Freight Transport in South Africa

Chapter 1 Historical Development

Land Freight Transport Operations

1. Introduction

This co-ordinated view of transport operations in all modes covers the freight operations on the major corridors of South Africa. Urban transport and the local transport in the rural areas are excluded in the project brief, but branch line and some road haulage of freight on provincial roads, between major centres is described in this report

The focus of this section of the report is on the operational factors that promote or hinder the efficiency of the freight transport modes and the description of operations in sufficient detail to ensure that the evaluations to be done in later phases of the project are fully informed of current circumstances and practises.

The transport operations within each province are described by mode and by major corridor.

5.3.2 Scope and Extent of Current Land Freight Transport Operations

Land freight transport operations in South Africa are currently divided between roads, pipeline and rail freight transport.

The railways handle approximately 182 million tons p.a of mainly block train consignments of primary minerals [ores, coal] and primary and secondary commodities such as timber, steel, grains, fuels, and smaller proportions of industrial outputs, imports and exports such as motor vehicles, containers and chemicals.

Road transport on the major corridors and main provincial arterial routes amounts to approximately 180 million tons of a wide range of commodities including fuels, containers, industrial goods, consumer and household products, fruit, grains, and chemicals. In addition to the corridor traffic there are much larger volumes of goods transported for shorter distances in rural and urban areas by road.

The estimated overall land freight market in South Africa is approximately 1.4 billion tons per annum with 182 million tons on rail, 14 million tons on pipeline and the balance on road. The proportion of road freight is increasing from year to year with increasing usage of road for primary and bulk commodities due to lack of rail capacity.

There is continual debate about competition between road and rail transport, and at national level, a stated official intention to reverse the trend towards increased road transport.

In order to evaluate the potential for achieving this objective it is necessary to appreciate that the current situation is the logical result of policy decisions taken by the government over the past 20 years, and reversing the process will require some very difficult policy decisions in the future.

Development of Freight Transport Policy

The development of transport in South Africa has followed a pattern very similar to that found in other countries, e.g. Canada, USA, Australia. All of these countries experienced a railway building period which was vital to the early development of the country and the establishment of agricultural and mining industries, as well as laying the sound infrastructural base for industrialisation.

Secondary industries such as spinning, tanning, smelting and forging were initially based on the agricultural and later the mining and extractive industries. As industrial development progressed, the production of finished industrial and consumer goods e.g. machinery, motor cars, household goods and clothing, increased. The early development of road transport gained momentum as roads were improved and the inherent advantages of the mode at that time in satisfying the needs of the industry became increasingly apparent.

The depression years of the 1920's caused serious overcapacity in the transport sector in many countries, aggravated by the ease with which road transport enterprises could be started and run by virtually anyone with a truck and a licence to drive.

In the 1930's, legislation was enacted to protect established transport operations (of several modes), in the USA (Motor Carriers Act 1935), the UK (Road Traffic Act 1930 and the Road and Rail Act 1933), in Australia (Transport Act 1930 - New South Wales).

The first legislation to regulate the orderly (and economic) development of road transport in the Union, later the Republic of South Africa and the mandated territory of South West Africa, was the Motor Carrier Transport Act, No 39 of 1930. This Act was considered necessary to protect the South African Railways and Harbours (SAR & H) and to promote the concept that it should be run according to business principles. A differentiated tariff structure was in use at that time with relatively high tariffs for the transport of manufactured goods of high value and low tariffs for that of raw materials such as agricultural and mining products. This structure was not only meant to stimulate the local economy, but was in line with the Policy at that time of fixing tariffs in accordance with the means to pay.

As with any other piece of legislation, the Motor Transportation Act No 39 of 1930, though introduced for specific objectives, has received repeated amendment in order to provide a dynamic regulatory framework for the operation of the transport markets, which are many, diverse and complex.

In 1948 the Transport Co-ordination Act (No 49 of 1948) was enacted, and the National Transport Commission was established with the following objectives, as stated in Section 7.

(i) promoting and encouraging the development of transport in the Union;
(ii) where necessary, co-ordination of various phases of transport;
(iii) in order to achieve the maximum benefit and economy of transport service to the public.

In Section 9 (iv) the Commission was enjoined *"to promote the development of the transport industry in the Union in general, with the aim of obtaining the greatest advantage for the public."*

The developmental and coordinative functions of the Commission were therefore clearly intended, accepted and implemented as can be seen, by the development of the transport industries in South Africa since 1948.

The creation of, and later extension of the exempted areas and the establishment of operating radii for private and public operators, as well as the increase in the number of types of operations which are excluded from the Act, are all evidence that *competition and normal pricing mechanisms were expected to operate in the market place, in response to the needs of the developing economy of the country.*

In 1969 the Commission of Enquiry into the Co-ordination of Transport in South Africa (Marais Commission) was appointed, and although their findings were never officially implemented, the commissioners recognised the need for competition and demand responsiveness to the needs of the public, and made their recommendations in this respect as follows (Clause 301):

> *"The Commission recommends that while a greater measure of freedom for the transport user should gradually develop, a form of controlled competition should remain. Such control should be dynamic, however, and should be reviewed from time to time to ensure efficient and economic services to the public".*

The recommendation of continuous review and development of the legislation was implemented in the activities of the Van Breda Commission, which resulted in the Road Transportation Act No 74 of 1977 with its further emphasis on deregulation of controlled competition, by providing for exempted goods and the deregulation of transportation by small vehicles.

Act No. 65 of 1981 provided for the formation of SA Transport Services [SATS] as a monopoly parastatal transport provider for rail, ports and pipelines. The company was freed from social obligations with a mandate to operate profitably. From that time until the present, successive restructuring and renaming of the organisation have lead to increasing refinement and concentration on profitable business in the selected fields.

The National Transport Policy Study (NTPS) of the mid 1980's was another stage in the evolution of transport regulation in South Africa. The approach of this study resulted from a directive by the Minister of Transport Affairs, *"to use as a basic point of departure the need for a more market orientated transport system with more effective competition*".

This directive indicated that transport policy should be revised to fall in line with current national goals and policy as defined in the Constitution Act of 1983, which describes the economic aspects of the phase: "to further private initiative and effective competition".

In summary, it can be seen that the development of transport regulation in South Africa has been aimed at providing the public with a variety of transport services necessary for the effective development of a modern, capitalistic, market based, economy.

The emphasis of the regulations has been to stress controlled, co-ordinated competition in the interests of economic efficiency and stability. However, at the same time permitting the phased development of transport services to match the changing needs of an economy in transition, from almost total dependence on agriculture and primary industry, to an economy based on the former but progressing towards modern, technologically sophisticated manufacturing and processing industries.

It has also been tacitly recognised that the economy will be dependent on high levels of import and export of goods vis the ports and via the country's borders with neighbouring states.

The modern industrial and consumer based economy, with the emphasis on high commodity values, high stock-turn ratios, marketing and customer transport services, created a need for more demand responsive transport services, but the government still retained monopoly control of parastatal transport operations.

Broad analysis of the operation of the market for freight transport services in South Africa shows the distribution of service providers in Table 5.3.3.1 below. The services in the area shaded brown are all provided by the single monopolist national parastatal transport company.

Table - Ownership and Provision of Transport Services

			INFRASTRUCTURE				OPERATIONS		
FREIGHT MODE	AREA		INSTITUTION RESPONSIBLE	OWNERSHIP	OWNERSHIP		INSTITUTION RESPONSIBLE	OPERATOR	OPERATOR
				Parastatal	Private			Parastatal	Private
PORTS									
CAPE TOWN	MOSSEL BAY		NPA	90.0%	10.0%		TERMINALS	90.0%	10.0%
SALDANHA BAY	EAST LONDON		NPA	90.0%	10.0%		TERMINALS	90.0%	10.0%
PORT ELIZABETH	DURBAN		NPA	80.0%	20.0%		TERMINALS	60.0%	40.0%
COEGA	RICHARDS BAY		NPA	70.0%	30.0%		TERMINALS	30.0%	70.0%
RAIL FREIGHT	**LINES**								
COALLINK	SISHEN		TRANSRAIL	100.0%	0.0%		TRANSRAIL	100.0%	0.0%
NATCOR	BOTSWANA		TRANSRAIL	100.0%	0.0%		TRANSRAIL	100.0%	0.0%
CAPE MAINLINE	MPUMALANGA		TRANSRAIL	100.0%	0.0%		TRANSRAIL	100.0%	0.0%
NORTHERN	OTHER LINES		TRANSRAIL	100.0%	0.0%		TRANSRAIL	100.0%	0.0%
WESTERN	BRANCH LINES		TRANSRAIL	100.0%	0.0%		TRANSRAIL	100.0%	0.0%
EASTCOAST			TRANSRAIL	100.0%	0.0%		TRANSRAIL	100.0%	0.0%
ROAD FREIGHT	**ROUTES**		SANRAL	100.0%	0.0%		CARRIERS	0.0%	100.0%
NATIONAL	LOCAL		MUNICIPAL	100.0%	0.0%		CARRIERS	0.0%	100.0%
PROVINCIAL	RURAL		PROVINCE	100.0%	0.0%		CARRIERS	0.0%	100.0%
	URBAN		COUNCIL	100.0%	0.0%		CARRIERS	0.0%	100.0%
PIPELINE	**ROUTES**		TRAN PIPE	100.0%	0.0%		TRAN PIPE	100.0%	0.0%
DBN-SASOL	SASOL-SECUNDA		TRAN PIPE	100.0%	0.0%		TRAN PIPE	100.0%	0.0%
SASOL-JNB	SASOL-KENDAL		TRAN PIPE	100.0%	0.0%		TRAN PIPE	100.0%	0.0%
SASOL-ORTI	GAS MOZ-MPU		SASOL	100.0%	0.0%		SASOL	100.0%	0.0%
AIR FREIGHT	**TERMINALS**		ACSA	100.0%	0.0%		SAA	100.0%	0.0%
OR TAMBO	P ELIZABETH		ACSA	100.0%	0.0%		SAA	100.0%	0.0%
DURBAN	E LONDON		ACSA	100.0%	0.0%		SAA	100.0%	0.0%
CAPETOWN	BLOEMFONTEIN		ACSA	100.0%	0.0%		SAA	100.0%	0.0%

The National Transport Commission accepted the recommendations of the National Transport Policy Study in 1987, which were as follows;

Pre-conditions to be met before the Implementation of the Recommendations.

> *"The recommendations presented in this White Paper should be viewed as an integrated package of measures designed to achieve the prime goal of bringing transport policy in line with the current national policy".*

Various affected parties formulated requirements as pre-conditions to be met prior to the implementation of certain other recommendations. These requirements are included in the recommendations.

Pre-conditions were set by, among others, the SA Transport Services, the Public Carriers Association and the SA Ship-owners Association, and were still to be met prior to the implementation of a more market related freight transport policy.

