet of the railway is used as the basis for the projection of the future financial position of the railway. Individual balance sheets for the Strategic Business Units do not exist at this time and will only become available when the railway has completed the task of assigning assets and liabilities to the new units as part of the restructuring process.
- **Operating Statistics**

The model contains provides the facility for the input of essential operating statistics for the freight and passenger business. These statistics are non-financial in nature and represent the basic operating parameters for the freight and passenger business units.

- **Freight Operating Statistics :** The operating requirements of the freight business unit are determined by the freight traffic forecasts. It is anticipated that in future the freight business unit will contract with the rolling stock business unit for the supply of traction units, wagons and associated services. It is therefore essential that the corporate financial computer model provides the facility for the freight business unit to assess its requirements based on the projected volume of traffic. The model provides the management of the railway with an operating profile based on number of locomotives required, assumed locomotive utilisation, average train size, and wagon fleet required.

- **Passenger Operating Statistics** : The operating requirements of the passenger business unit will also be determined by traffic forecasts. It is anticipated that the passenger business unit will contract with the rolling stock business unit for the supply of traction units, passenger coaches, and EMU's. The corporate financial model therefore provides management with the facility to assess its operating requirements based on projected passenger traffic volumes. The model provides the management of the railway with an operating profile based on number of locomotives required, EMU's required, assumed utilisation, average train size, and passenger coach fleet required.

- **Management Plans**

The Business Plan is essentially a means of presenting the strategy that management has developed for running the business. The financial model provides management with the facility to establish the impact of specific measures on the financial performance of the business. Here for example management can view the impact of staff reduction on overall profitability. Equally management can determine the impact of increased expenditure on the maintenance of rolling stock and infrastructure which is required because of the backlog of work caused by recent cash shortages. The corporate model provides the railway with the ability to establish how much it can afford to spend to regenerate the railway and restore it to the level of operating efficiency that is required to provide customers with a high quality service.

- The "top-down" approach to business planning is very useful in setting targets but this must be supplemented with much detailed planning. If the objectives set out in the business plan are to be achieved then operating managers must be actively involved in the preparation of detailed implementation plans and these must be reflected in the organisations annual budget.

- **Investment Plan**

The corporate financial model contains summary details of the railways investment plan. This investment plan should include all of the capital investment proposals planned by the railway as part of the redevelopment of the business. The investment plan is therefore not limited to items covered by funding provided by international financing institutions such as the European Bank for Reconstruction and Development (EBRD) but should include additional investment priorities identified by the railway which need to be funded from its own resources or by State funds.

Prior to inclusion in the Business Plan the investment proposals should have been subjected to rigorous economic and financial analysis to determine the internal rate of return associated with each investment proposal.

Funding Sources

The corporate model contains details of the finance that is available to pay for the investment programme. The basic input to the model will include the size of the loan finance available, the term of the loan, the grace period before repayment of the principle commences, and the rate of interest charged. The model calculates the annual interest payments for incorporation into the projected income statement, the capital repayments for inclusion in the cashflow statement and the outstanding loan balance for inclusion in the corporate balance sheet as an outstanding liability.

Where appropriate the model will also take account of any local financing that has been identified either in the form of a capital grant from State funds or in the form of an additional equity contribution.

Output from the Corporate Financial Model

Income Statements

- **Projected Business Unit Income Statements** : Projected income statements are produced for the Freight and Passenger Business Units, and projections of costs for the Rolling Stock Business Unit, the Infrastructure Business Unit, and Administrative Services Unit. The costs of the Rolling Stock Business Unit, the Infrastructure Business Unit and the Administrative Services Unit have been charged to the Freight and Passenger Business Unit. These costs have been charged out in the cost projections in order to establish the principle that the freight and passenger units will pay for the services they receive. The exact size of the charges will have to be determined through a process of negotiation between the business units.
- **Projected Consolidated Income Statements**: The model also produces a consolidated income statement for the total railway. Even after the restructuring of the railway into separate business units it will still be necessary to produce consolidated or "group accounts" for the railway which summarises the overall financial results for all of the business units.

Cash Flow Statements

The model produces projected cashflow statements for the total railway. To produce meaningful cashflow statements for the new Business Units it would be necessary to have opening balance sheets for each unit and these are not currently available. The cashflow statement reflects the impact of the investment programme and the repayment of the EBRD loan which at this time is deemed to be the responsibility of "the railway" and not of individual Business Units.

Consolidated Balance Sheets

The model produces projected balance sheets based on the opening balance sheet position as at 01.01.1998. The balance sheets are completely automated and any changes made to the corporate model will be carried through to the balance sheet.

en the railway has had an opportunity to determine the split of assets and liabilities between the business units and produce individual balance sheets for them, then the model should be updated to project these business unit balance sheets.

1.2 Financial Plan

1.2.1 Key Assumptions

Assumptions used in Corporate Financial Computer Model	
Planning Parameter	Modelling Assumption
General economic parameters - Inflation - Exchange rate	- inflation of 6.2% per annum from 1999 to 2003 - base 1.34 to US\$ in 1998, declining to 1.46 in 2001 and to 1.55 in 2003
Freight Traffic and Revenue	
Freight Volumes - import/transit oil - other international freight - local freight	(1999 +20.9%), (2000 +14.6%), (2001 +4.0%), (2002 - 1.0%), (2003 -1.0%) (Tariff elasticity -0.5) (1999 +13.2%), (2000 +9.0%), (2001 +5.8%), (2002 +6.2%), (2003 +6.5%) (Tariff elasticity -0.2) (1999 +5.4%), (2000 +5.5%), (2001 +5.5%), (2002 +5.6%), (2003 +5.7%) (Tariff elasticity -0.3)
Freight Tariffs - import /transit oil - other international freight - local freight	reducing by 3% per annum in real terms reducing by 3% per annum in real terms reducing by 3% per annum in real terms
Passenger Traffic and Revenue	
Passenger Volumes - international/long distance - suburban services	2.48% per annum (tariff elasticity -0.5) 2.48% per annum (tariff elasticity -0.5)
Passenger Tariffs - international/long distance - suburban services	increasing at 5% per annum in real terms increasing at 5% per annum in real terms
Freight Operating Resources - loco fleet - loco's per train - wagon fleet - wagons per train	Requirement for 55 loco's increasing to 68 by 2003 1.6 loco's on average per freight train 3993 wagons increasing to 4892 wagons in 2003 38.8 wagon per train increasing to 42 in 2003
Passenger Operating Resources - loco fleet - loco per train - EMU's - passenger coach fleet - passenger coaches per train	requirement for 25 loco's declining to 21 by 2003 average of 1 remaining constant 28 EMU's remaining constant 405 declining to 352 by the year 2003 average of 8.3 declining to 8.1 by 2001
Operating Costs	
Passenger Services - labour productivity - unit wages - materials - other costs (excluding depreciation)	Staff reduction (1999 -3%), (2000 -7%), (2001 -8%) (2002 -8%), (2003 -8%) Real wages increase by 25% in 1999, 20% in 2000, 15% in 2001, and 10% per annum thereafter 10% increase per annum 10% increase per annum
Freight Services - labour productivity - unit wages - materials - other costs (excluding depreciation)	Staff reduction (1999 -3%), (2000 -7%), (2001 -8%) (2002 -8%), (2003 -8%) Real wages increase by 25% in 1999, 20% in 2000, 15% in 2001, and 10% per annum thereafter 10% increase per annum 10% increase per annum
Traffic Department - labour productivity	Staff reduction (1999 -3%), (2000 -7%), (2001 -8%)

- unit wages - materials - other costs (excluding depreciation)	(2002 -8%), (2003 -8%) Real wages increase by 25% in 1999, 20% in 2000, 15% in 2001, and 10% per annum thereafter 10% increase per annum 10% increase per annum
Locomotive Department - labour productivity - unit wages - fuel (diesel & electric traction) - materials - other costs (excluding depreciation)	Staff reduction (1999 -3%), (2000 -7%), (2001 -8%) (2002 -8%), (2003 -8%) Real wages increase by 25% in 1999, 20% in 2000, 15% in 2001, and 10% per annum thereafter constant in real terms 10% increase per annum 10% increase per annum
Wagon Department - labour productivity - unit wages - materials - other costs (excluding depreciation)	Staff reduction (1999 -3%), (2000 -7%), (2001 -8%) (2002 -8%), (2003 -8%) Real wages increase by 25% in 1999, 20% in 2000, 15% in 2001, and 10% per annum thereafter 10% increase per annum 10% increase per annum
Track Services - labour productivity - unit wages - materials - other costs (excluding depreciation)	Staff reduction (1999 -3%), (2000 -7%), (2001 -8%) (2002 -8%), (2003 -8%) Real wages increase by 25% in 1999, 20% in 2000, 15% in 2001, and 10% per annum thereafter 10% increase per annum 10% increase per annum
Signalling - labour productivity - unit wages - materials - other costs (excluding depreciation)	Staff reduction (1999 -3%), (2000 -7%), (2001 -8%) (2002 -8%), (2003 -8%) Real wages increase by 25% in 1999, 20% in 2000, 15% in 2001, and 10% per annum thereafter 10% increase per annum 10% increase per annum
Electricity Supply - labour productivity - unit wages - materials - other costs (excluding depreciation)	Staff reduction (1999 -3%), (2000 -7%), (2001 -8%) (2002 -8%), (2003 -8%) Real wages increase by 25% in 1999, 20% in 2000, 15% in 2001, and 10% per annum thereafter 10% increase per annum 10% increase per annum
Buildings - labour productivity - unit wages - materials - other costs (excluding depreciation)	Staff reduction (1999 -3%), (2000 -7%), (2001 -8%) (2002 -8%), (2003 -8%) Real wages increase by 25% in 1999, 20% in 2000, 15% in 2001, and 10% per annum thereafter 10% increase per annum 10% increase per annum
Administrative Services - labour productivity - unit wages - materials - other costs (excluding depreciation)	Staff reduction (1999 -3%), (2000 -7%), (2001 -8%) (2002 -8%), (2003 -8%) Real wages increase by 25% in 1999, 20% in 2000, 15% in 2001, and 10% per annum thereafter constant in real terms constant in real terms
Ancillary - labour productivity	Staff reduction (1999 -0%), (2000 -14%), (2001 -

	82%)
- unit wages	Real wages increase by 25% in 1999, 20% in 2000, 15% in 2001
- materials	constant in real terms to 2001
- other costs (excluding depreciation)	constant in real terms to 2001
Working Capital	
- accounts receivable	130 days in 199 reducing to 90 days by 2003
- accounts payable	112 days in 1999 reducing to 90 days by 2003
- inventory	135 days stock reducing to 120 days by 2003
Investment	
- project investment (US\$ 1998)	\$15 million in 1999, \$11 million in 2000
- other investment (lari 1998)	25 million lari in 1998, 28.3 million in 1999, 25.2 million in 2000, 24.9 million in 2001, 19 million lari in 2002, 20.5 million lari in 2003
- rolling stock refurbishment	refurbishment as required by freight and passenger business units
Funding	
- Sources of Funds	EBRD \$20 million (1999-2001) Other Foreign Loans 3.3 million lari (1998 - 2000)
- Borrowing Terms	EBRD 7% for 15 years (3 years grace) Other 7% for 15 years (3 years grace) Local loan facility 22% reducing to 12%
- Government Contribution	None
Public Service Payments	20 million lari in 2001, 2002,2003

1.2.2 Financial Statement

Consolidated Income Statement

The financial statements produced as part of the draft business plan for SR must be regarded as a starting point for further discussions with management on the future of the railway. They are baseline projections which will be modified once senior management have had the opportunity to review the document and comment of the changes that have been proposed by the consultants.

The traffic and revenue projections are consistent with data prepared for the EBRD by CIE Consult and presented as part of the Trans-Caucasian Rail Link Project report. The projections used are those contained in the Base Case scenario of that document.

The financial projections for SR are based on the departmental expenditure data provided to the consultants for the period January to June 1998. The base for the projections is a full year estimate for 1998 which is based on a doubling of the departmental costs reported by SR for the half-year.

Passenger Revenue: Growth in passenger traffic up to 2003 of 10.0% is modest and the increase is largely a reflection of the application of a real increase in passenger fares of 5% per annum throughout the period of the plan. Cost recovery on passenger services is very low and a decision to increase tariffs in real terms will begin the process of shifting some of the burden for the cost of the services back to the customers. Cross subsidisation of passenger services from profitable freight services must be phased out. Support from the State will be required for essential social services and based on the preliminary allocations of costs to the Passenger Business Unit a figure of 20 million lari per annum has been included from the year 2001. Rationalisation of services is essential if SR is to eliminate any residual losses in the passenger business that remain after the payment of the PSO.

Freight Revenue : Growth in freight traffic between 1998 and 2003 is set at 52% and this is consistent with earlier projections prepared for the EBRD. Tariffs on all traffic carried by Georgian Railways is set in either US\$ or Swiss francs and as a consequence of this the local

currency yields will vary inversely with changes in the lari exchange rate. The assumption that local yields are adjusted to maintain a constant rate in lari whilst international rates are set to reduce by 3% per annum in real terms, has been retained. Export oil yields (revenue/ntkm) have also been assumed to reduce by a further 5% in real terms in 1998 as a result of low world crude oil prices and competition from Russian rail routes for Tengiz crude.