The most notable of these conditions were:

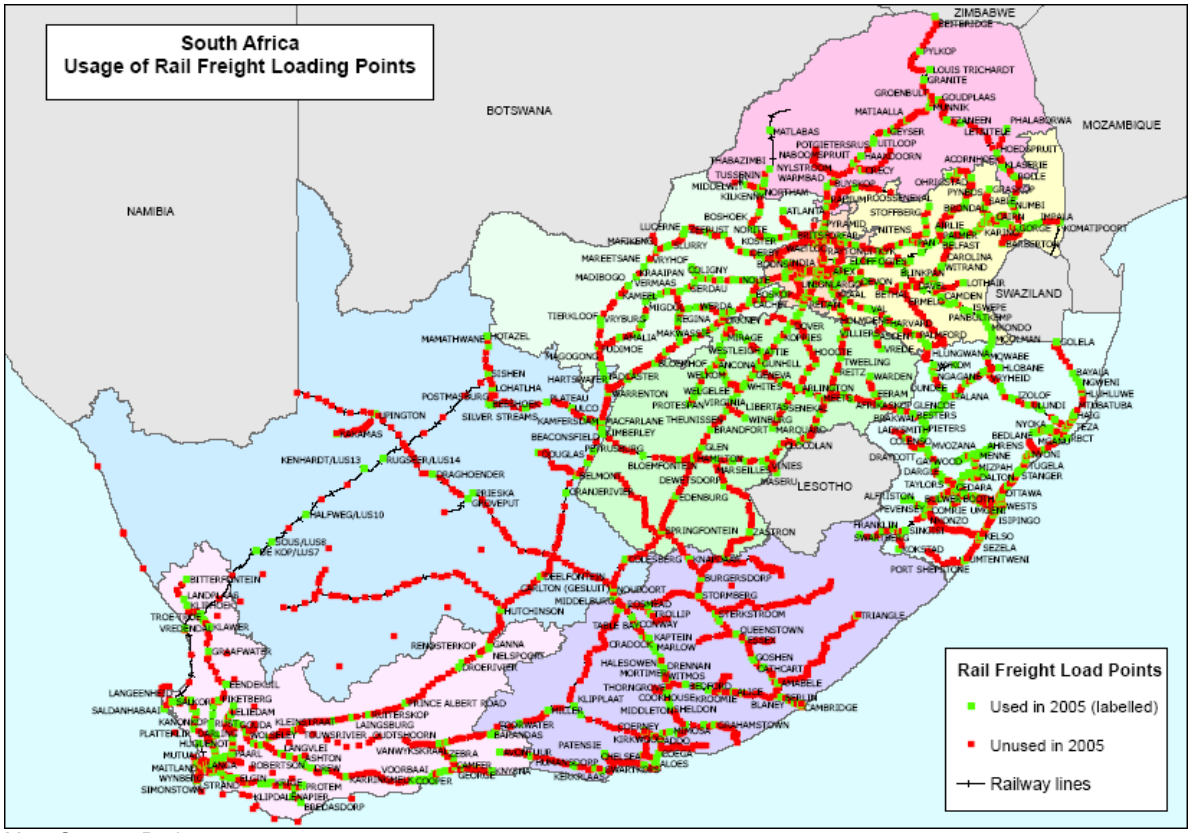
(i) The Railways must be relieved of the financial burden of providing uneconomic socio-economic services.
(ii) **The Railways must be allowed to introduce cost-related rail freight rates**.
(iii) Private road hauliers must be made to contribute "their relative proportion" to the provision and maintenance of roads.
(iv) The Railways must be allowed to remain autonomous and be relieved of other obligations imposed on it. **It must, for example, be given the right to refuse traffic or to suspend services.**
(v) Appropriate and sufficient infrastructure for on-the-ground enforcement of road quality matters must be introduced (infrastructure implies testing centres, en route facilities, sufficient and adequately trained inspectors and so on).
(vi) The role and function of the SA Road Transport Services of Railways must be clarified.
(vii) The rates at which **harbour charges, including ad valorem wharfage, are levied against coastal shipping must be brought onto a cost recovery basis** and Railways should be relieved of its burden of inter-departmental cross subsidization.
(viii) Operators in all modes should pay full taxes, licences and levies on inputs. Railways reciprocal agreements on these matters should be terminated."

Consequences of the Changed Policy

The railway, once relieved of the need to provide any but profitable services has effectively withdrawn rail services from large areas of the country [by closure of stations and scrapping of equipment]. The railway administration also introduced operating policies that exclude Less-than-truckload [LTL] consignments and generally refuses to handle consignments of less than 10 wagons. This effectively bars most small industrial and commercial usage of rail transport. Pricing and tariff increases are also apparently used to facilitate “load shedding” and exclusion of traffic that is problematic or unprofitable.

The extent of the reduction in rail freight load point usage that has resulted from the twin forces of increased road freight competition and railways corporate strategy to reduce costs is shown in Map 5.3.3.1 below.

MAP - USAGE OF STATIONS AND LOAD POINTS IN SA - (2005)



Map: Geosys: Durban

As shown in the above map the usage of the 3,000 stations, sidings and load points that were defined in the 1980's [shown in red] had reduced to 800 [shown in green] in 2005, due to closure, abandonment, and disuse due to competition.

Port and Pipeline charges have yet to be adjusted to the cost-recovery levels described in (vii) above, and cross subsidisation between departments in Transnet still occurs.

The present operational situation with port, pipeline, road and rail freight transport in South Africa reflects the logical and predictable result of the changed emphasis of government policy in the 1980s which created a commercially independent undertaking that has monopoly control of railways, ports and pipelines.

Current Land Transport Volumes

The annual state of logistic survey for South Africa produced by CSIR and the University of Stellenbosch (2006) provided estimates for the overall annual freight transport task in 2005 that showed 1,416 million tons and 352 billion ton kilometres per annum.

It was estimated that the road mode moved 1210 million tons (85.5%) and 223 billion ton kilometres (63.5%). The balance of the freight task was performed by rail and pipeline transport, was therefore estimated to be 206 million tons and 129 billion ton kilometres. The average distance hauled for road freight was estimated to be 184 kilometres and for rail the average haul was 626 kilometres.

The disparity in distance travelled, is analysed in some detail in Phase 2 as it provides indications of the focus of the railways on long haul block train operations for a large proportion of the tonnage moved.

Analysis of the relative proportions of road and rail traffic transported on the main corridors is shown in Table 5.1 below.

Table 5.1: Estimated Annual Tons on Road and Rail Corridors – 2005-2006

	CORRIDOR	CORRIDOR NAME	ROAD TONS	RAIL TONS	ROAD %	RAIL %	FREIGHT COMMODITIES
1	**N3/N11**	GAUTENG - DURBAN	33.5	14.0	70.5%	29.5%	Containers, Steel, Vehicles, Coal, Fuels, Perishables
2	**N1 SOUTH / N12**	GAUTENG -CAPE TOWN	11.0	8.0	57.9%	42.1%	Vehicles, Grains, Containers, Perishables, Cement, Steel
3	**N1 NORTH**	GAUTENG - MUSINA	8.5	3.1	73.3%	26.7%	Foods, Fuels, Vehicles, Cement, Perishables, Beverages.
4	**N4 WEST**	GAUTENG -LOBATSE	2.0	2.0	50.0%	50.0%	Fuels, cement, containers, vehicles, foods
5	**N4 EAST**	GAUTENG - RESSANO GARCIA	2.8	1.9	59.6%	40.4%	Fuels, sugar, timber, vehicles, paper,
6	**N7**	CAPE TOWN - NAMIBIA	2.2	0	100.0%	0.0%	Fish, Fuels, containers, fertiliser, cement, machinery.
7	**N2 SOUTH**	CAPE TOWN - PORT ELIZABETH	2.9	0.3	90.6%	9.4%	Vehicles, fuels, fruit, perishables, steel, tyres
8	**N2 NORTH**	EAST LONDON - DURBAN	4.8	0.0	100.0%	0.0%	Beverages, Foods, Fuels, vehicles.
9	**N2 NORTH**	DURBAN - PONGOLA	6.4	5.2	55.2%	44.8%	Containers, fuel, chemicals, timber
10	**N5**	WINBURG - HARRISMITH	5.8	0.0	100.0%	0.0%	Maize, Livestock, perishables, steel, containers
11	**N14**	GAUTENG - UPINGTON	2.1	0.7	75.0%	25.0%	Foods, cement, steel, machinery, vehicles, perishables
12	**N6**	EAST LONDON - BLOEMFONTEIN	1.2	1.6	42.9%	57.1%	Vehicles, steel, grains,
13	**N9**	GEORGE - COLESBURG	1.6	0.0	100.0%	0.0%	Fuels, Grain, perishables,
14	**N10**	BRITSTOWN - NAKOP	0.2	0.7	23.9%	76.1%	Foods, cement, steel, machinery, vehicles. Perishables
15	**N17**	GAUTENG - SWAZILAND	2.6	0.0	100.0%	0.0%	Beverages, Cement, Coal, Vehicles, Grains, Sugar
16	**N8**	THABA NCHU - MASERU	2.4	0.0	100.0%	0.0%	Containers, Fuels, cement, grains, coal, foods
17	**COALLINK**	ERMELO - RICHARDS BAY	0.0	85.0	0.0%	100.0%	Coal, steel, timber, chrome,
18	**OREX**	SISHEN - SALDANHA	0.0	29.0	0.0%	100.0%	Iron Ore ,lead,
			90.0	**151.5**	**37.3%**	**62.7%**	

As shown in the above table, it is estimated that approximately 90 million tons moved on the main national road corridors in 2005/06 whilst the approximate volume on rail amounted to 151.5 million tons. As shown in the table, there are some road corridors with no rail competition and some rail corridors that have no immediate parallel road competition. It is recognised that this is an over simplification as it is possible for road freight vehicles to run over the entire network, transporting commodities which could possibly have been committed to rail if a variety of factors had not made it attractive to use road transport.

It is also recognised that in addition to the 90 million tons recorded on the major corridors, there is approximately the same volume moving on the major provincial arterial routes which are used as alternatives to the national corridors or, partially used in conjunction with national routes. The tonnage of rail freight, by commodity group hauled over all lines in 2005 is shown is Table 5.2 below.

Freight Transport in South Africa

Chapter 2 Railways

The current situation with the railways is the result of the historical developments described briefly in the previous section and the logical reaction of the market. The chain of circumstances and policy developments that affected land freight intermodal competition were as follows;

1980 -	Road Transport -Still regulated By Road Transportation Permits
1988 -	Deregulation Of Road And Rail
1889-1990	Increased Competition From Road
1980-1990	Most Provinces have derelict or illegal weighbridges and there is minimal Enforcement (Except KZN)
1990 -	Switch of high value Cargo From rail continues
1993 -	Economic downturn - Oversupply of road Haulage
1993 -	Road Lobby achieves increased vehicle size / weights [Carrying capacity; Profit per load]
1994 -	Further Lobbying gets 5% (“grace”) on top of 56 Tons GCM [58.5 Tons]
1993-2006 -	Railway is told to “Commercialise” So unprofitable services are reduced - Stations are closed Railway rejects more mixed and low volume cargo

In Transport Economic terms competition in the market for transport services is based on defined factors by which the service is evaluated by the customer.
These include:

- accessibility of the service including convenience, minimal transfers, reduced packaging, minimal action by the customer
- safety, breakage including need to insure
- reliability, dependability of the service
- speed, total time from collection to final delivery
- costs, rates, tariffs

Rail market share declined due to operational policy constraints on the rail service provider, resulting from the transport policy decisions of the government as the major shareholder.

Reduced accessibility
In order to reduce costs, rail stations were closed in the 1980’s and1990’s, so that group age, consolidation and less-than-wagon load freight was abandoned, effectively depriving whole areas of the country of rail services. It was expected that the PX container service would take up this business but technical problems with the auto-sort facilities and other service issues forced the railway administration to move this traffic on road and to bypass the rail service. Ultimately, the PX Division was sold-off to other operators not using rail.

Siding to siding rail transport is generally only available for more than 10 wagons in a consignment i.e. a minimum of approximately 400 tons per consignment; obviously too much for most farmers and most businesses. This policy has resulted in several million tons of coal being delivered over long distances by road, all over the country.

Safety and Damage

The high cost of meeting packaging requirements, double handling from road to rail and back to road for delivery added to the effort to resolve claims for the high levels of damage and theft, make rail unattractive by comparison with direct road haulage.
The problems are aggravated by derailments, collisions and criminal actions such as cable thefts and vandalism.

Reliability

For many industries the absolute reliability of service is as important as cost and the erratic provision of empty wagons and uncertainty of delivery schedules make rail transport uncompetitive. Failure to provide funding to maintain adequate rolling stock and locomotive power has resulted in unreliability of the rail services.

Time from Collection to Delivery point

Travel speed is only crucial for a limited amount of cargo but for some specific loads e.g. containers to meet ship stack schedules timing is essential; for other goods payment is only released when deliveries are completed so speed is important and therefore road is generally the preferred mode.

Costs, Rates and Tariffs

Railway tariff increases of 50% from 2002-2005 for timber and sugarcane and 40% for grains, have exceeded the rate increases for road transport, in many instances forcing industries such as timber, grain, sugar and coal producers to turn to road haulage, despite their preference for rail.

For some industries the cost of transport is the major factor determining the profitability of the production process, e.g. timber production where transport accounts for 70% of overall product cost. It is estimated that more than 1 million tons of export timber will move to road haulage as the result of the railway rate increases proposed in 2008. It is also likely that 450,000 tons of sugarcane will move to road transport if tariffs continue to increase..

One of the most critical issues having impact on rail tariffs in South Africa is the very significant geographic distortion of the market for rail services. This is partly historical in relation to the location of the minerals that are the mainstay of rail operations as well the development of industry around Gauteng, 550 kms from the coast, due to the wealth created by the gold mines.

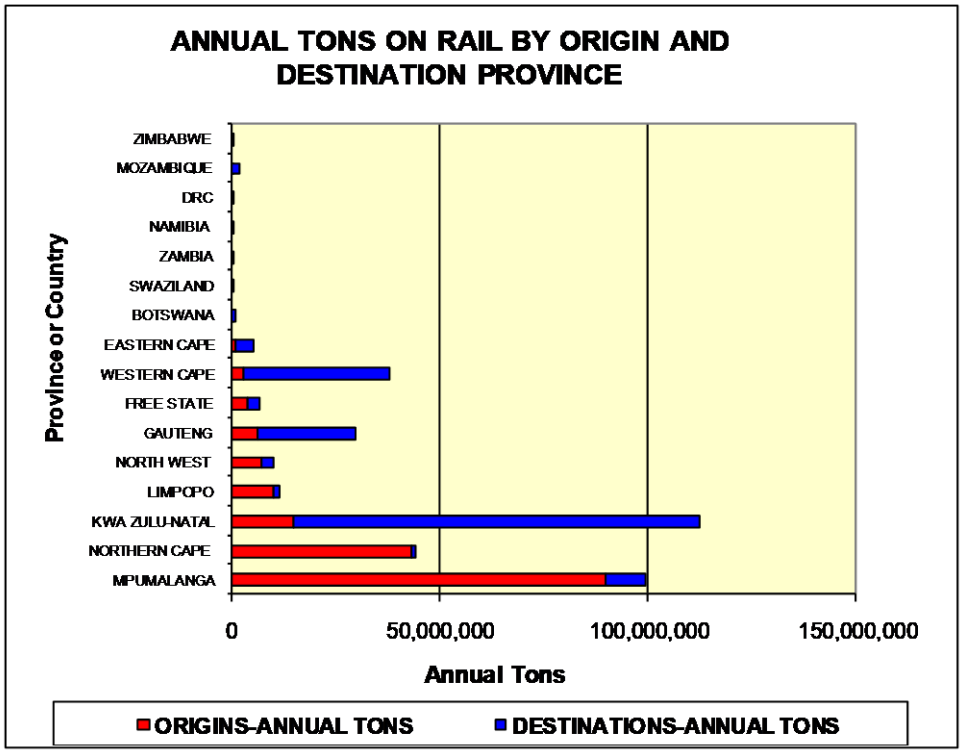
The distortion of origins and destination volumes is shown in the Table 5.5.1.2 and the accompanying graph.

Table 5.5.1.2 – Annual Tons Hauled on Rail by Origin and Destination Province (2005)

ANNUAL TONS ON RAIL BY ORIGIN AND DESTINATION PROVINCE

COUNTRY OR PROVINCE	ORIGINS ANNUAL TONS	% of Total Tons	DESTINATIONS ANNUAL TONS	% of Total Tons
MPUMALANGA	89,933,788	49.4%	9,489,332	5.2%
NORTHERN CAPE	43,224,771	23.7%	1,145,638	0.6%
KWA ZULU-NATAL	14,935,906	8.2%	97,726,530	53.7%
LIMPOPO	10,370,394	5.7%	1,307,205	0.7%
NORTH WEST	7,665,651	4.2%	2,467,472	1.4%
GAUTENG	6,669,184	3.7%	23,280,668	12.8%
FREE STATE	3,854,907	2.1%	3,030,441	1.7%
WESTERN CAPE	3,069,106	1.7%	34,957,491	19.2%
EASTERN CAPE	1,365,747	0.8%	4,348,159	2.4%
BOTSWANA	430,128	0.2%	741,180	0.4%
SWAZILAND	206,535	0.1%	261,144	0.1%
ZAMBIA	157,795	0.1%	683,000	0.4%
NAMIBIA	134,679	0.1%	395,102	0.2%
DRC	47,790	0.0%	300,161	0.2%
MOZAMBIQUE	19,710	0.0%	1,992,330	1.1%
ZIMBABWE	150	0.0%	112,140	0.1%

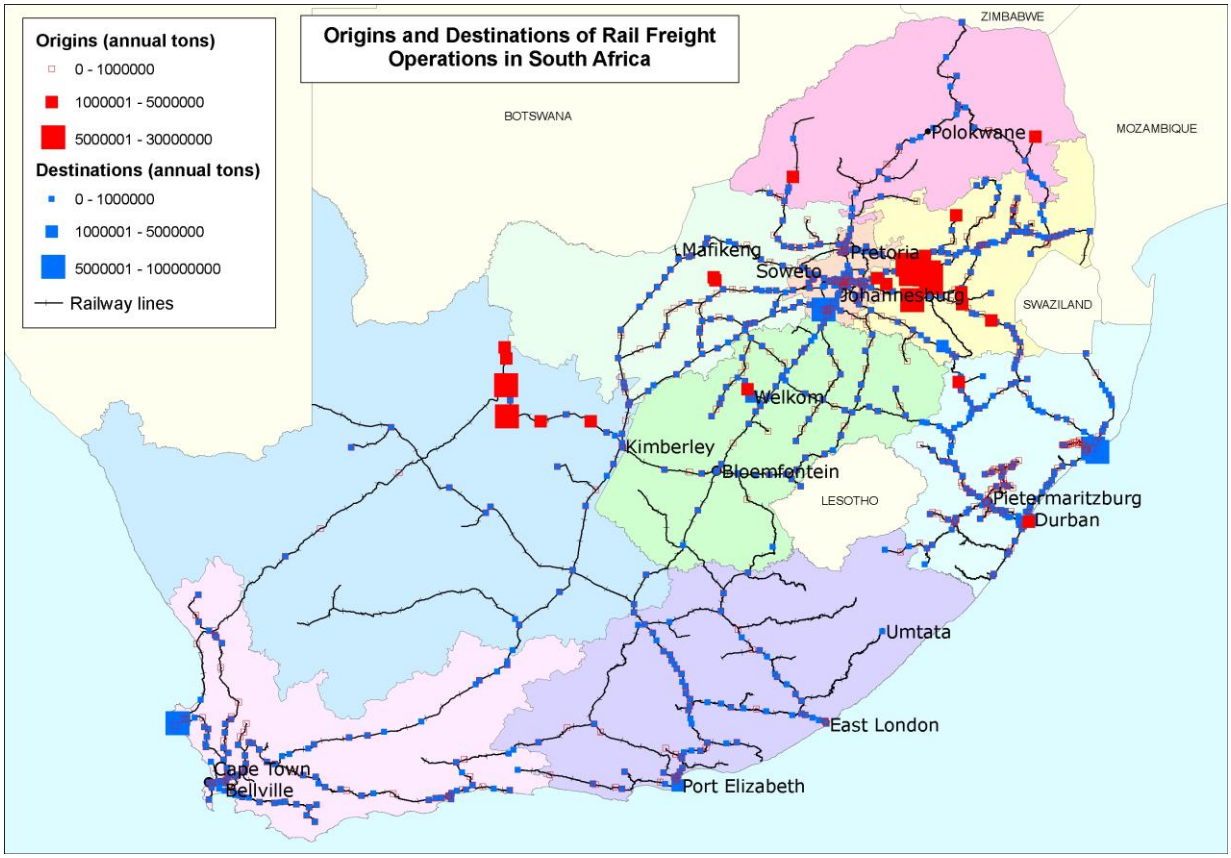
Graph 5.5.1.1 – O&D Rail Freight by Provinces – 2005



As shown in the above table and graph, KZN, Western Cape and Gauteng receive the highest tonnage and despatch relatively low volumes; Mpumalanga and Northern Cape despatch high volumes and receive very little. Due to nature of the rolling stock used and the need to return empty wagons there is very little potential to change this situation.

The distribution of origins and destinations of rail freight cargoes in 2005 is shown in Map 5.5.1.1 below:

Map - Distribution of Origins and destinations of Rail Freight Cargoes in 2005



Map:Geosys (Durban)

Government Policy

The current government policy prescriptions within which the railway is obliged to operate include the following;

- The railway is expected to generate its own profit and not seek government funding
- The railway is expected to employ staff in accordance with government policy
- The railway is permitted to operate a monopoly on rail freight

These policy directives have had some unintended consequences;

- Capital finance for new wagons and locos has been restricted
- Maintenance has been curtailed far more that it should have
- Railway lines and operations that are considered unprofitable are being abandoned irrespective of demand, or the fact that these lines may form key parts of other government policy
- The railway rate structure is now out of line in a comparison of national land transport charges.

As efficiency has not improved and volumes have not increased, the only way to provide a profit has been to increase freight rates for those tons that are carried. Phase 2 will show in detail the extent to which rail rates have risen compared with road and how the two now overlap far too much

It must be noted that in recent years the railway management has focused on issues of corporate governance and image and from the government perspective the company is clearly in better shape than it was. From the perspective of the customers, industry and the national economy the railway service has not improved to the degree expected or considered necessary.

Customer expectations

Rail freight customers have two main requirements:

- a service level commensurate with the needs of product that they wish to move
- a price level that is competitive in national and international terms

The railway has failed to carry all the volume of the commodities that are its core strategic objectives and the erratic inconsistency of train operations have left local rail users unable to take advantage of the biggest international export commodity boom there has ever been, in the demand for resources.

There is a body of customer opinion that considers pricing levels to be high given levels of service and predictability. An increase in volumes carried by rail should lower the fixed charges of TFR per ton carried to the benefit of the economy in general.

Conclusion

The provision of rail services in South Africa is determined by the single monopoly operator of all railway activities. The operator has a mandate to operate a profitable business, using a lot of aging assets, within the labour policies of the country, and the funding policy of the government, and is more or less successfully doing that, by concentrating primarily on the high volume traffic offered by the

mining and extractive industries as well some block train traffic such as grain, motor vehicles, containers and timber.

For a large proportion of freight movement in South Africa there is no road - rail competition as the railway company continues to withdraw from the market areas that are least attractive for a bulk rail operation and the economics of road transport preclude extensive competition for long haul bulk commodities in the absence of backhaul potential. There is however an increasing trend to long distance road freight haulage of bulk commodities such as chrome ore, manganese, fluorspar and coal from producing areas to ports in response for the overseas market demand in spite of the increased costs.

The potential for movement and competition for container traffic is discussed in some detail in the section on intermodal transport in this report.

5.1

5.2 RAIL FREIGHT VOLUMES

The table below shows the volumes that the railway has carried over the period 1949 to 2007. It will be noted that the total volume has grown very little in the last 20 years, but the mix of commodities has altered considerably. Over the period the tonnage of general freight business has declined substantially as a direct result road competition and the deliberate marketing strategy of withdrawal from the station to station and wagon load general cargo transport sectors and to allow branch line traffic to shrink.