- **Domestic traffic** is forecast to increase by between 6% and 8% per annum over the period of the plan in line with forecast growth in GDP. Short haul domestic traffic may be lost to competition from road haulage but this represents only a small proportion of SR traffic in total.
- **Exports** are a relatively minor part of total traffic and growth in this area has been set at between 5% and 10% per annum.
- **Imports** of refined oil products are held constant for the period of the plan as increased demand for energy may be met by local production as well as imports through the Black Sea ports. Grain and flour imports are assumed to be constant. Other semi-bulk freight is assumed to grow by 5% per annum with manufactured goods, foodstuffs and imported fuel growing by 10 per cent per annum.
- **Transit** oil traffic is forecast to grow by 10% per annum over the period to 2003 with almost all of the growth occurring in the first three years on the plan. After the initial growth the volumes will stabilise as the reduction in crude oil transport is off-set by increasing volumes of refined products for regional markets.

Ancillary/Other revenue : It has been assumed that ancillary revenue will grow in 1999 but that as the restructuring process takes effect the revenue from ancillary activities will be phased out and it will disappear completely by 2002. Other revenue from loco hire and demurrage has been assumed to remain and it increases in line with inflation.

Georgian Railways operating costs, expressed in current prices, grow by 89% between 1998 and 2003.

Staff numbers are projected to decline by 30% over the period of the plan spread across all of the Business Units but the financial impact of this is eroded by the projected increases in real wages. Salaries are assumed to increase in by 25% in 1999, by 20% in 2000, by 15% in 2001 and by 10% per annum thereafter. These increases are in addition to inflationary adjustments and are consistent with the level of increases contained in the financial projection produced for the EBRD and presented as part of the Trans-Caucasian Rail Link Project report. The success of a voluntary staff reduction programme may be impeded by the awarding of large salary increases as it reduces the incentive to opt for voluntary severance. SR will need to make a policy decision in this area regarding the granting of salary increases and the improvement in working conditions during the period of the restructuring.

Expenditure on materials and capital repair grow by 149% during the period of the plan. The increase is due to a combination of local inflation, growth in the level of traffic which results in higher levels of activity and an assumed increase in expenditure of 10% per annum in real terms. The backlog of maintenance activity has resulted in artificially low unit costs and these need to be adjusted upwards.

The locomotive fleet and the rolling stock fleet are much larger than required and therefore the costs of operations are based on operating requirements rather than existing levels of vehicle ownership. Scrapping or disposal of surplus vehicles needs to be addressed by SR during the period covered by the business plan.

Fuel costs rise by 66% during the period of the plan however it has been assumed that fuel prices remain constant in real terms. The increase in expenditure is due to a combination of inflationary increases and higher levels of activity.

Ancillary activity costs are assumed to be phased out by 2002 in line with the restructuring proposals in this area.

The costs of other activities increases in line with inflation.

Depreciation is shown in the Business Plan based on asset values shown in the SR balance sheet and the projected levels are consistent with the figures contained in the EBRD financial projections. The increased charges for depreciation reflect the impact of the proposed investment.

The projected net income shown in the Business Plan is positive through the period 1999 to 2003 however it is assumed that the Government is contributing to the support of socially necessary passenger services from 2001 onwards.

Consolidated Cash Flow

Operating cashflow is positive for the period of the plan which will allow SR to fund a significant amount of maintenance activity to clear the backlog that has arisen in recent years. This rehabilitation work will supplement the investment programme that is being funded by the proposed EBRD loan. The growth in freight traffic provides the funds to support the projected increases in wage rates and higher levels of expenditure on materials and capital repairs. The assumed funding of passenger services by the State contributes 60 million lari cumulatively to the cash flow and overall cashflow would remain positive at a significantly reduced level of contribution.

Consolidated Balance Sheets

Current assets increase from 65.2 million lari in 1998 to 129.8 million lari in 2003 mainly due to the accumulation of a large cash surplus. The cash position is contingent upon the payment of the PSO and in the event that SR does receive a substantial contribution from the State it is likely that the additional cash would be used to fund additional investment. It has been assumed that there will be a significant reduction in the level of accounts receivable with receivable days reducing from 155 days in 1998 to 90 days in 2003. The value of inventory increases due to inflationary prices increases and the assumed increase in the level of expenditure on materials. Improved inventory management practices, however, are assumed to reduce the number of inventory days from 145 days in 1998 to 120 days in 2003.

The increase in the value of fixed assets reflects the investment programme funded by the EBRD and SR's own rehabilitation/investment programme.

Current liabilities increase from 36.1 million lari in 1998 to 48.0 million lari in 2003 largely as a result of the increasing quantity and cost of materials purchased. It has been assumed that the payable days figure is reduced during the period of the plan from an initial figure of 123 in 1998 to 90 days outstanding in 2003.

Long term debt increases from 19.2 million lari in 1999 to 28.1 million in 2003 and the equity and reserves balances grows mainly as a result of accumulated operating surpluses. The debt to equity ratio increases from 5% in 1999 to 8% in 2000 and then declines to 7% by 2003.

1.3 Investment

The investment plan of SR has been the subject of extensive study and evaluation as part of the Trans-Caucasian Rail Link Project and the proposals have been incorporated into the Corporate Financial Model. Brief details of the investment components are given in the table below.

Investment Plan & Sources of Finance				
Project	Cost in US\$ Millions			
	EBRD	TACIS	Local	Total
Track renewal	10.4		2.5	12.9

Track equipment	3.3			3.3
Bridgeworks	1.8		0.5	2.3
Signalling renewal	4.5		2.0	6.5
Telecommunications		6.0	1.0	7.0
Technical Co-operation		1.2		1.2
Total	20.0	7.2	6.0	33.2

The project will be financed by an EBRD Loan of \$20.0 million, and EU grant of US \$7.2 million for the telecommunications component, and US \$6.0 million of local funds.

The financial internal rates of return for the project components have been calculated as part of a previous consultancy project and they are as follows :

Project FIRR by Component (% p.a.)		
Project Component	Cost (US\$ million)	FIRR (%)
Track renewal	12.90	15%
Track equipment	3.30	26%
Bridgeworks	2.30	12%
Signalling renewal	6.50	21%
Telecommunications	7.00	19%
Total	32.00	19%

The main benefits included:

- reduced transit times through increased lines speeds arising from improved track and bridge condition and upgraded signalling;
- reduced track and rolling stock maintenance costs and fuel consumption through improved track condition;
- improved rolling stock utilisation and operating efficiency through the provision of an upgraded communications system.

Other investments by SR to rehabilitated the infrastructure and facilities during the period 1999 to 2003 are projected to be as follows:

Year	Millions Lari
1999	28.3
2000	25.3
2001	24.9
2002	19.0
2003	20.5
Total	118.0

1.4 Financial Plans of the Business Units

1.4.1 Separation of SR departmental costs according to Business Unit

The consolidated financial results provide an overview of the performance of the railways as a total entity. There will be a requirement to produce result in the consolidated format even after restructuring has been completed. In addition to the consolidated figures, however, it will be necessary for SR to produce financial data for each of the Business Units. The structures of these Business Units are currently being prepared and the task of assigning staff and resources to the new units will require a great deal of effort on the part of SR.

For the purpose of preparing a draft business plan the consultants have prepared a tentative split of the current operating department costs using a number of broad assumptions as follows :

Department	Initial cost assignment	Costs charged to
Passenger Services	<ul style="list-style-type: none"> 100 % Passenger Business Unit 	Charged entirely to Passenger Business Unit
Freight Services	<ul style="list-style-type: none"> 100% Freight Business Unit 	Charged entirely to Freight Business Unit
Traffic Department	<ul style="list-style-type: none"> 80% Freight based on station and terminal staff levels 20% Passenger based on station and terminal staff levels 	Charged to Passenger Business Unit and Freight Business Unit based on predetermined split of costs.
Locomotive Department	<ul style="list-style-type: none"> Passenger Drivers assigned to Passenger Business Unit Freight Drivers assigned to Freight Business Unit Balance of Locomotive Department costs assigned to Rolling Stock Business Unit 	Locomotive Department costs charged out to Passenger and Freight based on Traction Unit Kms (i.e Locomotive Kms for Freight and Locomotive Kms plus EMU Km's for Passenger)
Wagon Department	<ul style="list-style-type: none"> 100% to Rolling Stock Business Unit 	100% of costs charged out to Freight Business Unit
Track department	<ul style="list-style-type: none"> 100% to Infrastructure Business Unit 	Charged out to Passenger and Freight based on gross tonne kilometres
Buildings	<ul style="list-style-type: none"> 100% to Infrastructure Business Unit 	Charged out to Passenger and Freight based on gross tonne kilometres
Signalling	<ul style="list-style-type: none"> 100% to Infrastructure Business Unit 	Charged out to Passenger and Freight based on gross tonne kilometres

		kilometres
Electrical	<ul style="list-style-type: none"> 100% to Infrastructure Business Unit 	Charged out to Passenger and Freight based on gross tonne kilometres
Administration	<ul style="list-style-type: none"> Administrative Services Unit 	50% to Freight and 50% to Passenger

1.4.2 Business Unit Cost Drivers

The Business Unit costs have been projected for the period of the plan using a number of specific cost drivers. For strategic planning purposes it is assumed that these **cost drivers** are reliable indicators of the level of activity in the operating departments that make up the business units. The impact of changes in the cost drivers is in addition to the impact of price inflation, changes in real input prices and any cost reduction plans identified for the business.

The main cost drivers that were used in the projection of Business Unit expenditure were are follows :

Passenger Business Unit : Cost Drivers

Department Name	Main Cost Driver
Passenger Services	Passenger Car kilometres
Traffic Department - Passenger	Train kilometres
Driver and Assistant salary costs	Passenger Train kilometres

Freight Business Unit : Cost Drivers

Department Name	Main Cost Driver
Freight Services	Net tonne kilometres
Traffic Department - Freight	Train kilometres
Drivers and assistants salary costs	Freight train kilometres

Rolling Stock Business Unit

Department Name	Main Cost Driver
Locomotive Department - Traction Fuel	Gross tonne kilometres
Locomotive Department - Other costs	Locomotive kilometres
Wagon Maintenance	Wagon kilometres

Infrastructure Business Unit

Department Name	Main Cost Driver
Track department	80% variable with track Kilometres, 20% variable with gross tonne kilometres
Buildings	Track kilometres
Signalling	Track kilometres
Electrical Supply	Track Kilometres

Administrative Services Unit

Department Name	Main Cost Driver
Administration	Number of staff employed

1.4.3 Passenger Business Unit projected income statement

Passenger Revenue: Growth in passenger traffic up to 2003 of 10.0% is modest and the increase in revenue is largely a reflection of the application of a real increase in passenger fares of 5% per annum throughout the period of the plan. Passenger Business Unit revenue, excluding public service obligation payments, is projected to grow by 64.5% between 1998 and 2003.

Cost recovery on passenger services is very low and a decision to increase tariffs in real terms will begin the process of shifting some of the burden for the cost of the services back to the customers. Cross subsidisation of passenger services from profitable freight services must be phased out. Support from the State will be required for essential social services and based on the preliminary allocations of costs to the Passenger Business Unit a figure of 20 million lari per annum has been included from the year 2001. Rationalisation of services is essential if SR is to eliminate any residual losses in the passenger business that remain after the payment of the PSO.

Direct expenditure on passenger services, including the costs of the passenger service department, a share of the traffic department costs and the salary costs of passenger drivers and assistants, grows by 120% during the period of the plan. This reflects increases in real wages, and increased expenditure on materials used in the repair of passenger rolling stock. The repair of passenger rolling stock is currently the responsibility of the passenger services department although this function should be performed by the rolling stock business unit which would then recharge the costs to the Passenger Business Unit.

Historical depreciation costs are constant throughout the period of the plan.

The Passenger Business Unit must bear a charge for the use of infrastructure which is tentatively estimated at 7.2 million lari for 1998 and this grows to 10.6 million lari by 2003 in line with increases in costs of the Infrastructure Business Unit. The charge out is based on passenger train gross tonne kilometres.

Rolling stock charges are estimated at 6.4 million lari for 1998 growing to 10.8 million lari by 2003. These charges are for the use of locomotives and EMU's and the charges are based on the number of traction unit kilometres (locomotive kilometres and EMU kilometres) operated by the passenger business unit.

The Passenger Business unit must also bear a proportion of the costs of the Administration and this charge has initially been set at 50%.

The projected net result for the Passenger Business Unit in 1999 is a loss of 18.9 million lari which rises to 20.9 million lari in 2000. The payment of PSO of 20.0 million lari per annum from 2001 onwards reduces the size of the reported loss to 2.9 million lari in 2001, to 4.8 million in 2002 and to 6.8 million lari in 2003.

1.4.4 Freight Business Unit projected income statement.

Freight Revenue : Growth in freight traffic between 1998 and 2003 is set at 52%. Tariffs on all traffic carried by Georgian Railways is set in either US\$ or Swiss francs and as a consequence of this the local currency yields will vary inversely with changes in the lari exchange rate. The assumption that local yields are adjusted to maintain a constant rate in lari whilst international rates are set to reduce by 3% per annum in real terms, has been retained. Export oil yields (revenue/ntkm) have also been assumed to reduce by a further 5% in real terms in 1998 as a result of low world crude oil prices and competition from Russian rail routes for Tengiz crude.

- **Domestic traffic** is forecast to increase by between 6% and 8% per annum over the period of the plan in line with forecast growth in GDP. Short haul domestic traffic may be lost to competition from road haulage but this represents only a small proportion of SR traffic in total.
- **Exports** are a relatively minor part of total traffic and growth in this area has been set at between 5% and 10% per annum.