Table 5.1: Annual Tons Hauled by Rail – (1949 –2007)

	GENERAL FREIGHT			COALINK			OREX			TOTAL	
Year	Annual Tons	% of Total Freight	Index 1980=100	Annual Tons	% of Total Freight	Index 1980=100	Annual Tons	% of Total Freight	Index 1980=100	Annual Tons	Index 1980=100
1949/50	**53.2**	100.0	36.3		0.0	0.0		0.0	0.0	**53.2**	29.0
1950/51	**56.4**	100.0	38.5		0.0	0.0		0.0	0.0	**56.4**	30.8
1951/52	**59.1**	100.0	40.4		0.0	0.0		0.0	0.0	**59.1**	32.2
1952/53	**62.6**	100.0	42.8		0.0	0.0		0.0	0.0	**62.6**	34.2
1953/54	**64.6**	100.0	44.1		0.0	0.0		0.0	0.0	**64.6**	35.2
1954/55	**65.2**	100.0	44.5		0.0	0.0		0.0	0.0	**65.2**	35.6
1955/56	**67.7**	100.0	46.2		0.0	0.0		0.0	0.0	**67.7**	36.9
1956/57	**68.1**	100.0	46.5		0.0	0.0		0.0	0.0	**68.1**	37.2
1957/58	**69.9**	100.0	47.7		0.0	0.0		0.0	0.0	**69.9**	38.1
1958/59	**72.3**	100.0	49.4		0.0	0.0		0.0	0.0	**72.3**	39.4
1959/60	**74.3**	100.0	50.8		0.0	0.0		0.0	0.0	**74.3**	40.5
1960/61	**79.9**	100.0	54.6		0.0	0.0		0.0	0.0	**79.9**	43.6
1961/62	**81.4**	100.0	55.6		0.0	0.0		0.0	0.0	**81.4**	44.4
1962/63	**84.8**	100.0	57.9		0.0	0.0		0.0	0.0	**84.8**	46.3
1963/64	**90.0**	100.0	61.5		0.0	0.0		0.0	0.0	**90.0**	49.1
1964/65	**94.7**	100.0	64.7		0.0	0.0		0.0	0.0	**94.7**	51.7
1965/66	**96.5**	100.0	65.9		0.0	0.0		0.0	0.0	**96.5**	52.6
1966/67	**99.8**	100.0	68.2		0.0	0.0		0.0	0.0	**99.8**	54.4
1967/68	**103.8**	100.0	70.9		0.0	0.0		0.0	0.0	**103.8**	56.6
1968/69	**107.5**	100.0	73.4		0.0	0.0		0.0	0.0	**107.5**	58.6
1969/70	**107.9**	100.0	73.7		0.0	0.0		0.0	0.0	**107.9**	58.9
1970/71	**109.6**	100.0	74.9		0.0	0.0		0.0	0.0	**109.6**	59.8
1971/72	**115.0**	100.0	78.6		0.0	0.0		0.0	0.0	**115.0**	62.7
1972/73	**119.6**	100.0	81.7		0.0	0.0		0.0	0.0	**119.6**	65.2
1973/74	**115.0**	100.0	78.6		0.0	0.0		0.0	0.0	**115.0**	62.7
1974/75	**124.5**	100.0	85.0		0.0	0.0		0.0	0.0	**124.5**	67.9
1975/76	**130.1**	100.0	88.9		0.0	0.0		0.0	0.0	**130.1**	71.0
1976/77	**135.2**	96.1	92.3	**5.5**	3.9	28.5		0.0	0.0	**140.7**	76.8
1977/78	**131.6**	84.7	89.9	**10.9**	7.0	56.5	**12.9**	8.3	73.3	**155.4**	84.8
1978/79	**137.1**	84.1	93.6	**12.5**	7.7	64.8	**13.4**	8.2	76.1	**163.0**	88.9
1979/80	**146.4**	79.9	100.0	**19.3**	10.5	100.0	**17.6**	9.6	100.0	**183.3**	100.0
1980/81	**146.9**	79.6	100.3	**25.0**	13.6	129.5	**12.6**	6.8	71.6	**184.5**	100.7
1981/82	**146.2**	77.7	99.9	**27.6**	14.7	143.0	**14.4**	7.7	81.8	**188.2**	102.7
1982/83	**127.2**	80.4	86.9	**22.4**	14.2	116.1	**8.7**	5.5	49.4	**158.3**	86.4
1983/84	**121.3**	77.2	82.9	**27.3**	17.4	141.5	**8.6**	5.5	48.9	**157.2**	85.8
1984/85	**132.4**	77.8	90.4	**28.0**	16.5	145.1	**9.8**	5.8	55.7	**170.2**	92.9
1985/86	**120.9**	70.5	82.6	**40.4**	23.5	209.3	**10.3**	6.0	58.5	**171.6**	93.6
1986/87	**122.0**	71.5	83.3	**39.8**	23.3	206.2	**8.8**	5.2	50.0	**170.6**	93.1
1987/88	**121.0**	72.2	82.7	**37.5**	22.4	194.3	**9.1**	5.4	51.7	**167.6**	91.4
1988/89	**126.2**	70.7	86.2	**40.7**	22.8	210.9	**11.6**	6.5	65.9	**178.5**	97.4
1989/90	**127.1**	68.0	86.8	**43.1**	23.1	223.3	**16.6**	8.9	94.3	**186.8**	101.9
1990/91	**112.3**	64.7	76.7	**44.0**	25.3	228.0	**17.3**	10.0	98.3	**173.6**	94.7
1991/92	**106.9**	63.2	73.0	**47.3**	28.0	245.1	**14.9**	8.8	84.7	**169.1**	92.3
1992/93	**103.7**	61.8	70.8	**48.1**	28.7	249.2	**16.0**	9.5	90.9	**167.8**	91.5
1993/94	**97.8**	57.8	66.8	**52.5**	31.0	272.0	**19.0**	11.2	108.0	**169.3**	92.4
1994/95	**101.8**	57.5	69.5	**54.1**	30.6	280.3	**21.1**	11.9	119.9	**177.0**	96.6
1995/96	**100.6**	55.9	68.7	**57.4**	31.9	297.4	**22.1**	12.3	125.6	**180.1**	98.3
1996/97	**99.2**	55.0	67.8	**61.2**	33.9	317.1	**20.1**	11.1	114.2	**180.5**	98.5
1997/98	**101.5**	54.3	69.3	**63.1**	33.8	326.9	**22.2**	11.9	126.1	**186.8**	101.9
1998/99	**95.9**	52.5	65.5	**64.7**	35.4	335.2	**22.1**	12.1	125.6	**182.7**	99.7
1999-00	**93.7**	52.5	64.0	**63.5**	35.6	329.0	**21.4**	12.0	121.6	**178.6**	97.4
2000/01	**91.0**	51.3	62.2	**64.0**	36.1	331.6	**22.5**	12.7	127.8	**177.5**	96.8
2001/02	**87.4**	49.6	59.7	**64.7**	36.7	335.2	**24.1**	13.7	136.9	**176.2**	96.1
2002/03	**84.3**	48.1	57.6	**65.7**	37.5	340.4	**25.4**	14.5	144.3	**175.4**	95.7
2003/04	**87.8**	48.6	60.0	**66.0**	36.5	342.0	**27.0**	14.9	153.4	**180.8**	98.6
2004/05	**86.1**	47.5	58.8	**66.9**	36.9	346.6	**28.2**	15.6	160.2	**181.2**	98.9
2005/06	**83.8**	46.0	57.2	**68.7**	37.7	356.0	**29.6**	16.3	168.2	**182.1**	99.3
2006/07	**84.3**	46.5	57.6	**67.0**	37.0	347.2	**30.0**	16.5	170.5	**181.3**	98.9
2007/08	**84.4**	46.9	57.7	**63.5**	35.3	329.0	**31.9**	17.7	181.3	**179.8**	98.1

Source : Transnet

The reduction in general freight traffic was compensated by the steadily increasing volume of iron ore and coal on the export lines. It is however noteworthy that due to operational constraints the railway has not been able to expand capacity to carry all the core traffic on offer, which has economic implications for those industries that are captive and dependent on railway services. This has been a limiting factor in South Africa's ability to benefit from the international commodity boom from 2005 – 2008 and the constraint imposed by rilway limitations has restrained potential economic growth for many years.

As can be seen in the above table, the railways have increasingly depended on long haul bulk commodities with reducing participation in the general goods market, from 1980 through to 2007.

The relative proportion of the different categories of freight is shown in the graph below,

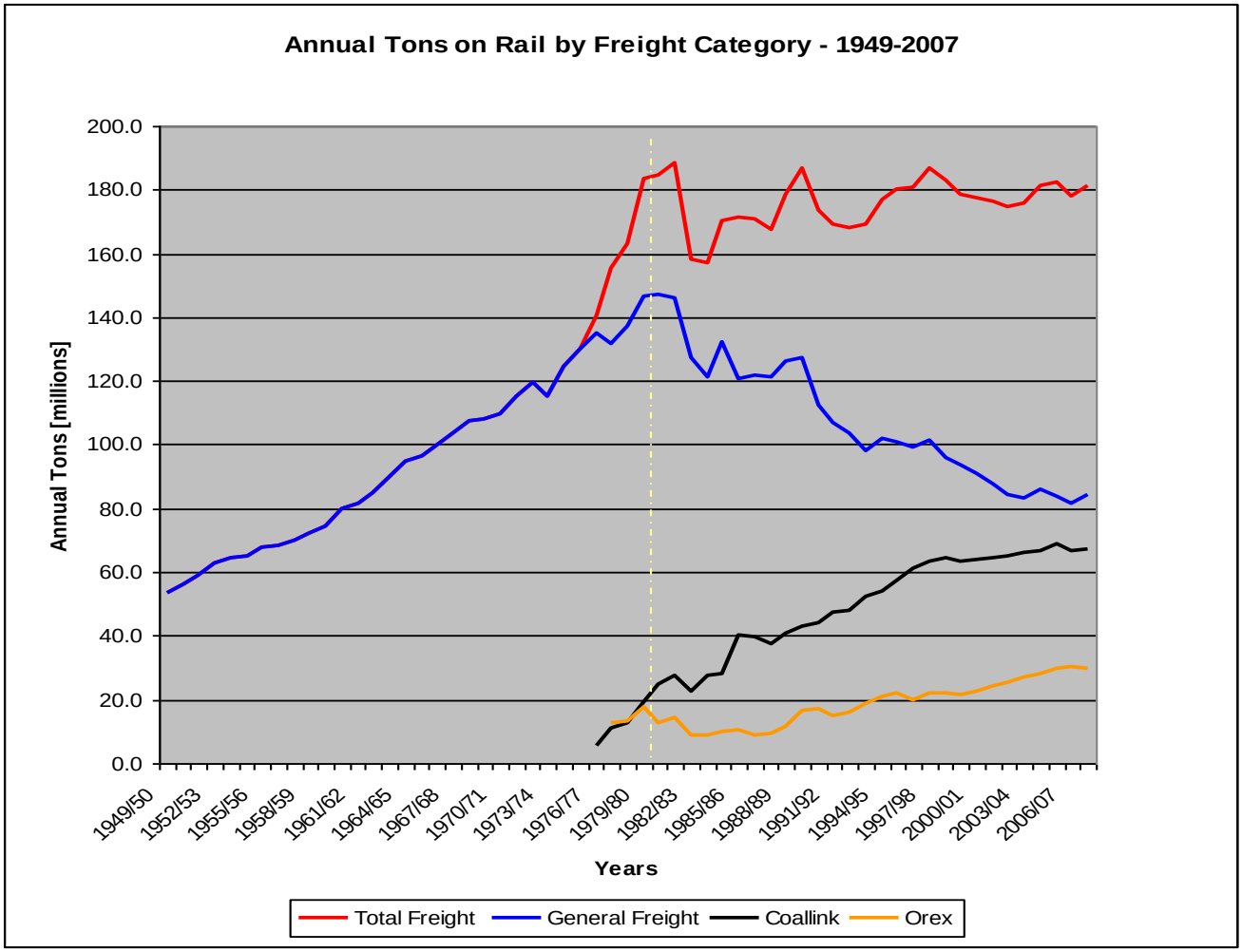


Figure 5.1: Annual Tons on Rail by Freight Category – 1949-2007

As shown in the above graph the total freight tonnage hauled by the railways peaked at 188.2 million tons in about 1982 with the development of the Richards Bay Coal link line adding 27.6 million tons to the 146.2 million tons of General Freight hauled by the railways at that time.

The reducing tonnage of General Freight from that period to the present has been replaced by the volumes of coal and iron ore on the heavy haul lines but the overall tonnage has remained almost constant at 180 million tons for the past 15 years.

5.3 RAIL FREIGHT OPERATIONS

5.5.1 Introduction

The rail division of Transnet, recently renamed Transnet Freight Rail (TFR) has a focus on the transport of primary mineral, forestry and bulk cargoes. The nature of the business is changing due to market pressures, with both the main bulk export lines achieving reduced throughput in 2007.

Analysis of the freight transport operations of TFR, by commodity group is shown in Table 5.5.1.1 below for the calendar year 2005.