- **Imports** of refined oil products are held constant for the period of the plan as increased demand for energy may be met by local production as well as imports through the Black Sea ports. Grain and flour imports are assumed to be constant. Other semi-bulk freight is assumed to grow by 5% per annum with manufactured goods, foodstuffs and imported fuel growing by 10 per cent per annum.
- **Transit** oil traffic is forecast to grow by 10% per annum over the period to 2003 with almost all of the growth occurring in the first three years on the plan. After the initial growth the volumes will stabilise as the reduction in crude oil transport is off-set by increasing volumes of refined products for regional markets.

Direct expenditure on freight services, including the costs of the freight service department, a share of the traffic department costs and the salary costs of freight drivers and assistants, grows by 180% during the period of the plan. This reflects increases in real wages and a growth in expenditure in line with the projected increases in the volume of traffic.

Historical depreciation costs are constant throughout the period of the plan.

The Freight Business Unit must bear a charge for the use of infrastructure which is tentatively estimated at 24.7 million lari for 1998 and this grows to 50.7 million lari by 2003 in line with increases in costs of the Infrastructure Business Unit. The charge out is based on freight train gross tonne kilometres.

Rolling stock charges are estimated at 18.9 million lari for 1998 growing to 47.8 million lari by 2003. These charges are made up of the cost of supplying and maintaining wagons used by the freight business unit and for the use of locomotives. The wagon maintenance costs are separately identified in the SR accounts and can be charged directly to the freight business unit. The charge of locomotive use is based on the number of locomotive kilometres operated in freight service.

The Freight Business Unit must also bear a proportion of the costs of the Administration and this charge has initially been set at 50%.

The projected net result for the Freight Business Unit in 1999 is a profit of 34.4 million lari which declines to 29.7 million lari in 2003. The increases in the infrastructure and rolling stock charges throughout the plan are the main factors that contribute to this deterioration. The increased freight traffic will result in a higher charges from both of the units. The Infrastructure and Rolling Stock Units will be embarking on rehabilitation programmes which will see their cost bases rising throughout the plan period and this will result in higher charges for track access and rolling stock use.

1.4.5 Rolling Stock Business Unit projected income statement

Revenue from the hire of locomotives to external parties and demurrage charges have been included in the rolling stock business unit income statement. These have been projected to rise in line with inflation.

Expenditure is projected to increase by 131% during the period of the plan. The increase is predominantly due to increases in real wages and higher expenditure on materials and capital repair due to a combination of local inflation, growth in the level of traffic which results in higher levels of activity and an assumed increase in expenditure of 10% per annum in real terms. The backlog of maintenance activity has resulted in artificially low unit costs and these need to be adjusted upwards. It should be noted that SR increased its expenditure on wagon maintenance during the first six months of 1998

Passenger coach maintenance costs are not reflected in the income statement as these are currently included in the costs of the passenger service department by SR.

The locomotive fleet and the rolling stock fleet are much larger than required and therefore the costs of operations are based on operating requirements rather than existing levels of vehicle

ownership. Scrapping or disposal of surplus vehicles needs to be addressed by SR during the period covered by the business plan.

Fuel costs rise by 72% during the period of the plan however it has been assumed that fuel prices remain constant in real terms. The increase in expenditure is due to a combination of inflationary increases and higher levels of activity.

The expenditure of the rolling stock business unit is charged out to the Passenger and Freight Business Unit without any mark-up and the net surplus shown in the projected income statement reflects the revenue from external locomotive hire and demurrage charges only.

1.4.6 Infrastructure Business Unit projected income statement

The Infrastructure Business Unit expenditure is projected to increase by 92% during the course of the plan. The bulk of the increase in costs is in the track department reflecting rehabilitation work on track and bridges. As in the other business units labour costs increase significantly due to increases in real wages but the main cost increase is in capital repair work which rises from 10.9 million lari in 1998 to 25.4 million lari in 2003.

Historical depreciation charges rise from 10.7 million lari in 1998 to 13.3 million lari in 2003 due to the impact of capital investment projects.

The Infrastructure Business Unit must bear the costs of the interest charges associated with the EBRD loan which is targeted at Infrastructural improvements.

The entire costs of the Infrastructure Unit is charged out to the Passenger and Freight Business Units based on the gross tonne kilometres calculated for each of those units. The charge out to the Freight Business increases more rapidly due to the increased traffic levels.

1.4.7 Administrative Services Unit projected income statement

The Administrative Services Unit will be responsible for providing support to the other Business Units. It will be responsible for a wide range of activities including the provision of management information systems, centralised accounting and statutory reporting, treasury management, pensions management and legal affairs.

The projected costs of the Administrative Services Unit increase by 27% during the course of the plan. Inflationary costs increases are offset by a general reduction in staffing and expenditure following the restructuring of the railways activities into business units.

The costs of Administration Services have been charged out to the Passenger and Freight Business Units with each of those units bearing an equal proportion of the costs.

Consolidated Income

Georgian Railways : Financial Plan

	Total Cost (000 Lari Current)						
	1997	1998	1999	2000	2001	2002	2003
Passenger Business Unit Total							
Salaries & Social Insurance	1,204	1,665	2,181	2,618	2,978	3,257	3,563
Materials	62	132	157	185	218	260	309
Diesel - Traction	-	-	-	-	-	-	-
Diesel - Other	89	84	91	97	104	113	122
Electricity - Traction	104	87	94	101	109	118	128
Electricity - Other	-	-	-	-	-	-	-
Depreciation	731	2,228	2,241	2,285	2,308	2,353	2,344
Capital Repairs	621	712	847	998	1,177	1,399	1,664
Other	390	832	990	1,169	1,380	1,641	1,953
Total	3,201	5,740	6,601	7,454	8,274	9,141	10,082
Freight Business Unit Total							
Salaries & Social Insurance	2,795	3,264	4,856	6,382	7,459	8,277	9,062
Materials	35	52	70	91	112	135	161
Diesel - Traction	-	-	-	-	-	-	-
Diesel - Other	29	30	37	44	48	53	57
Electricity - Traction	-	-	-	-	-	-	-
Electricity - Other	133	147	180	212	234	257	278
Depreciation	618	1,684	1,694	1,727	1,744	1,778	1,771
Capital Repairs	326	102	138	178	217	262	311
Other	312	-692	935	1,212	1,475	1,780	2,120
Total	4,248	5,971	7,911	9,847	11,288	12,541	13,761
Rolling Stock Business Unit Total							
Salaries & Social Insurance	3,611	3,443	5,009	6,508	7,629	8,500	9,375
Materials	2,459	1,492	1,929	2,435	2,947	3,549	4,235
Diesel - Traction	886	846	979	1,111	1,220	1,336	1,454
Diesel - Other	120	86	107	127	143	159	174
Electricity - Traction	4,122	4,534	5,249	5,954	6,537	7,159	7,795
Electricity - Other	74	30	37	44	50	55	61
Depreciation	2,615	5,420	5,453	5,559	5,614	5,724	5,701
Capital Repairs	3,965	2,866	3,797	4,876	5,951	7,214	8,655
Other	2,395	6,658	9,016	11,751	14,445	17,610	21,220
Total	20,247	25,375	31,576	38,365	44,535	51,306	58,670
Infrastructure Business Unit Total							
Salaries & Social Insurance	5,347	5,914	6,863	8,240	9,312	10,054	10,841
Materials	1,481	1,686	2,030	2,424	2,860	3,367	3,956
Diesel - Traction	-	-	-	-	-	-	-
Diesel - Other	292	362	393	424	454	485	517
Electricity - Traction	-	-	-	-	-	-	-
Electricity - Other	221	314	334	356	378	402	427
Depreciation	2,010	10,734	10,996	12,666	13,776	13,660	13,388
Capital Repairs	13,412	10,960	13,139	15,643	18,431	21,676	25,448
Other	1,576	1,708	2,035	2,413	2,838	3,332	3,908
Total	24,339	31,678	35,792	42,166	48,049	52,976	58,485

Consolidated Income

Corporate Services Total

Salaries & Social Insurance	990	1,474	1,898	2,250	2,528	2,716	2,920
Materials	117	76	78	77	76	74	72
Diesel - Traction	-	-	-	-	-	-	-
Diesel - Other	33	34	35	35	34	33	32
Electricity - Traction	-	-	-	-	-	-	-
Electricity - Other	154	96	99	98	95	93	91
Depreciation	442	256	258	263	265	270	269
Capital Repairs	220	136	140	138	135	132	129
Other	1,879	2,746	2,829	2,795	2,731	2,669	2,609
Total	3,835	4,818	5,337	5,655	5,864	5,988	6,122

Railway Expenditure Total

Salaries & Social Insurance	13,947	15,760	20,808	25,997	29,906	32,804	35,761
Materials	4,154	3,438	4,265	5,213	6,212	7,384	8,732
Diesel - Traction	886	846	979	1,111	1,220	1,336	1,454
Diesel - Other	563	596	663	727	783	842	903
Electricity - Traction	4,226	4,621	5,343	6,055	6,646	7,277	7,922
Electricity - Other	582	587	651	711	758	808	857
Depreciation	6,416	20,322	20,642	22,500	23,707	23,786	23,473
Capital Repairs	18,544	14,776	18,060	21,834	25,911	30,683	36,208
Other	6,552	12,636	15,805	19,340	22,868	27,033	31,810
Total	55,870	73,582	87,216	103,487	118,011	131,954	147,121

Consolidated Income

Georgian Railways : Financial Plan
Table 1 : Consolidate Income Statement

	(Lari million/current prices)						
	1997	1998	1999	2000	2001	2002	2003
Volume (million)							
Passenger (pass-km)	572	468	467	465	464	463	461
Freight (tonne -km)	2,006	2,394	2,811	3,172	3,361	3,507	3,628
Total Traffic Units	2,578	2,862	3,277	3,637	3,825	3,970	4,089
Traffic Units/core employees (000's)	164	182	215	257	293	331	370
Revenue							
Transport							
- Passenger	3.1	4.7	5.1	5.7	6.3	7.0	7.7
- Freight	61.1	81.7	99.0	115.2	126.0	135.8	145.1
- PSO Compensation	-	-	-	-	20.0	20.0	20.0
- Subtotal	64.2	86.4	104.1	120.9	152.3	162.8	172.8
Ancillary/other	14.1	15.0	16.4	16.6	10.7	10.0	10.9
Total Revenue	78.3	101.4	120.5	137.5	163.0	172.7	183.7
Expenditure							
Transport							
- Salaries	13.9	15.8	20.8	26.0	29.9	32.8	35.8
- Materials/other	29.3	30.9	38.1	46.4	55.0	65.1	76.8
- Fuel & Energy	6.3	6.7	7.6	8.6	9.4	10.3	11.1
- Subtotal	49.5	53.3	66.6	81.0	94.3	108.2	123.6
Ancillary/Other	15.0	10.0	12.0	13.2	10.2	10.0	10.9
Total Working Cost	64.5	63.3	78.6	94.2	104.5	118.1	134.5
Depreciation	6.4	20.3	20.6	22.5	23.7	23.8	23.5
Total Operating Cost	70.9	83.6	99.2	116.7	128.2	141.9	158.0
Net Operating Income	7.4	17.8	21.3	20.8	34.8	30.8	25.7
Interest Charges	-	0.2	1.4	2.3	2.3	2.2	2.0
Exchange adjustment EBRD Loan				0.5	0.8	0.9	0.8
Net Income before Tax	7.4	17.6	19.8	18.0	31.7	27.7	22.8
Income Tax	1.5	3.5	4.0	3.6	6.3	5.5	4.6
Net Income After Tax	5.9	14.1	15.9	14.4	25.3	22.2	18.3
Memo only :							
Distribution of net revenue:							
- Reserves	4.1	9.7	11.0	9.9	17.5	15.3	12.6
- SR General Reserve (69%)	1.5	3.5	4.0	3.6	6.3	5.5	4.6
- Social benefits	0.4	0.8	1.0	0.9	1.5	1.3	1.1
Performance Ratios							
Working Ratio (%)	82%	62%	65%	69%	64%	68%	73%
Operating Ratio (%)	91%	82%	82%	85%	79%	82%	86%

Consolidated Income

Georgian Railways : Financial Plan
Table 2: Cashflow Statement 1998 -2003

	(Lari million/current prices)					
	1998	1999	2000	2001	2002	2003
RECEIPTS						
Freight Revenue	81.7	99.0	115.2	126.0	135.8	145.1
Passenger Revenue	4.7	5.1	5.7	6.3	7.0	7.7
Auxiliary Income/Other	15.0	16.4	16.6	10.7	10.0	10.9
Operating Subsidy	-	-	-	20.0	20.0	20.0
Decrease in Accounts Receivable	2.5	-0.6	-3.3	0.5	0.8	1.4
Increase in Accounts Payable	3.0	2.8	3.2	1.3	2.1	2.4
Capital Grant - Repayment of Loans						
Other Grants						
Loans received - EBRD	-	16.5	11.4	-	-	-
Loans received - Other Foreign	0.6	1.3	0.6	-	-	-
Loans received - Local Banks						
Total	107.5	140.6	149.4	164.8	175.6	187.5
PAYMENTS						
Working Expenses	63.3	78.6	94.2	104.5	118.1	134.5
Increase in Inventory	-	0.0	2.0	2.7	3.2	3.3
Capital Investment	25.0	49.0	40.9	24.9	19.0	20.5
Own Uses	4.4	4.9	4.5	7.9	6.9	5.7
Interest - EBRD Loan & Commitment Fee	0.1	1.2	2.0	2.0	1.9	1.8
Interest - Foreign Loans	0.1	0.3	0.3	0.3	0.2	0.2
Loan Repayments - EBRD		-	-	-	2.5	2.6
Loan Repayments - Foreign Loans	-	-	0.3	0.3	0.3	0.3
Interest - Bank Borrowings						
Profit Tax Paid	3.5	4.0	3.6	6.3	5.5	4.6
Total	96.4	139.9	148.6	148.8	157.7	173.4
Cash Increase / (Decrease)	11.2	0.7	0.9	16.0	17.9	14.1
Balance Previous Year	4.4	15.6	16.2	17.1	33.1	51.0
Cash at Year End	15.6	16.2	17.1	33.1	51.0	65.1
Debt Service Coverage (Times) (Available Cash/Interest + Repayments)	66.0	11.4	6.7	12.7	10.3	13.3

Consolidated Income

Georgian Railways : Financial Plan
Table 3 : Consolidated Balance Sheet 1997 -2003

	(Lari million/current prices)						
	1997	1998	1999	2000	2001	2002	2003
Assets							
Current Assets							
Cash	4.4	15.6	16.2	17.1	33.1	51.0	65.1
Receivables	37.2	34.7	35.3	38.5	38.0	37.2	35.8
Inventories	14.9	14.9	16.9	19.7	22.4	25.6	28.9
Subtotal	56.5	65.2	68.4	75.3	93.5	113.8	129.8
Fixed Assets							
Book Values	310.7	335.7	384.7	425.6	450.5	469.5	490.0
Less: Accumulated Depreciation		20.3	41.0	63.5	87.2	111.0	134.4
Net Book Value	310.7	315.4	343.7	362.1	363.3	358.5	355.6
Other Assets	0.3	0.3	0.3	0.3	0.3	0.3	0.3
Total Assets	367.5	380.8	412.4	437.8	457.1	472.6	485.6
Current Liabilities							
Short term Debts	1.8	1.8	1.8	1.8	1.8	1.8	1.8
Accounts Payable	18.3	21.3	24.1	27.4	28.6	30.7	33.2
Other	13	13	13	13	13	13	13
Subtotal	33.1	36.1	38.9	42.2	43.4	45.5	48.0
Long Term Debts							
EBRD	0	0	16.5	28.4	29.2	27.6	25.9
Other	0.8	1.4	2.7	3.0	2.8	2.5	2.2
Equity & Reserves - opening	333.6	333.6	333.6	333.6	333.6	333.6	333.6
Profit/Loss - current		9.7	11.0	9.9	17.5	15.3	12.6
Profit/loss - cumulative		9.7	20.7	30.6	48.1	63.4	76.0
Total Liabilities	367.5	380.8	412.4	437.8	457.1	472.6	485.6
Current Ratio	1.7	1.8	1.8	1.8	2.2	2.5	2.7
Acid Test Ratio	1.3	1.4	1.3	1.3	1.6	1.9	2.1
Debt/Equity Ratio	0%	0%	5%	8%	8%	7%	7%

Consolidated Income

Reconciliation

Passenger Business Unit

Revenue	3,100	4,700	5,116	5,672	26,289	26,973	27,732
Costs	2,470	3,512	4,360	5,169	5,966	6,788	7,739
Depreciation	731	2,228	2,241	2,285	2,308	2,353	2,344
Result	- 101	- 1,040	- 1,485	- 1,781	18,015	17,832	17,649

Freight Business Unit

Revenue	61,100	81,700	98,991	115,248	126,041	135,805	145,079
Costs	3,630	4,287	6,217	8,120	9,544	10,763	11,990
Depreciation	618	1,684	1,694	1,727	1,744	1,778	1,771
Result	56,852	75,729	91,081	105,400	114,753	123,264	131,318

Rolling Stock Business Unit

Revenue (loco hire/demurrage)	6,900	7,000	7,644	8,347	9,115	9,954	10,870
Costs	17,632	19,955	26,124	32,806	38,922	45,582	52,969
Depreciation	2,615	5,420	5,453	5,559	5,614	5,724	5,701
Result	- 13,347	- 18,375	- 23,932	- 30,018	- 35,420	- 41,353	- 47,800

Infrastructure

Revenue	0	0	0	0	0	0	0
Costs	22,329	20,944	24,795	29,500	34,273	39,316	45,098
Depreciation	2,010	10,734	10,996	12,666	13,776	13,660	13,388
Result	- 24,339	- 31,678	- 35,792	- 42,166	- 48,049	- 52,976	- 58,485

Administrative services

Revenue	0	0	0	0	0	0	0
Costs	3,393	4,562	5,079	5,392	5,599	5,718	5,853
Depreciation	442	256	258	263	265	270	269
Result	- 3,835	- 4,818	- 5,337	- 5,655	- 5,864	- 5,988	- 6,122

Ancillary Services/other Costs

Revenue	7,200	8,000	8,736	8,204	1,568	-	-
Costs	15,000	10,000	12,000	13,209	10,174	9,954	10,870
Result	- 7,800	- 2,000	- 3,264	- 5,004	- 8,606	- 9,954	- 10,870

Total Revenue	78,300	101,400	120,487	137,472	163,014	172,732	183,680
Total Costs	64,454	63,260	78,574	94,196	104,479	118,121	134,517
Depreciation	6,416	20,322	20,642	22,500	23,707	23,786	23,473
Operating Costs	70,870	83,582	99,216	116,696	128,186	141,907	157,990

Consolidated Income

Interest Charges	-	236	1,426	2,787	3,142	3,090	2,859
	0	0	0	0	0	0	0
Net Income before tax	7,430	17,582	19,845	17,989	31,666	27,735	22,830
	0.0	0.0	-	-	-	-	-

Working Capital

Georgian Railways
Table 4 : Working Capital Calculation

	1997	1998	1999	2000	2001	2002	2003
Receivables Days	166	155	130	122	110	100	90
Inventory Days	143	145	135	131	127	124	120
Payables days	124	123	112	106	100	95	90
Millions lari							
Receivables	37.2	34.7	35.3	38.5	38.0	37.2	35.8
Inventory	14.9	14.9	16.9	19.7	22.4	25.6	28.9
Payables	18.3	21.3	24.1	27.4	28.6	30.7	33.2
Working Capital	33.8	28.3	28.1	30.9	31.8	32.1	31.5
Change in working capital	-	5.5 -	0.2	2.8	0.9	0.3 -	0.6
Decrease in receivables		2.5 -	0.6 -	3.3	0.5	0.8	1.4
Increase in Inventory	-	0.0	2.0	2.8	2.7	3.2	3.3
Increase in Payables		3.0	2.8	3.2	1.3	2.1	2.4

Loans

Georgian Railways
Table 6 : Loan Schedule 1998 - 2003

	1997	1998	1999	2000	2001	2002	2003
EBRD Loan (US\$)							
Facility (Us\$ million)	20						
Term - years	15						
Grace period	3						
Loan Drawdown US\$ (million)		-	12.0	8.0	-	-	-
Cumulative Drawdown		-	12.0	20.0	20.0	20.0	20.0
Loan Repayment -US\$ (million)						1.7	1.7
Loan Balance - Us\$ (million)			12.0	20.0	20.0	18.3	16.7
EBRD Loan (Local Currency Equivalent)							
Loan Drawdown (lari million)			16.5	11.4	0.0	0.0	0.0
Cumulative Drawdown		-	16.5	27.9	27.9	27.9	27.9
Loan Repayment -(lari million)			-	-	-	2.5	2.6
Loan Balance - (lari million)			16.5	27.9	27.9	25.4	22.8
Restated loan balance at current exchange rates			16.5	28.4	29.2	27.6	25.9
Exchange adjustment on loan			-	0.5	1.3	2.2	3.1
Annual exchange write-off required				0.5	0.8	0.9	0.8
Interest on EBRD Loan	Rate 7.00%		1.2	2.0	2.0	1.9	1.8
Commitment fee							
Commitment fee (EBRD) (million \$)	0.50%	0	0.1	0.0	0.0	0.0	0.0
Commitment fee (EBRD) (million lari)		0.0	0.1	0.0	0.0	0.0	0.0
Other Foreign Loans							
Facility (million lari)	3.3						
Term - years	15						
Grace period	3						
Loan Drawdown (lari million)		0.8	0.6	1.3	0.6	-	-
Cumulative Drawdown		0.8	1.4	2.7	3.3	3.3	3.3
Loan Repayment - (lari million)		-	-	-	0.3	0.3	0.3
Loan Balance - (lari million)		0.8	1.4	2.7	3.0	2.8	2.2
Interest on Foreign Loans	Rate		7.0%	9.9%	10.0%	9.9%	10.1%
Interest on Foreign Loans - Paid (million lari)			0.1	0.3	0.3	0.3	0.2
Total Interest payment (Lari Millions)		-	0.1	1.4	2.3	2.3	2.2
Exchange Rate adjustment		-	-	-	0.5	0.8	0.8
Commitment Fee		0.0	0.1	0.0	0.0	0.0	0.0
Total Loan Interest & Chargres (to Infrastructure Unit)		-	0.2	1.4	2.8	3.1	2.9

Input Data - Investment

Georgian Railways
Table 7 : Summary of Investment 1998 - 2003

	Cost	1997 WDV	Investment					
			1998	1999	2000	2001	2002	2003
Project Investment (\$ million)								
Land and Improvements			0	15	11	0	0	0
Machinery and equipment			0	0	0	0	0	0
Office and workshop equipment			0	0	0	0	0	0
Other assets			0	0	0	0	0	0
WIP			0	0	0	0	0	0
Total (\$m)			0	15	11	0	0	0
Project Investment (Lari Million)								
Land and Improvements			0	20.7	15.6	0.0	0.0	0.0
Machinery and equipment			0	0	0	0	0	0
Office and workshop equipment			0	0	0	0	0	0
Other assets			0	0	0	0	0	0
WIP			0	0	0	0	0	0
Total (lari million)			0	20.7	15.6	0.0	0.0	0.0
Other Investments (Lari million)								
Land and Improvements	6.75%	163.6	15.0	15.8	14.0	12.0	9.5	10.1
Machinery and equipment	6.75%	117	10.0	12.5	11.3	12.9	9.5	10.4
Office and workshop equipment	6.75%	1.5	0.0	0.0	0.0	0.0	0.0	0.0
Other assets	6.75%	4.2	0.0	0.0	0.0	0.0	0.0	0.0
WIP	6.75%	24.4	0.0	0.0	0.0	0.0	0.0	0.0
Total		310.7	25.0	28.3	25.3	24.9	19.0	20.5
Total Investment (1998 Lari million)								
Land and Improvements			15.0	36.5	29.6	12.0	9.5	10.1
Machinery and equipment			10.0	12.5	11.3	12.9	9.5	10.4
Office and workshop equipment			0.0	0.0	0.0	0.0	0.0	0.0
Other assets			0.0	0.0	0.0	0.0	0.0	0.0
WIP			0.0	0.0	0.0	0.0	0.0	0.0
Total			25.0	49.0	40.9	24.9	19.0	20.5
Rolling Stock Investment								
		Available Fleet	Price (1998 lari 000)					
Linehaul locomotives		75	400					
Carriages		250	100					
EMU		60	200					
Wagons (oil)		1000	10					
Wagons (other)		1400	10					
External source of funds								
EBRD (US\$ million)		0	0	12	8	0	0	0
EBRD (million lari current)		0	0	16.5	11.4	0	0	0
Other foreign loans (1998 million lari)		0.7	1.3	1.4	0	0	0	0
Local bank Loans (1998 million lari)		0	0	0	0	0	0	0
Borrowing terms								
	Term	Grace Period	interest rate					
EBRD loan	15	3	7%	7%	7%	7%	7%	7%
Other foreign loans	15	3	7.0%	9.9%	10.0%	9.9%	10.1%	10.0%
Local bank loans	15	0	22.0%	18.0%	15.0%	12.0%	12.0%	12.0%
EBRD commitment fee			0.50%					
Interest earned								
Government equity contribution			10.0%	8.0%	7.0%	6.0%	6.0%	6.0%
PSO contribution (1998 million lari)			0	0	0	0	0	0
					1.0	2.0	3.0	
Distribution of net income								
Taxes	20%							
Reserves	69%							
SR - General Reserve	25%							
- social benefits	6%							
total	100%							