5.4 TABLE 5.5.1.1 – RAIL FREIGHT OPERATIONS BY COMMODITY GROUPS – 2005

Codes	Commodities	Tons	%
C	Coal	87,635,677	48.1%
R	Minerals	58,995,617	32.4%
A	Grains	5,776,808	3.2%
I	Metals	5,738,242	3.1%
CC	Cement	5,668,247	3.1%
W	Wood	4,890,181	2.7%
T	Containers	4,359,603	2.4%
F	Fuels	3,314,161	1.8%
K	Chemicals	2,381,346	1.3%
O	Other	1,394,766	0.8%
AAA	Ag. Products	1,284,282	0.7%
B	Beverages	386,514	0.2%
M	Machines/Vehicles	271,767	0.1%
AA	Crops	141,344	0.1%
		182,238,555	100.0%

As shown in Table 5.5.1.1, bulk minerals traffic accounts for 85% of the total tons hauled and grains [maize and wheat], metals [mainly steel], cement and timber account for a further 12.1 %. All the other commodities make up the remaining 2.9%.

Bulk minerals increased by 1.5 million tons in 2006 with the addition of 1 million tons of magnetite from Phalaborwa via Swaziland and 500,000 tons of anthracite from Somkhele in Zululand.

It is apparent from Table 5.5.1.1 that rail freight transport does not receive a large proportion of its patronage from general commerce and industry, either for local production or import and export commodities.

Discussion of the competition between road and rail freight transport services in South Africa often fails to cover the fact that for a large proportion of industry, agriculture and commerce there is no effective rail service and there is no attempt or motivation on the part of the railways to address the problem. In the present dispensation the rail operator is perfectly entitled to refuse to provide services.

Rolling Stock

20 years ago the railway possessed 125,000 wagons and about 5000 locomotives and carried the volumes shown in the tables in section 5.3.1 above. At that time the equipment was extremely underutilised and it was quite common wagons to convey only 1 load per month. As matters stand today the railway owns 80,000 wagons and 2,300 locomotives and carries approximately the same tonnage.

The 2008 Transnet annual report shows that the average wagon still only travels 41 km per day; this may not be correct as the average haul is reportedly 625 kms. On an efficient railway the average wagon turnaround should be a load every 5 days and with a payload of 50 tons this would enable the existing fleet to carry 292 million tons per annum compared with the current figure of 185 million tons per annum. The national permissible axle-load map (see chapter 6) shows that most of the network can in fact carry 60 tons of payload provided that the wagons are designed and constructed accordingly.

Due to capital restrictions, wagon fleet renewal has fallen well behind acceptable norms and as a result old wagons with reduced payloads exist in substantial numbers thereby limiting the ability to carry extra tonnage.

The locomotive fleet achieves a monthly travel figure around 7,500 kms. By comparison the average road vehicle on a similar haul travels 18,000 kms a month. These performance deficiencies are the root cause of the lack of volume growth and are one of the basic reasons why substantial volumes of potential rail freight commodities are being hauled by road.

It must be recognised that the fleet is old and getting older, but it is the management of the existing fleet that is the main cause of dissatisfaction to customers.

Slot Usage

Map 5.1 shows slot utilisation as an indication of how much capacity the railway still has in the form of track and signalling and the under-utilisation of infrastructure capacity.

There are 3 sections of railway that are more or less at full capacity:

- the section between Kimberly and De Aar was singled and electrified about 20 years ago, however the number of passing loops for long trains was limited and it is now a problem when 2 trains each 104 wagons long need to pass each other in this section .it is necessary to hold up trains to manipulate passing points and this causes block back and reduces capacity. Fortunately the old second line was left in place and now it requires having sections restored as passing loops and to be electrified and signalled.

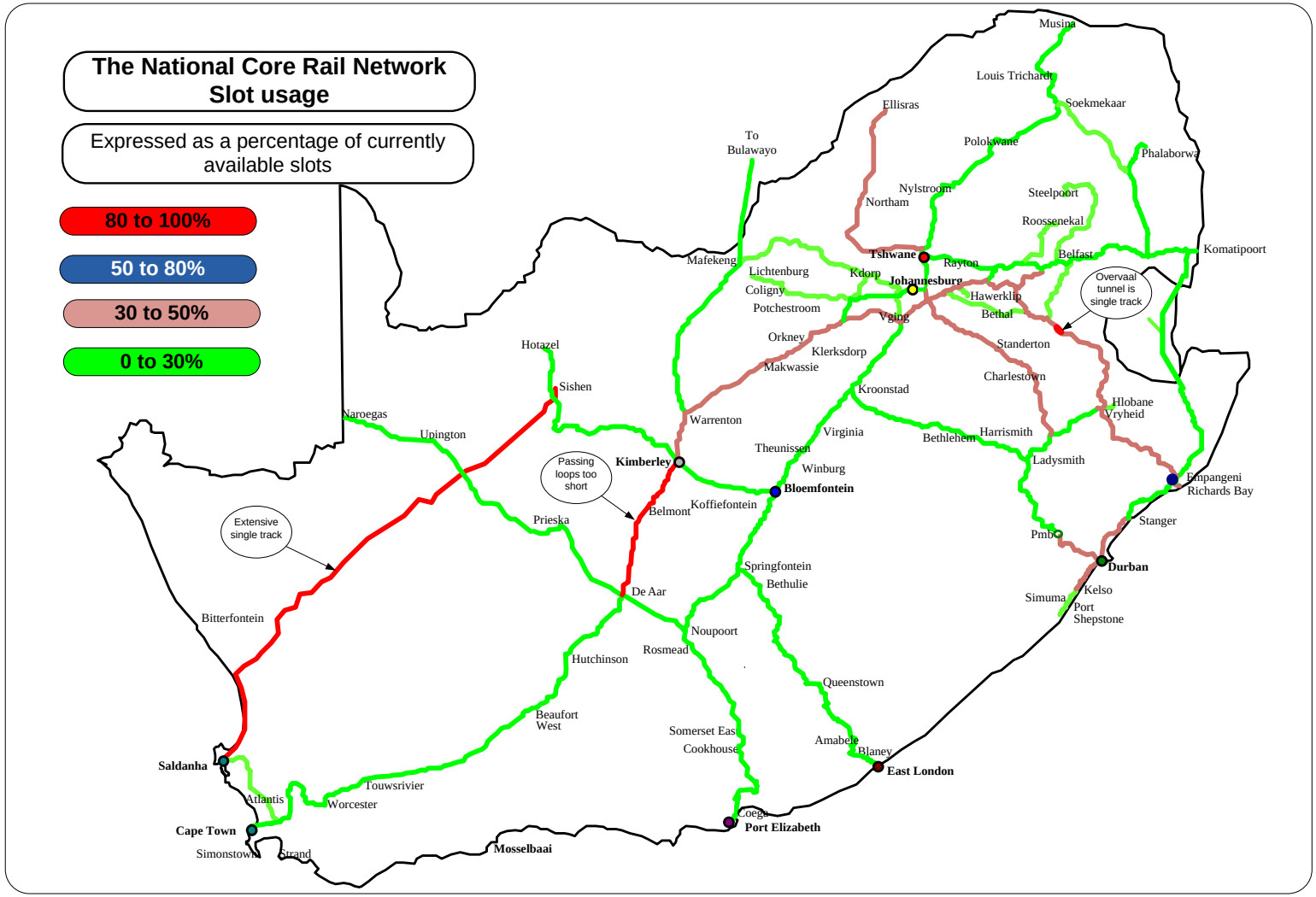
- The Overvaal tunnel on the Ermelo to Vryheid section was constructed as a single line tunnel when the coal line was built. The single section is some 4 km long and is the only point on the coal line where the track is single; this bottleneck has now reached capacity and is in need of rectification.

- The Orex line to Saldanha Bay is at capacity and is currently undergoing substantial upgrade to allow longer trains and extra passing loops.

Inspection of Map 5.1 shows that the rest of the railway network is substantially underutilised.

Analysis of the current operations shows that there is very little motivation for the introduction of widespread plans to increase infrastructure and for the development of new lines. Clearly there are local bottlenecks (e.g.-Insese yard in Richards Bay) which need to be fixed. Other investment in new infrastructure will be targeted towards increasing

congested corridor capacity, easing unproductive facilities, for example around Gauteng and new track to support mining developments.



Map 5.1: Slot Usage on National Railway Network

(a) Rail Operations

The operation of railways in South Africa by Transnet Freight Rail [TFR], as a parastatal monopoly company has had the effect of narrowing the field of rail operations to focus on bulk commodities. The tonnage of general cargo, and less than block load traffic has reduced steadily only to be transferred to road haulage. The total tonnage hauled, has changed very little over the last 20 years.

From the analysis of freight operations in this report, it would appear that there is sufficient under utilized infrastructure, to permit the promotion of train operator competition over a large proportion of the network. This will require the separation of track provision and maintenance from train operations.

A further concern is a reducing pool of technical and operational competence in the railways sector due to the restriction on the entry private sector organisations to the industry.

The institutional structure of the railway operations has also limited the availability of capital by deterring private sector investment in the mode, with the result that supply of capital has been subjugated to the many other demands on the fiscus.

These issues are analysed and discussed further in Phase 2 of this project

5.5.4 Rail Freight Costs and Rates

The cost of rail freight transport in South Africa is generally considered to be too high, both in relation to other modes of transport and in relation to international best standards. There are many reasons that are advanced, for this state of affairs and it is relevant to analyse these to obtain some indications of whether it is possible in the short to medium term to improve this situation and if so what steps could be taken.

The major factors that have impact on the costs of rail transport in South Africa are;

- The asymmetric distribution of origins and destinations, as shown in previous sections of this report. There are very serious distortions of cargo availability with the major inland origins of bulk freight being approximately 500km from destinations at the ports.
- The deregulation of road transport in the 1990's was accompanied by legislation that permits some of the biggest road freight vehicles in the world for usage on the general road system of the country, without geographic restriction.
- This proliferation of 7 to 9 axle road freight combinations with carrying capacities with up to 40 tons means that their cost per ton kilometre of road freight is considerably lower than general cargo on rail, when high proportions of backhauls can be achieved .
- The railway has been deliberately restricted for capital expenditure for approximately 20 years. A large proportion of the equipment is over 20 years old and much of it is even older than that.
- The railway has for the last 14 years being rapidly depleted of skills in all disciplines due to labour policies.
- The international surge in the market for bulk commodities was not appreciated in the 1990's, so that inadequate preparation was made for the scale of potential expansion required.

- The continued evolution of the South African economy from an agricultural, mining and primary industry base into a more sophisticated import/export orientated manufactured goods economy, has left railways unable to compete for much of the higher rated more sophisticated traffic. It is significant that analysis of container traffic hauled by rail, shows that 15 destinations account for about 85% of the traffic, whilst the wide distribution of the remaining 15% to a further 200 destinations is probably uneconomical.
- The railway management has focused on provision of service to the major industrial bulk customers, with the resources available. Services to other industries have been discontinued or priced to compensate for low volumes.
- The railway administration continues to be over-staffed, with high proportions of overhead positions that do not contribute to coal-face management decision making.

5.5.6 Current Rail Operational Problems and Constraints

The railway operating company [Transnet Freight Rail - TFR] has seen operating efficiency decline for a number of years.

The reduction in efficiency can be ascribed to ;

- a lack of short and long term maintenance has led to deterioration in equipment serviceability
- age of equipment
- reduced operating staff experience causing breakdowns, derailments and accidents
- reduced line capacities due to deferred maintenance
- deliberate reduction in rolling stock and locos to "downsize" the business
- lack of managerial motivation for investment to meet demand
- government resistance to providing capital to meet customer demand

Examples of some of these problems are described below.

Locomotive and wagon shortages

During the planned streamlining of railway services between 1985 and 2000 many locomotives were taken out of service after having had relatively minor break-downs.With corporate downsizing these locomotives were seen to be surplus to future needs. The locomotives left at insecure locations suffered the theft of important, and sometimes costly or irreplaceable components. The company scrapped wagons – reducing from 120 000 in the early 1990's to less than 80 000 now. Foreign consultants recommended reduction to 60 000 wagons; to be achieved when wagon utilisation was improved by reducing turnaround times.

As the result of poor or lack of maintenance to wagon journals, hot boxes and axle breakages were blamed on friction bearings which it was claimed were dangerous and prone to derailing; vacuum brake wagons were said to be obsolete. Railways had used friction bearings for over 100 years and while roller bearings have decided advantages, the claim that friction-bearing wagons were unsafe was totally misleading and the scrapping of wagons was unnecessary waste.

Air brake equipped wagons have many advantages over vacuum brake wagons and the plan had been to only use air brake wagons in the future but the programme to convert completely to air brake wagons was not completed. For the general freight business, many commodities can be effectively loaded in vacuum brake wagons and there was no reason for not making better use of vacuum brake wagons until the conversion was completed.

The process described above, causes wagon shortages, which resulted in large quantities of chrome and ferrochrome, domestic coal and grain traffic switching to road transport. Bulk cement producers have been offered wagons, which are not effectively self-offloading, causing them to use road freight hauliers. No efficient custom wagons have been designed for years and in view of the recent steep tariff increases; it is unlikely that much of this cargo will be attracted back to rail.

Reduced line capacity

On the Gauteng – Cape Town route, the section between Kimberley (Beaconsfield) and De Aar, previously double track, has been electrified but reduced to single track. This could limit train movements should there be an upsurge in traffic. Re-instating the second line and electrifying should be considered as an urgent matter.

Between Bloemfontein and Noupoort, as section of main line serving both the East London and Port Elizabeth lines, some 50% of the interloops (crossing points) were eliminated several years ago. Again, if traffic returns to rail, this could create a bottleneck.

The arterial line from Orkney to Vierfontein was uplifted recently and because of this certain traffic must be routed over other lines and over much greater distances. This includes export grain traffic.

Many branch lines have operating restrictions in terms of speed and axle loading.

On the Ressano Garcia – Maputo line, an 18.5 ton axle load and speed restriction has been imposed because of the poor condition of some bridges. This has meant that only Class 35 diesel locomotives operating in pairs can be used and not the larger Class 33 locos owned by CFM. The earlier concessioning of this operation to Spoornet and resulting delays in implementing infrastructure upgrades has reduced the capacity of this section. A mining company is reportedly planning a pipeline to Maputo to transport magnetite to avoid using the monopoly rail services.

Poor Operating Efficiency

An example of how operating efficiency can be compromised is in the North-South Corridor operation between Phalaborwa and Richards Bay. There is a designed turn time of 96 hours for the round trip but numerous problems have led to turn times of between 120 and 150 hours. Part of the problem has been the unreliability of both diesel and electric locomotives and the effect of traffic delays due to subsequent breakdowns. There have been hold ups in the change from electric to diesel traction at Komatipoort because of poorly timed train meets and air brake test delays.

Container trains operating between Gauteng and Durban are often delayed due to electric loco breakdowns. A set of three 18E locos maintained in Gauteng is required to haul a normal 50 wagon container train but if one loco has become defective the other two cannot take the train which in consequence will miss its return slot. For this reason, the train may stand at the Kings Rest yard for 24 to 48 hours and this unreliability promotes the switch to road haulage.

Staff Problems

Railways is short of qualified and experienced staff, in maintenance, operations, planning, management and engineering. Training of staff within months instead of years results in drivers after three to six month training being put on main line duties. In the past, it took between 5 and 10 years before a person could qualify to drive main line trains. The result is inefficiency and accidents.

Many of the people that perform locomotive maintenance are poorly trained and not suitable for the physically demanding tasks. Private sector companies are available to provide professional maintenance services but the railway company does not use contracted maintenance providers, even where there are in-house problems.

Tariff Issues

Government policy includes promotion of rail traffic and TFR states an intention to increase the share of the general freight traffic market.

Recent tariff increases are forcing more traffic to road. This includes grain, sugar cane and forest products. The scale of increases was staggering – ranging from 40 to 90%, although TFR promised to spread the increase over two years.

Forestry Industry analysis shows that rail rates increased by an average of 66% from 2002 to 2007 and road had increased by 35% during the same time. The 2008 rate proposals will increase rail to 106% but road to only 45%.

Timber traffic volumes from the Pietermaritzburg branch line cluster, which was at a level of about 741 000 tons in 2005-2006, is now expected to drop to about 450 000 tons. The reduced volume may encourage TFR to demand substantial additional increases in 2009 which will hasten the closure of these lines and result in even more traffic being transferred to road.

In the case of grain traffic, TFR demanded increases of 25 to 30% for 2008-2009. The excuse was the same – much of the traffic originated on branch lines. But several had already closed and in some cases had been badly vandalised. Grain millers and exporters threatened to move even more traffic to road.

In contrast, import container rates have decreased marginally for a 6-metre, 15 ton payload container from Durban to the City Deep Container Terminal in Gauteng.

- 2007 R 3 432 + VAT+ Road delivery [10 kms] R 1 040 + VAT
- 2008 R3 228 + VAT + Road delivery [10 kms] R 1 196 + VAT

A fuel surcharge of 2.986% has also been added with the result that the total door to door rate has changed from R 5 098.08 to R 5 083.67 a reduction of R14.41, which is unlikely to attract any additional cargo.

6.3.2. Current Constraints - Rail Freight

In the analysis of current railway operational capacity constraints, it is important to isolate the theoretical potential from the current actual performance as there is wide divergence between theoretical capacity and actual current service levels, from the customer perspective.

As shown in Figure 6.1 there has been significant reduction in the tonnage of general cargo hauled by railways over the past 20 years. The demand for land freight transport of general cargo on the main corridor routes has increased over that period to more than 250 million tonnes p.a. As railways have failed to capture this demand it must be apparent that capacity limitations exist and that these can be identified.

A basic problem with current debates about railway capacity is the unrealistic premise that one parastatal company can be expected to meet the demand for 40-50 million tonnes of general freight all over the country, whereas the road freight industry is composed of thousands of competing firms that perform millions of transactions each day.

In particular, it is clear that although there is in many areas, sufficient theoretical capability to move specific volumes of different commodities, in practice the performance is such that industrial users have largely chosen to abandon railway service in favour of road haulage.

The major reasons for under capacity in relation to the provision of satisfactory or superior service relate to the following aspects of customer-supplier relationships.

6.3.2.1 Reliability

The issue of reliability is absolutely critical for many undertakings. Industrial manufacturing concerns regard supply continuity as an absolute imperative as the costs of downtime for large scale processing operations is such that transport cost considerations are often relatively irrelevant.

Another area where transport cost considerations are less important than reliability and commitment to specific delivery schedules is the export of commodities as it is absolutely critical that delivery to the ports is done in time to meet shipping stack closure dates, prior to berthing of specific vessels. An industry that on one or two occasions is let down by the transport supplier in whatever modes will immediately seek an alternative transport supplier in order to ensure that there is no repeat of the very expensive experience of paying for shipping capacity that is unused or even worse, paying demurrage to hold a ship at a berth while commodity is transported to make up an order. In many cases the cost of missing all or part of a consignment is the loss of the customer's business as unreliable supply for whatever reason is unacceptable to customers whose business is negatively affected by supply failures.

The fairly consistent failure of the railways to supply sufficient wagons and to move commodities according to the demand schedule of industrial customers is one of the primary reasons why the railway is regarded as an unsatisfactory and ineffective means to move cargo. The reason for unreliability and inability to supply consistent service, are not limited to unavailability of rolling stock but include staffing problems, locomotive break downs, scheduling inefficiencies, train planning and scheduling and sometimes an apparent lack of management and operational motivation to achieve the requisite service levels.
Until the management and operational organisation is radically revitalised, it is unlikely that any amount of infrastructure and rolling stock acquisition will make significant impact on the current perceptions of the industrial customers.

6.3.2.2 Accessibility

The limited accessibility of the current railway service is another negative feature of the mode, by comparison with road transport. The deliberate closure of stations and the continual reduction in the availability of sidings that have fully operational support systems (shunting and marshalling) has meant that more and more industrial undertakings are technically, separated from the railway system.

It is often mooted that railway services could be provided by using Intermodal containers but the reality is that transhipment of containers from one mode to the other, is most effectively done in large terminals, and is problematic at the plant of most industrial concerns due to unavailability of equipment to handle loaded containers.

In practice, where containers are delivered to industrial premises, they must be left on board a semi trailer in order to permit movement within the warehouse property and this implies that somebody must provide a logistical service of placement and removal of containers as they are loaded and unloaded. Whilst this is technically possible, it is difficult to make economic arrangements when small volumes of containers are involved. Extensive international experimentation has taken place, to try to resolve this problem, notably the Steadman system in Canada and several European demountable systems.

Several attempts have been made at designing and introducing Intermodal transportation systems that would allow road trailers to be placed on rail cars for long haul transit traffic but the railway administration has apparently been somewhat indifferent to the suggestion of coordinated transport. It is recognised that intermodality on the South African railway system will imply the development of a specific set of road-rail rolling stock for the purpose as South African road vehicle dimensions are far too large for transport by rail and railway gauge limitations and historical tunnel and overhead limitations make it impossible to match the current road transport vehicles with current railway equipment.

None of these problems is insurmountable but will take an extensive amount of research and development and will of course imply very significant capital expenditure in facilities, rolling stock, terminals and possibly purpose made handling equipment.

The deliberate closure of railway stations all over South Africa has meant that the consignment of less than truck load traffic is virtually impossible and the railway policy of declining to transport less than 5 or 10 wagon batch consignments precludes the use of rail transport for a very large proportion of industrial cargo.

It must also be noted in passing that future construction of a “standard gauge“ main line will pose further problems for accessibility as it would create a technical barrier between the main line and the rest of the network, and probably promote further switch to road haulage.

6.3.2.3 Safety and Security

A further major constraint to the use of rail transport is the wide spread occurrence of pilferage and the apparent inability of the enforcement agencies to ensure the safety of rail freight in transit.

The poor security system makes it virtually impossible to use rail transport for valuable goods and an additional negative feature has been the complexity of procedures for registration of claims for losses by the railways.

The poor security situation applies to almost all aspects of rail transport, with reported losses of items such as timber, sugar in bulk, bagged animal feed, fertiliser and steel.

The disbandment of the railway police, and limited replacement of security cover has led to largely uncontrolled marshalling yards and terminals and rail based theft and vandalism are often treated as minor crimes by the over worked South African Police Services.

A further cause for concern is the increasing frequency of derailments and consequent damage to cargoes. This is closely related to the relative inexperience of train operating staff and the foreshortened training periods and unsuitable trainees as drivers.

6.3.2.4 Packaging Requirements

A negative feature of railway freight transport requirements is the need for superior packaging of goods in order to avoid damage in transit and to minimise losses due to pilferage.

By contrast, it is possible to load road freight vehicles from a warehouse loading dock, seal the vehicle and to receive the load intact, at a delivery point anywhere in the country. Road freight hijackings are regular occurrences but the total proportions are relatively small.

6.3.2.5 Tariffs and Rates

For many commodities railway tariffs effectively encourage users to explore the use of road transport where backhaul cargo can be used to reduce road freight rates.

It is likely that proposed increases of 14 to 18% in 2009, by the railways, would be sufficient to divert most timber and several other commodities to road freight. A comparison of chrome haulage tariffs from Mpumalanga to Richards Bay is given in Table 6.4 below.

Table 6.4 – Comparative Rates for Chrome Haulage

	Rail	Rail Return	Road one way	Road two way haul	
				Front haul	Back haul
Origin	Pendoring	Richards Bay	Pendoring	Pendoring	Richards Bay
Destination	Richards Bay	return empty	Richards Bay	Richards Bay	Gauteng area
Tonnage p.a.	163800	0	163800	163800	163800
Product	Chrome	-	Chrome	Chrome	Bulk Products
Lead kms	833	0	736	736	736
Rate per ton	244	0	432	216	216

Notes	1	note the lead distance is greater for rail
	2	In this case there are sufficient road back haul tons
	3	Road is competitive only if more than 75 % backhaul

Land Freight Modal Rate Comparison

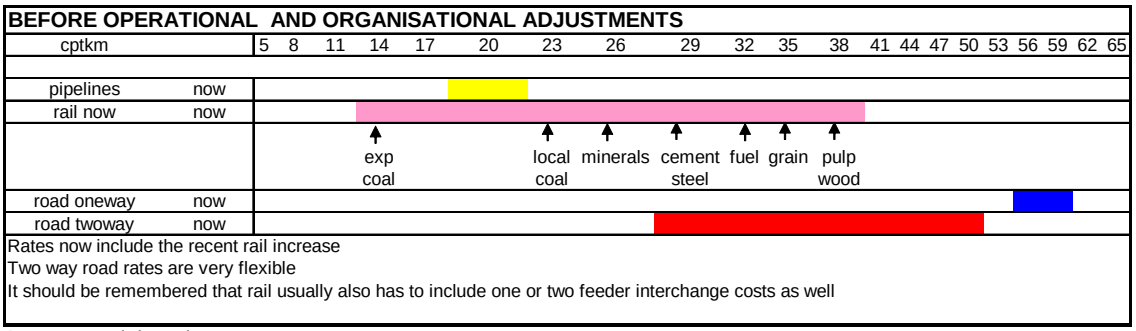
Calculation of the achievable comparative rates between the land freight modes is illustrated in Figure 6.7 below.