Georgian Railways
Table 8 : TRAFFIC FORECASTS

	1997	1998	1999	2000	2001	2002	2003	1998	1999	2000	2001	2002	2003
Factor for Elasticity Effect													
Passengers (000's)													
International/long distance	1,936	1,921	1,919	1,918	1,916	1,915	1,913		0.975	0.975	0.975	0.975	0.975
Suburban	2,429	1,731	1,713	1,695	1,678	1,660	1,643		0.975	0.975	0.975	0.975	0.975
Total	4,365	3,652	3,632	3,613	3,594	3,575	3,556						
Passenger -km (million)													
International/long distance	344	363	363	362	362	362	362	189	189	189	189	189	189
Suburban	228	105	104	103	102	101	100	60.7	60.7	60.7	60.7	60.7	60.7
Total	572	468	467	465	464	463	461						
Passenger Revenue (millions lari)													
Total	3.1	4.7	5.1	5.7	6.3	7.0	7.7	0.9860	1.0964	1.2192	1.3558	1.5076	1.6765
Suburban	-	-	-	-	-	-	-						
Total	3.1	4.7	5.1	5.7	6.3	7.0	7.7						
Freight													
Tonnes(000)													
Import/Transit Oil	3,251	4,088	5,018	5,836	6,161	6,314	6,346		1.02	1.02	1.02	1.02	1.02
Other International	2,305	2,695	3,068	3,364	3,581	3,825	4,099		1.01	1.01	1.01	1.01	1.01
Other Domestic	1,675	1,759	1,870	1,990	2,119	2,259	2,409		1.01	1.01	1.01	1.01	1.01
Total	7,231	8,542	9,956	11,190	11,861	12,397	12,854						
Tonne-km (millions)													
Import/Transit Oil	995	1,251	1,536	1,786	1,885	1,932	1,942		306	306	306	306	306
Other International	681	796	906	994	1,058	1,130	1,211		295	295	295	295	295
Other Domestic	330	347	369	393	418	446	475		197	197	197	197	197
Total	2,006	2,394	2,811	3,172	3,361	3,507	3,628						
Freight Revenue (Million Lari)													
Import/Transit Oil	29.3	41.8	52.9	63.5	69.2	73.2	76.0	3.341	3.448	3.559	3.672	3.790	3.911
Other International	22.3	29.1	34.2	38.7	42.5	46.8	51.8	3.656	3.773	3.893	4.018	4.147	4.279
Other Domestic	9.5	10.8	11.9	13.0	14.3	15.7	17.3	3.112	3.212	3.315	3.421	3.530	3.643
Total	61.1	81.7	99.0	115.2	126.0	135.8	145.1	3.413					
Other revenues (million Lari)													
Ancillary services	7.2	8.0	8.7	8.2	1.6	0.0	0.0						
Other operating (Loco hire, demurrage)	6.9	7.0	7.6	8.3	9.1	10.0	10.9						
Other businesses	-	-	0.0	0.0	0.0	0.0	0.0						
Subtotal	14.1	15.0	16.4	16.6	10.7	10.0	10.9						
Public Service Obligation													
Total Revenue (million lari current)	78.3	101.4	120.5	137.5	163.0	172.7	183.7						
inflation factor													
Unit labour factor	100%	100%	106%	113%	120%	127%	135%						
Exchange rate	1.34	1.34	1.38	1.42	1.46	1.51	1.55						

Passenger Unit Plan

Georgian Railways
Table 9 : Passenger Business Unit : Financial Plan

	Total Cost (000 Lari Current)						
	1997	1998	1999	2000	2001	2002	2003
Passenger Services Revenue	3,100	4,700	5,116	5,672	6,289	6,973	7,732
Public Service Obligation	-	-	-	-	20,000	20,000	20,000
Total Passenger Revenue	3,100	4,700	5,116	5,672	26,289	26,973	27,732
Salaries & Social Insurance	1,204	1,665	2,181	2,618	2,978	3,257	3,563
Materials	62	132	157	185	218	260	309
Diesel - Traction	-	-	-	-	-	-	-
Diesel - Other	89	84	91	97	104	113	122
Electricity - Traction	104	87	94	101	109	118	128
Electricity - Other	-	-	-	-	-	-	-
Capital Repairs	621	712	847	998	1,177	1,399	1,664
Other	390	832	990	1,169	1,380	1,641	1,953
Subtotal Passenger Expenditure	2,470	3,512	4,360	5,169	5,966	6,788	7,739
Operating Surplus/Deficit	630	1,188	757	504	20,323	20,185	19,993
Depreciation	731	2,228	2,241	2,285	2,308	2,353	2,344
Infrastructure Charges	6,270	7,191	7,510	8,323	9,141	9,805	10,603
Rolling Stock Charges	6,032	6,450	7,225	8,034	8,873	9,798	10,820
Administrative Services Charge	1,918	2,409	2,668	2,827	2,932	2,994	3,061
Net Income/Loss	- 14,320	- 17,090	- 18,889	- 20,965	- 2,931	- 4,765	- 6,836

Passenger Unit Plan

Georgian Railways
Table 10 : Passenger Business Unit : Financial Plan

	Total Cost (000 Lari Current)						
	1997	1998	1999	2000	2001	2002	2003
Passenger Services							
Salaries & Social Insurance	572	938	1,229	1,470	1,666	1,823	1,994
Materials	56	122	145	171	201	240	285
Diesel - Other	83	78	84	90	97	105	113
Electricity - Other	75	54	58	63	67	72	78
Depreciation	577	1,812	1,823	1,858	1,877	1,914	1,906
Capital Repairs	564	690	820	967	1,139	1,355	1,612
Other	314	686	816	961	1,133	1,347	1,602
Total	2,241	4,380	4,976	5,580	6,180	6,855	7,591
Traffic Department - Passenger							
Salaries & Social Insurance	315	343	450	545	624	685	751
Materials	6	10	12	14	17	20	24
Diesel - Other	6	6	6	7	8	8	9
Electricity - Other	29	33	36	39	42	45	49
Depreciation	154	416	419	427	431	439	438
Capital Repairs	57	22	26	31	37	44	53
Other	76	146	174	207	247	294	351
Total	643	976	1,123	1,270	1,406	1,537	1,674
Drivers & Assistants - Passenger							
Salaries & Social Insurance	317	384	502	603	688	750	818

Freight Unit Plan

Georgian Railways
Table 11 : Freight Business Unit : Financial Plan

	Total Cost (000 Lari Current)						
	1997	1998	1999	2000	2001	2002	2003
Freight Revenue	61,100	81,700	98,991	115,248	126,041	135,805	145,079
Salaries & Social Insurance	2,795	3,264	4,856	6,382	7,459	8,277	9,062
Materials	35	52	70	91	112	135	161
Diesel - Traction	-	-	-	-	-	-	-
Diesel - Other	29	30	37	44	48	53	57
Electricity - Traction	-	-	-	-	-	-	-
Electricity - Other	133	147	180	212	234	257	278
Capital Repairs	326	102	138	178	217	262	311
Other	312	692	935	1,212	1,475	1,780	2,120
Total	3,630	4,287	6,217	8,120	9,544	10,763	11,990
Operating Surplus/Deficit	57,470	77,413	92,775	107,128	116,497	125,042	133,089
Depreciation	618	1,684	1,694	1,727	1,744	1,778	1,771
Infrastructure Charges	18,069	24,723	29,707	36,630	42,050	46,261	50,741
Rolling Stock Charges	14,215	18,925	24,351	30,332	35,662	41,508	47,850
Administrative Services Charge	1,918	2,409	2,668	2,827	2,932	2,994	3,061
Net Income/Loss	22,650	29,672	34,355	35,611	34,108	32,500	29,666

Freight Unit Plan

Georgian Railways
Table 12 : Freight Business Unit : Financial Plan

	Total Cost (000 Lari Current)						
	1997	1998	1999	2000	2001	2002	2003
Freight Services							
Salaries & Social Insurance	269	358	541	724	862	967	1075
Materials	9	14	19	25	31	38	46
Diesel - Other	3	6	7	9	10	11	12
Electricity - Other	15	14	17	21	24	26	29
Depreciation	5	20	20	21	21	21	21
Capital Repairs	97	12	16	22	27	33	40
Other	10	110	151	199	246	300	363
Total	408	534	773	1020	1221	1396	1585
Traffic Department - Freight							
Salaries & Social Insurance	1256	1373	2039	2673	3117	3454	3774
Materials	26	38	51	66	80	97	115
Diesel - Other	26	24	29	35	38	42	45
Electricity - Other	118	133	163	191	211	231	249
Depreciation	613	1664	1674	1707	1723	1757	1750
Capital Repairs	229	90	121	157	190	229	272
Other	302	582	784	1013	1228	1480	1757
Total	2570	3904	4862	5842	6588	7289	7962
Drivers & Assistants - Freight							
Salaries & Social Insurance	1270	1533	2276	2985	3480	3856	4214

Rolling Stock Business Plan

Georgian Railways
Table 13 : Rolling Stock Business Unit : Financial Plan

	Total Cost (000 Lari Current)						
	1997	1998	1999	2000	2001	2002	2003
Rolling Stock Revenue							
External Loco hire/demurrage etc	6,900	7,000	7,644	8,347	9,115	9,954	10,870
Salaries & Social Insurance	3,611	3,443	5,009	6,508	7,629	8,500	9,375
Materials	2,459	1,492	1,929	2,435	2,947	3,549	4,235
Diesel - Traction	886	846	979	1,111	1,220	1,336	1,454
Diesel - Other	120	86	107	127	143	159	174
Electricity - Traction	4,122	4,534	5,249	5,954	6,537	7,159	7,795
Electricity - Other	74	30	37	44	50	55	61
Depreciation	2,615	5,420	5,453	5,559	5,614	5,724	5,701
Capital Repairs	3,965	2,866	3,797	4,876	5,951	7,214	8,655
Other	2,395	6,658	9,016	11,751	14,445	17,610	21,220
Total Expenditure	20,247	25,375	31,576	38,365	44,535	51,306	58,670
Passenger Business Unit Charges	6,032	6,450	7,225	8,034	8,873	9,798	10,820
Freight Business Unit Charges	14,215	18,925	24,351	30,332	35,662	41,508	47,850
Total Charges	20,247	25,375	31,576	38,365	44,535	51,306	58,670
Net Surplus/Deficit	6,900	7,000	7,644	8,347	9,115	9,954	10,870

Georgian Railways
Table 14 : Rolling Stock Business Unit : Financial Plan

	Total Cost (000 Lari Current)						
	1997	1998	1999	2000	2001	2002	2003
Locomotives Department - Passenger							
(excl Drivers & Assistants)							
Salaries & Social Insurance	675	815	1,065	1,280	1,460	1,591	1,735
Materials	558	551	653	774	917	1,087	1,289
Diesel - Traction	461	440	475	509	546	589	637
Diesel - Other	-	-	-	-	-	-	-
Electricity - Traction	2,143	2,358	2,546	2,729	2,926	3,159	3,412
Electricity - Other	-	-	-	-	-	-	-
Depreciation	572	1,242	1,249	1,274	1,286	1,312	1,306
Capital Repairs	1,195	606	718	851	1,009	1,196	1,417
Other	428	438	519	615	729	864	1,024
Total	6,032	6,450	7,225	8,034	8,873	9,798	10,820
Locomotives Department - Freight							
(excl Drivers & Assistants)							
Salaries & Social Insurance	623	752	1,117	1,464	1,707	1,892	2,067
Materials	516	509	686	886	1,074	1,294	1,537
Diesel - Traction	425	406	504	602	674	746	818
Diesel - Other	-	-	-	-	-	-	-
Electricity - Traction	1,979	2,176	2,703	3,224	3,612	4,000	4,383
Electricity - Other	-	-	-	-	-	-	-
Depreciation	528	1,146	1,153	1,175	1,187	1,210	1,205
Capital Repairs	1,104	560	754	975	1,182	1,424	1,691
Other	395	404	544	703	853	1,027	1,220
Total	5,570	5,953	7,461	9,030	10,289	11,593	12,920
Wagons Service							
Salaries & Social Insurance	2,313	1,876	2,928	3,763	4,463	5,017	5,573
Materials	1,385	432	591	775	955	1,168	1,410
Diesel - Other	120	86	107	127	143	159	174
Electricity - Other	74	30	37	44	50	55	61
Depreciation	1,515	3,032	3,050	3,110	3,140	3,202	3,189
Capital Repairs	1,666	1,700	2,325	3,049	3,760	4,595	5,547
Other	1,572	5,816	7,953	10,432	12,863	15,719	18,976
Total	8,645	12,972	16,890	21,302	25,374	29,915	34,930

Infrastructure Business Unit

Georgian Railways
Table 16 : Infrastructure Business Unit : Financial Plan

	Total Cost (000 Lari Current)						
	1997	1998	1999	2000	2001	2002	2003
Track							
Salaries & Social Insurance	3036	3378	3598	4369	4963	5380	5818
Materials	1273	1518	1833	2195	2592	3054	3590
Diesel - Other	200	238	261	284	305	327	349
Electricity - Other	33	28	31	33	36	38	41
Depreciation	1552	8466	8673	9990	10866	10774	10559
Capital Repairs	9703	8466	10226	12240	14455	17032	20022
Other	697	1014	1225	1466	1731	2040	2398
Total	16494	23108	25847	30577	34949	38645	42778
Buildings							
Salaries & Social Insurance	69	90	116	137	154	166	178
Materials	0	2	2	3	3	4	4
Diesel - Other	0	0	0	0	0	0	0
Electricity - Other	12	22	23	25	26	28	30
Depreciation	166	656	672	774	842	835	818
Capital Repairs	1383	700	818	955	1116	1304	1523
Other	22	26	30	35	41	48	57
Total	1652	1496	1662	1930	2183	2384	2610
Signalling							
Salaries & Social Insurance	1016	1140	1468	1740	1955	2101	2258
Materials	65	78	91	106	124	145	170
Diesel - Other	31	58	62	65	69	74	78
Electricity - Other	176	178	189	201	213	226	240
Depreciation	292	576	590	680	739	733	718
Capital Repairs	780	350	409	478	558	652	761
Other	199	180	210	246	287	335	392
Total	2559	2560	3019	3515	3946	4266	4618
Electricity							
Salaries & Social Insurance	1226	1306	1682	1993	2239	2407	2587
Materials	143	88	103	120	140	164	191
Diesel - Other	61	66	70.1	74	79	84	89
Electricity - Other	0	86	91	97	103	109	116
Depreciation	0	1036	1061	1222	1330	1318	1292
Capital Repairs	1546	1444	1687	1971	2302	2689	3142
Other	658	488	570	666	778	909	1062
Total	3634	4514	5264	6144	6972	7681	8479