The rates shown in the “BEFORE” section are the prevailing rates, that are currently charged to users of the different freight modes.

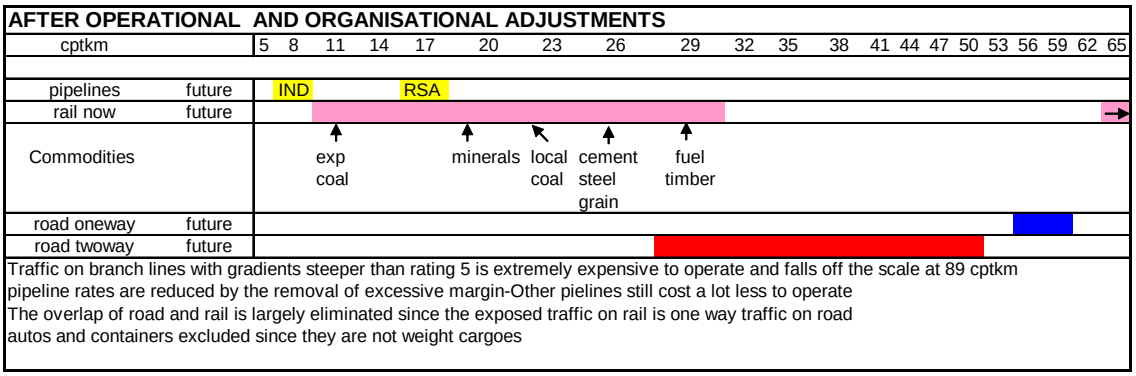
The “AFTER” rates are the rates that should apply if efficiency were improved and margins adjusted to remove the monopoly premiums.

Note: The comparative rates for pipelines that would result from reduction of the monopoly rate premium are shown in Figure 6.7 by way of comparison with road and rail rates.

Figure 6.7 – Comparison of Present and Potential Future Modal Rates



Source : Freight train



Source : Freight train

As shown, the skew of tariffs between modes would be removed by introducing competitive efficiencies and reducing monopoly margins.

By using rate tables such as those shown above would be possible to calculate the BEFORE and AFTER costs for all long haul freight, and by using the O&D pairs information developed in NATMAP Phase 2 It will be possible to evaluate the extent of the additional cost to the country of running a monopolistic rail freight transport system.

Table 6.5 below shows a very rough, but conservative calculation of the magnitude of the additional costs that are being incurred by industry from being forced to use road haulage for 50 million tonnes of potential rail freight.

Table 6.5–Estimated Additional Costs of Cargo Transferred to Road Haulage

Reason for Transfer	Annual Tonnes
Not Carried due to Lack of Competitive Service	35,000,000
Not Carried due to Strategic Withdrawal	15,000,000
Total Annual Tonnes	50,000,000
Average Distance	625.00
Average Rail Cost / TKm - 2008	27.48
Average Road Cost / TKm - 2008	55.66
Variance - Cost / TKm	28.18
Additional Cost of Transferring 50 million tonnes p.a. of Rail Freight to Road Haulage	**R 8,806,250,000**

Source : Freight train

One of the issues that gives rise to further concern about the future of rail-road share of the overall longhaul freight transport market is that the extensive [R92 billion] planned recapitalisation of the railways and ports may result in significant tariff increases as has happened to electricity

6.3.2.6 Double Handling

An unavoidable negative feature that always impacts on railways' ability to compete with road freight is the requirement to transport cargo by road to and from the rail point of contact (sidings, stations, terminal or loading area). The cost of the short haul road transport and the transhipment from road to rail is in many cases sufficient to justify use of direct long haul road transport, from load to unload point.

6.3.2.7 Technology

In South Africa, the railways face severe problems in competing with road freight due to the fact that most of the railway equipment is obsolete (20 to 30 years old) compared to "state of the art" modern road freight technology employing internationally designed truck tractor and trailer equipment with a range of efficiency features such as hydraulic loading, tipping, onboard weighing, vehicle tracking, radio communications, higher transit speeds and high quality customer interfaces and systems integration.

6.3.2.8 Customer Orientation

One of the most serious problems facing the railway, in recapturing any general freight tonnage, is the need to redevelop a customer orientation amongst operating staff. The current rigid definition of railway policy, makes little provision for customer needs and several of the organisation's policy changes such as the minimum wagon batch size, the ordering procedure for wagons, the response to non delivery of wagons, and the reaction from the railway management to serious industrial dissatisfaction, are all major problems and obstacles for future development of a customer oriented railway system.

The extreme centralisation of decision making also adds to the remoteness of the organisation's response from the customer supply requirements and local staff are apparently unable to increase the levels of service due to inability to influence the central planning process.

The general lack of responsiveness to customer demand and the denial of unsatisfactory service add to customer dissatisfaction and disaffection and promote the switch to road transport.

The recent trend of announcements by railway management that capacity for strategic bulk cargoes will only be provided after guarantees of volumes is likely to accelerate the trend to other solutions, such as a switch to Maputo or use of road haulage.

6.3.2.9 Electrification

The rail system of South Africa consists of approximately 20,000 kms of track, including branch lines and some urban commuter lines. All the main lines and heavily used secondary lines are electrified, but not all at the same voltages. In several areas the voltage differences and un-electrified sections of track impose operational limitations. Shunting operations in un-electrified sidings and transfers between lines require diesel locos, which are often greatly under-utilised.

The total length of electrified lines, at various voltages, is 8,425 kms as shown in Table 6.6 below.

Table 6.6– Electrification of Rail Lines in South Africa (2008)

Section		Km	System	Owner
Cape Town Suburban Area*	a	115	3 kV DC	TFR/SARCC
Cape Town – Beaufort West		546	3 kV DC	TFR
Beaufort West – De Aar		257	25 kV AC	TRF
De Aar – Kimberley		242	25 kV AC	TRF
Kimberley – Johannesburg		563	3 kV DC	TFR/SARCC
Kamfersdam – Hotazel		338	25 kV AC	TFR
Sishen – Saldanha		862	50 kV AC	TRF
Reef Suburban Area*	a	291	3 kV DC	TFR/SARCC
Potchefstroom – Houtkop		84	3 kV DC	TRF
Reef Freight Lines	a	190	3 kV DC	TRF
Johannesburg – Pretoria*		70	3 kV DC	TFR/SARCC
Pretoria – Pyramid		24	3 kV DC	TFR/SARCC
Pyramid – Polokwane		262	25 kV AC	TRF
Pyramid – Middelwit and Lephalale		257	25 kV AC	TRF
Pretoria – Komatipoort		473	3 kV DC	TRF
Derwent – Roossenenkal		101	3 kV DC	TRF
Phalaborwa – Kaapmuiden		220	3 kV DC	TRF
Pretoria Suburban Area*	a	110	3 kV DC	TFR/SARCC
Germiston – Witbank		142	3 kV DC	TRF
Delmas – Hawerklip		21	3 kV DC	TRF
Ogies and Wonderfontein – Ermelo		115	3 kV DC	TRF
Ermelo – Richards Bay		301	25 kV AC	TRF
Germiston – Bloemfontein		409	3 kV DC	TRF
Kroonstad – Ladysmith		346	3 kV DC	TRF
Union – Durban		698	3 kV DC	TRF
Glencoe – Vryheid		89	3 kV DC	TRF
Durban Suburban Area*	a	101	3 kV DC	TFR/SARCC
Durban – Empangeni		178	3 kV DC	TFR/SARCC
Durban – Port Shepstone, Simuma		124	3 kV DC	TFR/SARCC
East London – Springfontein		472	25 kV AC	TFR/SARCC
Port Elizabeth – De Aar		526	25 kV AC	TFR/SARCC
Total Route Kms		**8527**		
Summary				
3 kV DC		4 918		
25 kV AC		2 645		
50 kV AC		862		
TOTAL		**8 425**		

*Note : * The South African Rail Commuter Corporation manages 2 859 km of track, of which 97% is electrified. Some of these lines are shared with TFR.*
Note : [a] Represents an approximate figure.

The implications of having a large proportion of the rail system dependent on diesel fuelled locomotives needs to be addressed in relation to future fuel supplies and the potential of the rail system to compensate for any limitation of road freight capacity in the future.

6.3.2.10 Branch Lines

There are currently 81 branch lines in South Africa, covering approximately 10,000 kms of track and a providing potential rail services to a large part of the rural hinterland of the country.

The branch line system is South Africa was at one time a significant element of the overall rail system, providing feeder services to main lines. The inroads of road transport into the formerly rail commodity markets has left railways with unviable operations in many areas as branch line tonnages have been reduced. The present situation with all branch lines is shown in Annexure B.

For a variety of reasons the branch line services have been allowed to decline to the point where there are now 33 lines in operation, 14 lines that are currently closed or disused but potentially usable and approximately 8 lines that have been closed due to very poor prospects of future cargoes.

Some of the branch lines are important for current services and will almost certainly be regarded as part of the core network in any future rationalisation. The continued withdrawal of branch line service can be regarded as an ongoing restraint on the overall rail service that is promoting the switch to road haulage.

The recent announcement by the Minister of Agriculture that efforts will be made to revive the branch line services in agricultural areas, is further evidence of government's wish to revitalise rail services in rural areas, but the implementation is likely to require total reorganisation, restructuring and certainly involved some elements of government subsidisation in order to rehabilitate many of the lines which have been allowed to deteriorate to the point where resuscitation is going to be very expensive.

If a general reorganisation includes privatisation and the establishment of a satisfactory interline cooperation environment between branch line operators and the mainline service provider, there may be potential for revitalising some sections of the branch line system. The coordination of responsibilities between government departments is essential as the current separation of responsibilities is ineffective.

It must be noted that any trend to changing the rail gauge of main lines will have negative and probably terminal fatal for future revitalisation and accommodation of branch line traffic.

6.4 Future Operational Capacity Constraints by Mode

This section of the report describes the most pressing future constraints that will have impact on the effectiveness of each mode. It is assumed that the issues described under "current constraints" in the previous section, will be resolved. Failure to address the issues described will mean that they continue to impose further constraints in the future. The conservative estimate is that overall freight transport volumes will change during the period 2005 to 2050 by the amounts below;

Table 6.7– Total Annual Freight Tonnes by Mode (Millions)

	2005	%	**2050**	%
Rail Freight	182	9.3%	265	7.1%
Ports (including containers)	246	12.6%	600	16.1%
Pipelines	20	1.0%	45	1.2%
Road Freight Urban-	777	39.7%	1500	40.2%
Road Freight -Rural	630	32.2%	1100	29.5%
Road Freight - Corridors	103	5.3%	220	5.9%
Total Road Freight	1510	77.1%	2820	75.6%
	1958	100.0%	**3730**	100.0%

Within these data there is the fact that the demand for container handling at the port of Durban will increase almost 300 % from the present 3.0 million p.a. to approximately 9 million p.a. Motor vehicle imports and exports will rise to approximately 600 000 units p.a.

Urban road freight movements will swamp the existing road system and rural movements will pose serious challenges for the road systems and the enforcement authorities and the agencies charged with maintenance of roads.

Additional rail cargo of 30-40 million tonnes of general cargo (including containers) will require massive investment in rolling stock, locomotives, terminal facilities and upgrading of the main line systems.

Imports of diesel will require another pipeline to handle more than 40 million tonnes p.a. and there may be need for construction of a completely new liquid fuels handling system in Durban or Richards Bay, with attendant pipeline capacity to the interior.