Administrative Services

Georgian Railways
Table 17 : Administrative Services Unit : Financial Plan

	Total Cost (000 Lari Current)						
	1997	1998	1999	2000	2001	2002	2003
Administration							
Salaries & Social Insurance	990	1474	1898	2250	2528	2716	2920
Materials	117	76	78	77	76	74	72
Diesel - Other	33	34	35	35	34	33	32
Electricity - Other	154	96	99	98	95	93	91
Depreciation	442	256	258	263	265	270	269
Capital Repairs	220	136	140	138	135	132	129
Other	1879	2746	2829	2795	2731	2669	2609
Total Expenditure	3835	4818	5337	5655	5864	5988	6122
Passenger Business Unit Charge 50%	1,918	2,409	2,668	2,827	2,932	2,994	3,061
Freight Business Unit Charge (50%)	1,918	2,409	2,668	2,827	2,932	2,994	3,061

Ancillary Services

Georgian Railways
Table 18 : Ancillary Services : Financial Plan

	Total Cost (000 Lari Current)						
	1997	1998	1999	2000	2001	2002	2003
Ancillary Services							
Revenue							
- Ancillary	7,200	8,000	8,736	8,204	1,568	-	-
Total	7,200	8,000	8,736	8,204	1,568	-	-
Costs	8,100	3,000	4,356	4,861	1,059	-	-
Surplus/(Deficit)	-	900	4,380	3,343	509	-	-
<hr/>							
Other Costs	6,900	7,000	7,644	8,347	9,115	9,954	10,870
<hr/>							

Input data - Traffic & Revenue

Georgian Railways
Table 19 : TRAFFIC AND REVENUE

	Actual		Forecast Growth (% pa)					Fare Elasticity
	1997	1998	1999	2000	2001	2002	2003	
ECONOMIC DATA								
Inflation								
Cumulative inflation			6.2%	6.2%	6.2%	6.2%	6.2%	
Increase in wages (real)			100%	106.2%	112.8%	119.8%	127.2%	135.1%
Exchange rate			25%	20%	15%	10%	10%	
Exchange Rate projected		1.34	2.9%	3.0%	2.9%	3.1%	3.0%	
			1.38	1.42	1.46	1.51	1.55	
TRAFFIC DATA								
Passengers (000's)								
			Growth in base volume (% pa) (before tariff effects)					
International/long distance	1936	1921	2.48%	2.48%	2.48%	2.48%	2.48%	-0.5
Suburban	2429	1731						
Total	4365	3652	1.5%	1.5%	1.5%	1.5%	1.5%	-0.5
Passenger -km (million)								
			Growth in average trip length (% pa)					
International/long distance	344	363	0%	0%	0%	0%	0%	
Suburban	228	105						
Total	572	468	0%	0%	0%	0%	0%	
Passenger Revenue (millions lari)								
			Real price increase (%pa)					
International/long distance	3.1	4.7	5%	5%	5%	5%	5%	
Suburban	0.0	0.0						
Total	3.1	4.7	5%	5%	5%	5%	5%	
Freight								
Tonnes(000)								
			Base volume growth (%pa) (before tariff effects)					
Import/Transit Oil	3251	4088	20.9%	14.6%	4.0%	1.0%	-1.0%	-0.5
Other international	2305	2695	13.2%	9.0%	5.8%	6.2%	6.5%	-0.2
Other Domestic	1675	1759	5.4%	5.5%	5.5%	5.6%	5.7%	-0.3
Total	7231	8542						
Tonne-km (millions)								
			Growth in average haul (%pa)					
Import/Transit Oil	995	1251	0%	0%	0%	0%	0%	
Other international	681	796	0%	0%	0%	0%	0%	
Other Domestic	330	347	0%	0%	0%	0%	0%	
Total	2006	2394	0%	0%	0%	0%	0%	
Freight Revenue (Million Lari)								
			Real price increase (%pa)					
Import/Transit Oil	29.3	41.8	-3.0%	-3.0%	-3.0%	-3.0%	-3.0%	
Other international	22.3	29.1	-3.0%	-3.0%	-3.0%	-3.0%	-3.0%	
Other Domestic	9.5	10.8	-3.0%	-3.0%	-3.0%	-3.0%	-3.0%	
Total	61.1	81.7	-3.0%	-3.0%	-3.0%	-3.0%	-3.0%	
Other revenues (million Lari)								
			Growth in other income (real % pa)					
Ancillary services	7.2	8	3%	3%	0%	0%	0%	
Other operating (Loco hire, demurrage)	6.9	7	3%	3%	3%	3%	3%	
Other	0	0	3%	3%	3%	3%	3%	
Subtotal	14.1	15	3%	3%	3%	3%	3%	
TOTAL REVENUES (million)	78.3	101.4						

Georgian Railways
Table 20 : Input Data : Operating resources

	1997	1998	1999	2000	2001	2002	2003
PASSENGER OPERATIONS							
Electric Loco's- in service	23	24	24	24	23	22	21
Diesel Loco's - in service	2	2	2	2	2	2	2
Train Km. Electric (000) 90%	1,623	1,623	1,646	1,670	1,695	1,719	1,744
Train Km. Diesel (000) 10%	180	180	183	186	188	191	194
Total	1,803	1,803	1,829	1,856	1,883	1,910	1,938
Locomotives per train - Electric	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Locomotives per train - Diesel	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Passenger coaches per Loco hauled train	8.3	8.3	8.3	8.2	8.1	8.1	8.1
Passenger Coach Vehicle tare	64.0	64.0	64.0	64.0	64.0	64.0	64.0
Locomotive tare	180.0	180.0	180.0	180.0	180.0	180.0	180.0
Passenger Coach Fleet	405	405	395	383	372	364	352
EMU's in service	28	28	28	28	28	28	28
EMU Train Km (000)	1200	1200	1234	1269	1305	1342	1380
Units per EMU	4.0	4.0	4.0	4.0	4.0	4.0	4.0
EMU Passenger Car Km (million)	4.8	4.8	4.9	5.1	5.2	5.4	5.5
EMU vehicle tare	53	53	53	53	53	53	53
FREIGHT OPERATIONS							
Electric Loco's- in service	55	55	62	67	69	69	68
Diesel Loco's - in service	0	0	0	0	0	0	0
Wagons per Train	38.8	38.8	39.4	40.0	40.7	41.3	42.0
Locomotives per train - Electric	1.60	1.60	1.60	1.60	1.60	1.60	1.60
Locomotives per train - Diesel	1.60	1.60	1.60	1.60	1.60	1.60	1.60
Wagon Fleet							
Oil Tanks	1471	1471	1630	1732	1737	1718	1687
Other wagons	2522	2522	2853	3095	3168	3199	3205
Total	3993	3993	4483	4827	4905	4917	4892
Loaded Tonnes per wagon							
Oil Wagons	52.2	52.4	52.8	53.2	53.6	53.6	54
Other wagons	47.0	46.8	46.6	46.6	46.6	46.4	46.3
Empty Wagon Return %							
Oil Wagons	100%	100%	100%	100%	100%	100%	100%
Other wagons	85%	85%	85%	85%	85%	85%	85%
Locomotive tare - Electric Locos	196	196	196	196	196	196	196
Locomotive tare - Diesel Locos	196	196	196	196	196	196	196
Wagon tare	23	23	23	23	23	23	23
INFRASTRUCTURE							
Track Kms	990	990	990	990	990	990	990
Stations	90	90	90	90	90	90	90
STAFF NUMBERS - Railways							
	15695	15695	15225	14163	13033	11993	11037

Georgian Railways
Table 21-1 :INPUT DATA - FINANCIAL

FINANCIAL INPUTS (000 Lari)	1997	1998	Cost reduction / increase %					Cost Driver
			1999	2000	2001	2002	2003	
Passenger Services								
Salaries & Social Insurance	572	938	-3.0%	-7.0%	-8.0%	-8.0%	-8.0%	Car Km.
Materials	56	122	10%	10%	10%	10%	10%	Car Km.
Diesel - Traction	0		0%	0%	0%	0%	0%	Gross tonne Km.
Diesel - Other	83	78	0%	0%	0%	0%	0%	Car Km.
Electricity - Traction	0		0%	0%	0%	0%	0%	Gross tonne Km.
Electricity - Other	75	54	0%	0%	0%	0%	0%	Car Km.
Depreciation	577	1812	0%	0%	0%	0%	0%	calculated
Capital Repairs	564	690	10%	10%	10%	10%	10%	Car Km.
Other	314	686	10%	10%	10%	10%	10%	Car Km.
Total	2241	4380						
Freight Department								
Salaries & Social Insurance	269	358	-3.0%	-7.0%	-8.0%	-8.0%	-8.0%	Ntkm.
Materials	9	14	10%	10%	10%	10%	10%	Ntkm.
Diesel - Traction	0	0	0%	0%	0%	0%	0%	Gross tonne Km.
Diesel - Other	3	6	0%	0%	0%	0%	0%	Ntkm.
Electricity - Traction	0	0	0%	0%	0%	0%	0%	Gross tonne Km.
Electricity - Other	15	14	0%	0%	0%	0%	0%	Ntkm.
Depreciation	5	20	0%	0%	0%	0%	0%	calculated
Capital Repairs	97	12	10%	10%	10%	10%	10%	Ntkm.
Other	10	110	10%	10%	10%	10%	10%	Ntkm.
Total	408	534						
Passenger Traffic Department								
Salaries & Social Insurance	315	343	-3.0%	-7.0%	-8.0%	-8.0%	-8.0%	Train Km.
Materials	6	10	10%	10%	10%	10%	10%	Train Km.
Diesel - Traction	0		0%	0%	0%	0%	0%	Gross tonne Km.
Diesel - Other	6	6	0%	0%	0%	0%	0%	Train Km.
Electricity - Traction	0		0%	0%	0%	0%	0%	Gross tonne Km.
Electricity - Other	29	33	0%	0%	0%	0%	0%	Train Km.
Depreciation	154	416	0%	0%	0%	0%	0%	calculated
Capital Repairs	57	22	10%	10%	10%	10%	10%	Train Km.
Other	76	146	10%	10%	10%	10%	10%	Train Km.
Total	643	976						
Freight Traffic Department								
Salaries & Social Insurance	1256	1373	-3.0%	-7.0%	-8.0%	-8.0%	-8.0%	Train Km.
Materials	26	38	10%	10%	10%	10%	10%	Train Km.
Diesel - Traction	0		0%	0%	0%	0%	0%	Gross tonne Km.
Diesel - Other	26	24	0%	0%	0%	0%	0%	Train Km.
Electricity - Traction	0		0%	0%	0%	0%	0%	Gross tonne Km.
Electricity - Other	118	133	0%	0%	0%	0%	0%	Train Km.
Depreciation	613	1664	0%	0%	0%	0%	0%	calculated
Capital Repairs	229	90	10%	10%	10%	10%	10%	Train Km.
Other	302	582	10%	10%	10%	10%	10%	Train Km.
Total	2570	3904						

Input - Financial data

Georgian Railways
Table 21-2 : INPUT DATA - FINANCIAL

FINANCIAL INPUTS (000 Lari)	1997	1998	Cost reduction / increase %					Cost Driver
			1999	2000	2001	2002	2003	
Locomotive Department - Passenger (excl. Drivers & Assistants)								
Salaries & Social Insurance	675	815						
Materials	558	551	-3.0%	-7.0%	-8.0%	-8.0%	-8.0%	Loco. Km
Diesel - Traction	461	440	10%	10%	10%	10%	10%	Loco. Km
Diesel - Other	0	0	0.0%	0.0%	0.0%	0.0%	0.0%	Gross tonne Km.
Electricity - Traction	2143	2358	0.0%	0.0%	0.0%	0.0%	0.0%	Loco. Km
Electricity - Other	0	0	0.0%	0.0%	0.0%	0.0%	0.0%	Gross tonne Km.
Depreciation	572	1242	0.0%	0.0%	0.0%	0.0%	0.0%	Loco. Km
Capital Repairs	1195	606	10%	10%	10%	10%	10%	calculated
Other	428	438	10%	10%	10%	10%	10%	Loco. Km
Total	6032	6450						
Locomotive Department - Freight (excl. Drivers & Assistants)								
Salaries & Social Insurance	623	752	-3.0%	-7.0%	-8.0%	-8.0%	-8.0%	Loco. Km
Materials	516	509	10%	10%	10%	10%	10%	Loco. Km
Diesel - Traction	425	406	0.0%	0.0%	0.0%	0.0%	0.0%	Gross tonne Km.
Diesel - Other	0	0	0.0%	0.0%	0.0%	0.0%	0.0%	Loco. Km
Electricity - Traction	1979	2176	0.0%	0.0%	0.0%	0.0%	0.0%	Gross tonne Km.
Electricity - Other	0	0	0.0%	0.0%	0.0%	0.0%	0.0%	Loco. Km
Depreciation	528	1146	0.0%	0.0%	0.0%	0.0%	0.0%	calculated
Capital Repairs	1104	560	10%	10%	10%	10%	10%	Loco. Km
Other	395	404	10%	10%	10%	10%	10%	Loco. Km
Total	5570	5953						
Drivers & Assistants								
Passenger Business	317	384	-3.0%	-7.0%	-8.0%	-8.0%	-8.0%	Passenger Train Km
Freight Business	1270	1533	-3.0%	-7.0%	-8.0%	-8.0%	-8.0%	Freight Train Km.
Total	1587	1917						
Wagons Maintenance								
Salaries & Social Insurance	2313	1876	-3.0%	-7.0%	-8.0%	-8.0%	-8.0%	Wagon Km.
Materials	1385	432	10%	10%	10%	10%	10%	Wagon Km.
Diesel - Traction	0	0	0.0%	0.0%	0.0%	0.0%	0.0%	Gross tonne Km.
Diesel - Other	120	86	0.0%	0.0%	0.0%	0.0%	0.0%	Wagon Km.
Electricity - Traction	0	0	0.0%	0.0%	0.0%	0.0%	0.0%	Gross tonne Km.
Electricity - Other	74	30	0.0%	0.0%	0.0%	0.0%	0.0%	Wagon Km.
Depreciation	1515	3032	0.0%	0.0%	0.0%	0.0%	0.0%	calculated
Capital Repairs	1666	1700	10%	10%	10%	10%	10%	Wagon Km.
Other	1572	5816	10.0%	10.0%	10.0%	10.0%	10.0%	Wagon Km.
Total	8645	12972						

Georgian Railways
Table 21-3 : INPUT DATA - FINANCIAL

FINANCIAL INPUTS (000 Lari)	1997	1998	Cost reduction / increase %					Cost Driver
			1999	2000	2001	2002	2003	
Track Department								
Salaries & Social Insurance	3036	3378	-3.0%	-7.0%	-8.0%	-8.0%	-8.0%	Track Km 80% GTkm. 20
Materials	1273	1518	10%	10%	10%	10%	10%	Track Km 80% GTkm. 20
Diesel - Traction	0		0.0%	0.0%	0.0%	0.0%	0.0%	Gross tonne Km.
Diesel - Other	200	238	0.0%	0.0%	0.0%	0.0%	0.0%	Track Km 80% GTkm. 20
Electricity - Traction	0		0.0%	0.0%	0.0%	0.0%	0.0%	Gross tonne Km.
Electricity - Other	33	28	0.0%	0.0%	0.0%	0.0%	0.0%	Track Km 80% GTkm. 20
Depreciation	1552	8466	0.0%	0.0%	0.0%	0.0%	0.0%	calculated
Capital Repairs	9703	8466	10%	10%	10%	10%	10%	Track Km 80% GTkm. 20
Other	697	1014	10%	10%	10%	10%	10%	Track Km 80% GTkm. 20
Total	16494	23108						
Buildings								
Salaries & Social Insurance	69	90	-3.0%	-7.0%	-8.0%	-8.0%	-8.0%	Track Km
Materials	0	2	10%	10%	10%	10%	10%	Track Km
Diesel - Traction	0		0.0%	0.0%	0.0%	0.0%	0.0%	Gross tonne Km.
Diesel - Other	0		0.0%	0.0%	0.0%	0.0%	0.0%	Track Km
Electricity - Traction	0		0.0%	0.0%	0.0%	0.0%	0.0%	Gross tonne Km.
Electricity - Other	12	22	0.0%	0.0%	0.0%	0.0%	0.0%	Track Km
Depreciation	166	656	0.0%	0.0%	0.0%	0.0%	0.0%	calculated
Capital Repairs	1383	700	10%	10%	10%	10%	10%	Track Km
Other	22	26	10%	10%	10%	10%	10%	Track Km
Total	1652	1496						
Signals								
Salaries & Social Insurance	1016	1140	-3.0%	-7.0%	-8.0%	-8.0%	-8.0%	Track Km
Materials	65	78	10%	10%	10%	10%	10%	Track Km
Diesel - Traction	0		0.0%	0.0%	0.0%	0.0%	0.0%	Gross tonne Km.
Diesel - Other	31	58	0.0%	0.0%	0.0%	0.0%	0.0%	Track Km
Electricity - Traction	0		0.0%	0.0%	0.0%	0.0%	0.0%	Gross tonne Km.
Electricity - Other	176	178	0.0%	0.0%	0.0%	0.0%	0.0%	Track Km
Depreciation	292	576	0.0%	0.0%	0.0%	0.0%	0.0%	calculated
Capital Repairs	780	350	10%	10%	10%	10%	10%	Track Km
Other	199	180	10%	10%	10%	10%	10%	Track Km
Total	2559	2560						
Electrical								
Salaries & Social Insurance	1226	1306	-3.0%	-7.0%	-8.0%	-8.0%	-8.0%	Track Km
Materials	143	88	10%	10%	10%	10%	10%	Track Km
Diesel - Traction	0		0.0%	0.0%	0.0%	0.0%	0.0%	Gross tonne Km.
Diesel - Other	61	66	0.0%	0.0%	0.0%	0.0%	0.0%	Track Km
Electricity - Traction	0		0.0%	0.0%	0.0%	0.0%	0.0%	Gross tonne Km.
Electricity - Other	0	86	0.0%	0.0%	0.0%	0.0%	0.0%	Track Km
Depreciation	0	1036	0.0%	0.0%	0.0%	0.0%	0.0%	calculated
Capital Repairs	1546	1444	10%	10%	10%	10%	10%	Track Km
Other	658	488	10%	10%	10%	10%	10%	Track Km
Total	3634	4514						

Input - Financial data

Georgian Railways
Table 21-4 : INPUT DATA - FINANCIAL

FINANCIAL INPUTS (000 Lari)	1997	1998	Cost reduction / increase %					Cost Driver
			1999	2000	2001	2002	2003	
Administration								
Salaries & Social Insurance	990	1474	-3.0%	-7.0%	-8.0%	-8.0%	-8.0%	Staff Numbers
Materials	117	76	0	0	0	0	0	Staff Numbers
Diesel - Traction	0		0	0	0	0	0	
Diesel - Other	33	34	0	0	0	0	0	Staff Numbers
Electricity - Traction	0		0	0	0	0	0	
Electricity - Other	154	96	0	0	0	0	0	Staff Numbers
Depreciation	442	256	0	0	0	0	0	Staff Numbers calculated
Capital Repairs	220	136	0	0	0	0	0	Staff Numbers
Other	1879	2746	0	0	0	0	0	Staff Numbers
Total	3835	4818						
Ancillary								
Salaries & Social Insurance			0.0%	-14.0%	-82.0%	0.0%	0.0%	
Materials			0	0	0	0	0	
Diesel - Traction			0	0	0	0	0	
Diesel - Other			0	0	0	0	0	
Electricity - Traction			0	0	0	0	0	
Electricity - Other			0	0	0	0	0	
Depreciation			0	0	0	0	0	
Capital Repairs			0	0	0	0	0	
Other			0	0	0	0	0	
Total								
Total	55870	73582						

Passenger Operations

Georgian Railways
Table 22 : Passenger Services : Operating resources

	1997	1998	1999	2000	2001	2002	2003
Locomotive Services							
<i>Electric Loco's- in service</i>	23	24	24	24	23	22	21
<i>Diesel Loco's - in service</i>	2	2	2	2	2	2	2
<i>Train Km. Electric (000) 90%</i>	1,623	1,623	1,646	1,670	1,695	1,719	1,744
<i>Train Km. Diesel (000) 10%</i>	180	180	183	186	188	191	194
Total Train Km (000)	1,803	1,803	1,829	1,856	1,883	1,910	1,938
<i>Locomotives per train - Electric</i>	1.00	1.00	1.00	1.00	1.00	1.00	1.00
<i>Locomotives per train - Diesel</i>	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Locomotive Km (000) - Electric	1,623	1,623	1,646	1,670	1,695	1,719	1,744
Locomotive Km (000) - Diesel	180	180	183	186	188	191	194
Total Locomotive Km (000)	1,803	1,803	1,829	1,856	1,883	1,910	1,938
<i>Locomotive Km. per unit in service - Electric</i>	71	68	69	70	74	78	83
<i>Locomotive Km. per unit in service - Diesel</i>	90	90	92	93	94	96	97
<i>Passenger coaches per Loco hauled train</i>	8.3	8.3	8.3	8.2	8.1	8.1	8.1
<i>Passenger coach kilometres (million)</i>	15	15	15	15	15	15	16
<i>Passengers per car (loco hauled)</i>	23.0	24.3	23.9	23.8	23.7	23.4	23.0
<i>Passenger Coach Vehicle tare</i>	64.0	64.0	64.0	64.0	64.0	64.0	64.0
<i>Locomotive tare</i>	180.0	180.0	180.0	180.0	180.0	180.0	180.0
<i>Trailing Tonne Kms (million) - Loco hauled</i>	958	958	972	974	976	990	1005
<i>Gross Tonne Kilometres - Loco Hauled</i>	1282	1282	1301	1308	1315	1334	1353
Passenger Coach Fleet	405	405	395	383	372	364	352
EMU's							
<i>EMU's in service</i>	28	28	28	28	28	28	28
<i>EMU Train Km (000)</i>	1200	1200	1234	1269	1305	1342	1380
<i>Passenger cars per EMU</i>	4.0	4.0	4.0	4.0	4.0	4.0	4.0
<i>EMU Passenger Car Km (million)</i>	4.8	4.8	4.9	5.1	5.2	5.4	5.5
<i>Passengers per car (EMU hauled)</i>	47.5	21.9	21.1	20.3	19.5	18.8	18.1
<i>EMU vehicle tare</i>	53	53	53	53	53	53	53
<i>Trailing Tonne Kilometres (million)</i>	254	254	262	269	277	285	293
<i>Gross Tonne Kilometres (million)</i>	254	254	262	269	277	285	293
Combined Operating Statistics							
Car Kms (millions)							
<i>Loco Hauled carriages</i>	14.96	14.96	15.18	15.22	15.25	15.47	15.70
<i>EMU Passenger Car Km (million)</i>	4.80	4.80	4.94	5.08	5.22	5.37	5.52
Total	19.76	19.76	20.12	20.30	20.47	20.84	21.22
Train Km (000)							
<i>Locomotive Train Kms</i>	1,803	1,803	1,829	1,856	1,883	1,910	1,938
<i>EMU Train Km</i>	1,200	1,200	1,234	1,269	1,305	1,342	1,380
Total	3,003	3,003	3,063	3,125	3,188	3,252	3,318
Locomotive Kilometers (000)							
<i>Locomotive Train Kms</i>	1,803	1,803	1,829	1,856	1,883	1,910	1,938
Gross Tonne Kilometers (million)							
<i>Locomotive Train GTKms</i>	1282	1282	1301	1308	1315	1334	1353
<i>EMU Train GTKm</i>	254	254	262	269	277	285	293
Total	1537	1537	1562	1577	1592	1618	1646

Georgian Railways
Table 23 : Freight Services : Operating resources

	1997	1998	1999	2000	2001	2002	2003
Locomotive Services							
<i>Electric Loco's - in service</i>	55	55	62	67	69	69	68
<i>Diesel Loco's - in service</i>	0	0	0	0	0	0	0
Total	55	55	62	67	69	69	68
Net Tonne Kilometres - Electric (million)	2,006	2,394	2,811	3,172	3,361	3,507	3,628
Net Tonne Kilometres - Diesel (million)	-	-	-	-	-	-	-
Total	2,006	2,394	2,811	3,172	3,361	3,507	3,628
Wagons per Train	38.8	38.8	39.4	40.0	40.7	41.3	42.0
Average tonnes per wagon - loaded & empty	25.7	25.7	25.8	25.9	26.0	25.9	25.9
Average Tonnes per train - Electric	997.5	998.0	1,016.2	1,036.4	1,058.5	1,071.2	1,089.9
Average Tonnes per train - Diesel	997.5	998.0	1,016.2	1,036.4	1,058.5	1,071.2	1,089.9
Train Km. Electric (000)	2,011	2,399	2,766	3,060	3,175	3,274	3,329
Train Km. Diesel (000)	-	-	-	-	-	-	-
Total Train Km (000)	2,011	2,399	2,766	3,060	3,175	3,274	3,329
Locomotives per train - Electric	1.60	1.60	1.60	1.60	1.60	1.60	1.60
Locomotives per train - Diesel	1.60	1.60	1.60	1.60	1.60	1.60	1.60
Locomotive Km (000) - Electric	3,217	3,838	4,426	4,897	5,081	5,239	5,326
Locomotive Km (000) - Diesel	-	-	-	-	-	-	-
Total Locomotive Km (000)	3,217	3,838	4,426	4,897	5,081	5,239	5,326
Locomotive Km. per unit in service - Electric (00)	58	70	71	73	74	76	78
Locomotive Km. per unit in service - Diesel (00)	-	-	-	-	-	-	-
Average Locomotive Km per unit in service	58	70	71	73	74	76	78
Wagon Fleet							
Oil Tanks	1471	1471	1630	1732	1737	1718	1687
Other wagons	2522	2522	2853	3095	3168	3199	3205
Total	3993	3993	4483	4827	4905	4917	4892
Loaded Tonnes per wagon							
Oil Wagons	52.2	52.4	52.8	53.2	53.6	53.6	54.0
Other wagons	47.0	46.8	46.6	46.6	46.6	46.4	46.3
Wagon trips - Full Loads							
Oil Wagons (000)	62.3	78.0	95.0	109.7	114.9	117.8	117.5
Other wagons (000)	84.7	95.2	105.9	114.8	122.3	131.0	140.7
Total Wagon Loads (000)	147.0	173.2	201.0	224.5	237.2	248.8	258.2
Wagon trips - Empty Loads							
Oil Wagons (000)	62.3	78.0	95.0	109.7	114.9	117.8	117.5
Other wagons (000)	72.0	80.9	90.0	97.6	103.9	111.4	119.6
Total Wagon Loads (000)	134.3	158.9	185.1	207.3	218.9	229.2	237.1
Average Wagon Load - Full Load	49.2	49.3	49.5	49.8	50.0	49.8	49.8
Average Wagon Load - Full & Empty Wagons	25.7	25.7	25.8	25.9	26.0	25.9	25.9
Loaded Wagon Kilometers (million)							
Oil Wagons	19.1	23.9	29.1	33.6	35.2	36.0	36.0
Other wagons	21.5	24.4	27.4	29.7	31.7	33.9	36.5
Total	40.6	48.3	56.4	63.3	66.8	70.0	72.4
Empty Wagon Return %							
Oil Wagons	100%	100%	100%	100%	100%	100%	100%
Other wagons	85%	85%	85%	85%	85%	85%	85%
Empty Wagon Kilometres (million)							
Oil Wagons	19.1	23.9	29.1	33.6	35.2	36.0	36.0
Other wagons	18.3	20.8	23.3	25.3	26.9	28.8	31.0
Total	37.3	44.6	52.3	58.8	62.1	64.9	66.9
Total Wagon Kilometers (million)							
Oil Wagons	38.1	47.7	58.2	67.1	70.3	72.1	71.9
Other wagons	39.8	45.2	50.6	55.0	58.6	62.8	67.4
Total	77.9	92.9	108.8	122.1	128.9	134.9	139.4
Locomotive fare - Electric Locos							
Locomotive fare - Diesel Locos	196	196	196	196	196	196	196
Wagon fare	23	23	23	23	23	23	23
Trailing Tonne Kilometres (million)	3,798	4,531	5,312	5,981	6,326	6,609	6,833
Gross Tonne Kilometres (million)	4,429	5,284	6,180	6,941	7,322	7,636	7,877

Assumed Cost Splits

Total : Operating resources - for Departmental Splits

	1997	1998	1999	2000	2001	2002	2003
Traffic department cost split							
Freight %	80%	80%	80%	80%	80%	80%	80%
Passenger %	20%	20%	20%	20%	20%	20%	20%
Total	100%	100%	100%	100%	100%	100%	100%
Locomotive Department cost split							
Freight Locomotive Kilometres	3,217	3,838	4,426	4,897	5,081	5,239	5,326
Passenger Locomotive Kilometres	1,803	1,803	1,829	1,856	1,883	1,910	1,938
EMU Train Kilometres	1,200	1,200	1,234	1,269	1,305	1,342	1,380
Total Passenger	3,003	3,003	3,063	3,125	3,188	3,252	3,318
Total Units	6,220	6,841	7,489	8,022	8,269	8,491	8,644
Freight %	52%	56%	59%	61%	61%	62%	62%
Passenger %	48%	44%	41%	39%	39%	38%	38%
Locomotive Department staff							
Freight Drivers and Assistants	932	44%					
Passenger Drivers and Assistants	240	11%					
Other staff	958	45%					
Total	2130	100%					
Depreciation Split							
	Est 1998	1998	1999	2000	2001	2002	2003
Model Calculations							
Land and Improvements		10.72	11.00	12.67	13.78	13.66	13.39
Machinery and equipment		7.66	7.82	8.12	8.33	8.63	8.69
Office and workshop equipment		0.10	0.09	0.09	0.08	0.07	0.07
Other Assets		0.27	0.26	0.24	0.22	0.21	0.20
WIP		1.59	1.48	1.39	1.30	1.21	1.13
Total Depreciation		20.34	20.64	22.50	23.71	23.79	23.47
Total Depreciation - excl Land & Improvements		9.62	9.65	9.83	9.93	10.13	10.09
Business Unit Depreciation							
Passenger Services	1,812	1,818	1,823	1,858	1,877	1,914	1,906
Traffic Department	416	417	419	427	431	439	438
Total Passenger Department	2,228	2,235	2,241	2,285	2,308	2,353	2,344
Freight Services	20	20	20	21	21	21	21
Traffic Department	1,664	1,670	1,674	1,707	1,723	1,757	1,750
Total Freight Department	1,684	1,690	1,694	1,727	1,744	1,778	1,771
Locomotives - Passenger	1,242	1,246	1,249	1,274	1,286	1,312	1,306
Locomotives - Freight	1,146	1,150	1,153	1,175	1,187	1,210	1,205
Wagons	3,032	3,042	3,050	3,110	3,140	3,202	3,189
Total Rolling Stock Business Unit	5,420	5,438	5,453	5,559	5,614	5,724	5,701
Track	8,466	8,452	8,673	9,990	10,866	10,774	10,559
Buildings	656	655	672	774	842	835	818
Signalling	576	575	590	680	739	733	718
Electricity	1,036	1,034	1,061	1,222	1,330	1,318	1,292
Total Infrastructure Business Unit	10,734	10,716	10,996	12,666	13,776	13,660	13,388
Corporate Services	256	257	258	263	265	270	269
Total Depreciation	20,322	20,336	20,642	22,500	23,707	23,786	23,473
Total Depreciation - less infrastructure	9,588	9,620	9,646	9,834	9,931	10,126	10,086

Georgian Railways - Department costs 1997														
Department	Full Year	Salaries	Social Insurance	Materials	Diesel		Electricity		Depreciatio	Capital repairs	Other	Total		
					Traction	Other	Traction	Other						
Passenger	2,241.0	437.0	135.0	56.0	-	83.0	-	75.0	577.0	564.0	314.0	2,241.0		
Freight	408.0	205.0	64.0	9.0	-	3.0	-	15.0	5.0	97.0	10.0	408.0		
Traffic	3,213.0	1,200.0	372.0	32.0	-	32.0	-	147.0	766.0	286.0	378.0	3,213.0		
Locomotive	13,189.0	2,202.0	683.0	1,074.0	886.0	-	4,122.0	-	1,100.0	2,299.0	823.0	13,189.0		
Wagons	8,645.0	1,766.0	547.0	1,385.0	-	120.0	-	74.0	1,515.0	1,666.0	1,572.0	8,645.0		
Track	16,494.0	2,318.0	718.0	1,273.0	-	200.0	-	33.0	1,552.0	9,703.0	697.0	16,494.0		
Buildings	1,652.0	53.0	16.0	-	-	-	-	12.0	166.0	1,383.0	22.0	1,652.0		
Signalling	2,559.0	776.0	240.0	65.0	-	31.0	-	176.0	292.0	780.0	199.0	2,559.0		
Electricity	3,634.0	936.0	290.0	143.0	-	61.0	-	-	-	1,546.0	658.0	3,634.0		
Admin	3,835.0	755.0	235.0	117.0	-	33.0	-	154.0	442.0	220.0	1,879.0	3,835.0		
Subtotal	55,870.0	10,648.0	3,300.0	4,154.0	886.0	563.0	4,122.0	686.0	6,415.0	18,544.0	6,552.0	55,870.0		
Basis of splits														
1. Traffic		80% Freight	Stations and Terminal staff			2222		83%						
		20% Passenger	Passenger Stations staff			452		17%						
						2674								
2. Locomotive														
Salary Costs														
Freight Drivers & Assistants		44%	Staff Numbers											
Passenger Drivers & Assistants		11%												
Other Locomotive Department Costs														
Freight		48%												
Passenger		52%	Loco. Km.											

Cost Allocation estimate of 1997													
Department	Full Year	Salaries	Social Insurance	Materials		Diesel		Electricity		Depreciation	Capital repairs	Other	Total
				Traction	Other	Traction	Other	Traction	Other				
PASSENGER													
Passenger	2,241	437	135	56	-	83	-	-	75	577	564	314	2,241
Traffic	643	240	74	6	-	6	-	-	29	153	57	76	643
Locomotive - Drivers & Assista	317	242	75										317
Total	3,201	919	285	62	-	89	-	104	-	730	621	390	3,201
FREIGHT													
Freight	408.0	205.0	64.0	9.0	-	3.0	-	15.0	-	5.0	97.0	10.0	408
Traffic	2,570	960	298	26	-	26	-	118	-	613	229	302	2,570
Locomotive - Drivers & Assista	1,269	969	301										1,269
Total	4,247.8	2,133.9	662.1	34.6	-	28.6	-	132.6	-	617.8	325.8	312.4	4,247.8
ROLLING STOCK													
Locomotive - Passenger Other	6,033	515	160	558	461	-	2,143	-	572	1,195	428	6,033	
Locomotive - Freight Other Cos	5,569	475.6	147.5	516	425	-	1,979	-	528	1,104	395	5,569	
Wagons	8,645	1,766	547	1,385	-	120	-	74	1,515	1,666	1,572	8,645	
Total	20,247	2,757	854	2,459	886	120	4,122	74	2,615	3,965	2,395	20,247	

Georgian Railways - Department cost 1998 (estimated)													
Department	Full Year	Salaries	Social Insurance	Materials	Diesel		Electricity		Depreciation	Capital repairs	Other	Total	
					Traction	Other	Traction	Other					
Passenger	4,380.0	716.0	222.0	122.0	-	78.0	-	54.0	1,812.0	690.0	686.0	4,380.0	
Freight	534.0	274.0	84.0	14.0	-	6.0	-	14.0	20.0	12.0	110.0	534.0	
Traffic	4,880.0	1,310.0	406.0	48.0	-	30.0	-	166.0	2,080.0	112.0	728.0	4,880.0	
Locomotive	14,320.0	2,660.0	824.0	1,060.0	846.0	-	4,534.0	-	2,388.0	1,166.0	842.0	14,320.0	
Wagons	12,972.0	1,432.0	444.0	432.0	-	86.0	-	30.0	3,032.0	1,700.0	5,816.0	12,972.0	
Track	23,108.0	2,578.0	800.0	1,518.0	-	238.0	-	28.0	8,466.0	8,466.0	1,014.0	23,108.0	
Buildings	1,496.0	68.0	22.0	2.0	-	-	-	22.0	656.0	700.0	26.0	1,496.0	
Signalling	2,560.0	870.0	270.0	78.0	-	58.0	-	178.0	576.0	350.0	180.0	2,560.0	
Electricity	4,514.0	998.0	308.0	88.0	-	66.0	-	86.0	1,036.0	1,444.0	488.0	4,514.0	
Admin	4,818.0	1,124.0	350.0	76.0	-	34.0	-	96.0	256.0	136.0	2,746.0	4,818.0	
Subtotal	73,582.0	12,030.0	3,730.0	3,438.0	846.0	596.0	4,534.0	674.0	20,322.0	14,776.0	12,636.0	73,582.0	
Note : Estimate for full year 1998 based on January to June 98 times 2)													
Basis of splits													
1. Traffic	80%	Freight	Stations and Terminal staff	2222	83%								
	20%	Passenger	Passenger Stations staff	452	17%								
2. Locomotive				2674									
Salary Costs													
Freight Drivers & Assistants	44%		Staff Numbers										
Passenger Drivers & Assistants	11%												
Other Locomotive Department Costs													
Freight	48%		Loco. Km.										
Passenger	52%												

Cost Allocation estimate of 1997												
Department	Full Year	Salaries	Social Insurance	Materials	Diesel Traction	Diesel Other	Electricity Traction	Electricity Other	Depreciatio	Capital repairs	Other	Total
PASSENGER												
Passenger	4,380	716	222	122	-	78	-	54	1,812	690	686	4,380
Traffic	976	262	81	10	-	6	-	33	416	22	146	976
Locomotive - Drivers & Assista	383	293	91									383
Total	5,739	1,271	394	132	-	84	-	87	2,228	712	832	5,739
FREIGHT												
Freight	534.0	274.0	84.0	14.0	-	6.0	-	14.0	20.0	12.0	110.0	534
Traffic	3,904	1,048	325	38	-	24	-	133	1,664	90	582	3,904
Locomotive - Drivers & Assista	1,533	1,170	363									1,533
Total	5,971.0	2,492.4	771.4	52.4	-	30.0	-	146.8	1,684.0	101.6	692.4	5,971.0
ROLLING STOCK												
Locomotive - Passenger Other	6,450	622	193	551	440	-	2,358	-	1,242	606	438	6,450
Locomotive - Freight Other Cos	5,954	574.6	178.0	509	406	-	2,176	-	1,146	560	404	5,954
Total	12,972	1,432	444	432	-	86	-	30	3,032	1,700	5,816	12,972
Total	25,376	2,629	815	1,492	846	86	4,534	30	5,420	2,866	6,658	25,376

staffing plan

**Georgian Railways
Staff Plan 1998 - 2003**

	1998	1999	2000	2001	2002	2003
Senior management group	20	20	20	20	20	20
Senior Task Group	10	10	10	10	10	10
Safety and Environment	5	5	5	5	5	5
Corporate Services	386	374	348	320	295	271
Freight	3246	3149	2929	2695	2479	2281
Infrastructure	7214	6997	6507	5986	5507	5067
Passenger Services	1833	1778	1654	1522	1400	1288
Rolling Stock	2981	2892	2690	2475	2277	2095
Total Operations	15695	15225	14163	13033	11993	11037
Ancillary Services	6843	6843	5890	1050	0	0
- Management	50	50	50	50	0	0
- Railway Enterprises	2953	2953	2000	1000	0	0
- Social Activities	3840	3840	3840	0	0	0

**Georgian Railways
Staff Plan percentage decrease 1998 - 2003**

	1998	1999	2000	2001	2002	2003
Senior management group	100%	0%	0%	0%	0%	0%
Senior Task Group	100%	0%	0%	0%	0%	0%
Safety and Environment	100%	0%	0%	0%	0%	0%
Corporate Services	100%	-3%	-7%	-8%	-8%	-8%
Freight	100%	-3%	-7%	-8%	-8%	-8%
Infrastructure	100%	-3%	-7%	-8%	-8%	-8%
Passenger Services	100%	-3%	-7%	-8%	-8%	-8%
Rolling Stock	100%	-3%	-7%	-8%	-8%	-8%
Total Operations	100%	-3%	-7%	-8%	-8%	-8%
Ancillary Services	100%	0%	-14%	-82%	0%	0%
- Management	100%	0%	0%	0%	0%	0%
- Railway Enterprises	100%	0%	-32%	-50%	0%	0%
- Social Activities	100%	0%	0%	-100%	0%	0%