6.4.1 Future Operational Capacity Constraints – Rail

In the analysis of future constraints in the rail sector it is important to define whether the institutional structure will be changed or the current "model" of service provision retained.

If the current situation is unchanged the following constraints can be identified.

6.4.1.1 Policy Constraints

The current operational constraints on the transport of goods by rail are largely the result of the deliberate policy directions taken over the past 20 years. The principal policy decisions taken during this period were:

a) that rail transport will remain a government parastatal monopoly
b) rail service would be constrained by parliamentary budget allocation initially, and later by governmental restraint on railway capital generation.
c) deliberate reduction of the skills and experience base of the railway company.
d) failure to attract, train and develop adequate technical skills and management capacity in relation to the national demand for freight transport.
e) failure to maintain rolling stock and provide for adequate maintenance capability.
f) deliberate closure of access points (rail stations and sidings) thereby excluding the transport of large proportions of general freight.
g) deliberate concentration on captive cargoes and industries without alternative mode.
h) deliberate ignorance of freight customer demand.
i) Abandonment of significant proportions of the rail system and centralisation of management and planning.
j) failure to develop operational managerial capability for transport of general cargo.

The result of all of the foregoing has been ongoing reduction of capacity to handle complex general cargo operations, which will require very high future expenditure and redevelopment to replace and expand. In order to take up 30-40 million tonnes of general cargo (or more) and revitalise services to all areas there will be a need for very large capital expenditure over the next 10 years, as well as large scale increases in operating capability. As this is almost certainly beyond the available resources the result is likely to be further restriction of rail freight capacity.

The future capacity of the rail system, if it continues to be confined to the operations of one parastatal company, is at this point unpredictable, as it is highly unlikely that the current staff, management and systems can be stretched to cover extensive general cargo operations and there is very limited available expertise in the country apart from some ex-railway personnel.

A problem with projecting future railway performance lies with the fact that there are limited authoritative alternative opinions to effectively evaluate the announced plans and policy directions of the railway administration and attempts by external transport consultants at obtaining the data on which plans are based has proved problematic over the past 20 years.

The future lack of capacity is particularly apparent in the following areas:

6.4.1.2 General Freight

a) customer access points (stations, sidings, terminals, intermodal systems access, etc)

b) the deliberate closure of contact points with the customer interface and lack of facilities to handle general cargoes mean that the potential for redeveloping the general cargo market is very severely limited by lack of facilities. Most factory and industrial development since 1990 has failed to make any provision for rail transport due to the policy of withdrawal of rail services for general cargo.

   The limited handling facilities that are available at the ports and industrial plants are currently inadequate to achieve the volumes that are proposed by railway plans and budgets.

   The current Transnet capital proposal suggests that R26 billion of expenditure by TFR would result in 64 million tonnes of general cargo, but that may not materialise.

   As an example of the capital constraints faced by railways in redeveloping general cargo services, Table 6.8 shows an estimate of the amount of additional equipment that would be required to move selected rail friendly cargoes that are currently transported by road on the Durban-Gauteng corridor. These commodities, amounting to about 16.5 million tonnes p.a. are considered to represent the immediate potential freight that could be attracted back to rail.

   The calculations are based on purchase of new equipment on the assumption that if sufficient equipment was currently available, this tonnage would already be using the rail mode and if it is not already on rail, it is because there is lack of the necessary equipment.

Table 6.8 – Estimated Capital Equipment to Rail 16.5 million tonnes p.a.

Wagon Requirements for 16 500 000 additional tons of traffic on Durban - Gauteng main line										
Commodity	Tons per annum	Wagon Type	Loads per annum	Revised turnaround time	Loads per annum (348 days) *	Total New Wagons + 10%	Wagons per train	Trains	Cost /Unit	Capital Required Rands
Inland										
Container	4,500,000	SMLJ	150,000	7 days	49	3367	50	3,000	900,000	3,030,300,000
Fuel	2,000,000	XP	50,000	12 days	29	1,897	40	1,250	1,300,000	2,466,100,000
Grain/Maize	1,000,000	FZ	22,727	14 days	25	1,000	50	455	960,000	960,000,000
Vehicle	1,000,000	SC	62,500	6 days	58	1,185	50	1,250	1,000,000	1,185,000,000
Other Liquids	500000	X, various	12,500	16 days	22	625	40	313	1,400,000	875,000,000
Other Dry Blk	500000	FZ, X	10,000	10 days	35	314	40	250	900,000	282,600,000
	9,500,000		307,727			8,388		6,518		**8,799,000,000**
To Coast										
Container	3,000,000	SMLJ	100000	see above	s/a	s/a	50	s/a	850,000	See inland total
Coal	1 000 000	BAD, CAL	19231	10 days	34	622	50	385	900,000	559,800,000
Steel	1 000 000	DAJ, DLJ	18519	12 days	29	703	50	371	890,000	625,670,000
Rock/Ore	1 000 000	CR-1	17241	8 days	43	441	50	345	900,000	396,900,000
Other	1 000 000	X, various	19 231	10 days	34	622	50	385	900,000	559,800,000
	7,000,000		**154,991**			**2,388**		**1,486**		**2,142,170,000**
		Total Wagons				**10,776**				**10,941,170,000**
s/a - See above										
* This is an arbitrary figure. A normal full year is 365 days, or 52 full weeks and and 1 day, except in a leap year.										
A 50 week year is 350 days and the use of 348 days is to allow for extra contingencies.										
Locomotive Requirements: Class 18E or equivalent										
	Trains per Annum (1)	Locos per train	Trips per week	Trips per Annum (2)	Loco sets per annum	Loco Required (3)	PrimaryRoute	Sec. Route (4)		Capital Required Rands (5)
Inland										
Container	3,000	4 Class 18E	2,5	125	24	96	Dbn - GP	To north		
Fuel	1,250	3 Class 18E	2,5	125	10	30	Dbn - GP	To north		
Grain/Maize	455	4 Class 18E	2,5	125	3,64	15	Dbn - FS	Branches		
Other Liquids	313	3 Class 18E	2,5	125	2,50	8	Dbn - GP	To north		
Other Dry Bulk	250	3 Class 18E	2,5	125	2,0	6	Dbn - GP	To north		
Total	**1486**					**155**				**5,425,000,000**
To Coast										
Container	2,000	4 Class 18E	2,5	s/a	s/a	s/a	GP - Dbn	Fm north		
Coal	385	4 Class 18E	2,5	s/a	s/a	s/a	GP - Dbn			
Steel	371	4 Class 18E	2,5	s/a	s/a	s/a	GP - Dbn			
Rock/Ore	345	4 Class 18E	2,5	s/a	s/a	s/a	GP - Dbn			
Other	385	4 Class 18E	2,5	s/a	s/a	s/a	GP - Dbn			
Total to Coast	**3,486**					**s/a**				
								Total Locomotive and Wagon costs (Rands)		**16,366,170,000**
Notes:										
Re locos: Sets of locos to complete three round trips per week between Durban and Gauteng or Kroonstad.										
This is 149.1 round trips per year but in practice only about 2,5 round trips per week are achieved, or 124.25 per annum										
1. Rounded to highest number										
2. Based on 2,5 round trips per week over a 50 week period between Durban and Gauteng or Kroonstad.										
Excludes branch line and extended main line requirements.										
3. It is assumed that return workings will be in the capacity of forward working requirements.										
4. Additional locomotives will be required for services beyond Kroonstad and Gauteng. For grain traffic, this will include locos operating on										
branch and main lines using electric and diesel locos for example. Such requirements have not been calculated in this spreadsheet.										
5. Estimated cost of 'new' 18E or Class 10E is R 28 million per unit for 155 units. To cater for repair and maintenance times, 170 locos will be										
required at a cost of R 4 760 000 000 (4.76-bn)										

As shown in Table 6.8, providing capacity for an increase of 16.5 million tonnes of general cargo to be transported by rail on the Durban–Gauteng main line would require capital expenditure of approximately R13.7 billion on rolling stock and locomotive power on this corridor. In this exercise, the amount of additional equipment required to move the tonnage between the origins and destinations and the main line have not been included. Some additional expenditure may also be necessary for shunting and materials handling equipment. The operating cost of such an exercise has not been calculated.

A further issue not under general discussion at present is the tariff implications of large capital injections into the state railway system, when recent and current proposed tariff increases are already deterring use of railways in many areas.

6.4.1.3 Coal

The transport of coal is the railway's biggest single commodity in South Africa so that projections of future usage and capacity must necessarily focus on the likely future demand and supply potential for this commodity. Table 6.9 below shows a projection of the likely future transport demand for coal by various major industrial groupings as well as the likely changes in source of coal supply.

Table 6.9 – Projected Sources and Users of Coal by Mode – 2005-2050

Projected COAL usage by User	Province/Area	Units	2005	2010	2015	2020	2030	2040	2050	Remarks
	MPUMALANGA		M/Tp.a.	M/Tp.a.	M/Tp.a.	M/Tp.a.	M/Tp.a.	M/Tp.a.	M/Tp.a.	
Planned ESKOM Power generation from COAL		kW	27780	29780	29780	34000	34000	31000	27000	life expired stations/coal in decline after 2030
Projected COAL Usage ESKOM - CONVEYORS		Tons p.a.	72	82	82	93	93	81	74	millions of tons
Projected usage ESKOM - ROAD [to power stations]		Tons p.a.	20	20	11	11	11	11	11	
Projected Usgae ESKOM -RAIL [to power stations]		Tons p.a.	4	4	13	13	13	13	13	rail captures road to majuba after cut off open
Total ESKOM		Tons p.a.	96	106	106	117	117	105	98	low qlty coal towards the end-more tons burned
Projected tons COAL - to SASOL [conveyors]		Tons p.a.	20	20	20	20	20	20	20	secunda steady throughout
Projected tons COAL - to Industry - RAIL		Tons p.a.	10	12	11	11	11	11	12	small growth-coal substitutes found
Projected tons COAL - to Industry - ROAD		Tons p.a.	12	11	12	12	13	13	12	
Total Tons to Industry [all over SA]		Tons p.a.	42	43	43	43	44	44	44	
Tons for Export - RAIL to Richards Bay		Tons p.a.	66	68	80	80	70	65	60	resources beginning to run out
Tons for export RAIL to Durban		Tons p.a.	2	2	2	0	0	0	0	terminal to Richards Bay
Tons for export Rail to Maputo		Tons p.a.	2	2	2	2	2	2	2	growth from Limpopo coal
Tons for Export		Tons p.a.	70	72	84	82	72	67	62	
	LIMPOPO		M/Tp.a.	M/Tp.a.	M/Tp.a.	M/Tp.a.	M/Tp.a.	M/Tp.a.	M/Tp.a.	
Planned ESKOM Power generation from COAL		kW	3990	3990	8000	12100	16500	20500	24500	Lephalale coal field growth
Projected COAL Usage ESKOM - CONVEYORS		Tons p.a.	12.8	12.8	25	25	37	48	48	
Projected usage ESKOM - ROAD [to power stations]		Tons p.a.	0	0	0	0	0	0	0	
Projected Usage ESKOM -RAIL [to power stations]		Tons p.a.	0	0	0	0	0	0	0	
Total ESKOM		Tons p.a.	12.8	12.8	25	25	37	48	48	Replaces declining Witbank field
Projected tons COAL - to SASOL [conveyors]		Tons p.a.	0	0	20	20	20	20	20	chemical plant at Lephalale
Projected tons COAL - to Industry - RAIL		Tons p.a.	1	1	1	1	2	2	2	
Projected tons COAL - to Industry - ROAD		Tons p.a.	0	0	0	0	0	0	0	
Total Tons to Industry [all over SA]		Tons p.a.	1	1	21	21	22	22	22	
Tons for Export - RAIL to Richards Bay		Tons p.a.	1	2	10	20	30	40	50	replace witbank field-some tons from Botswana
Tons for export RAIL to Durban		Tons p.a.								
Tons for export Rail to Maputo		Tons p.a.	0	0	1	2	2	3	3	new flow from northern fields
Tons for Export		Tons p.a.	1	2	11	22	32	43	53	
	FREE STATE		M/Tp.a.	M/Tp.a.	M/Tp.a.	M/Tp.a.	M/Tp.a.	M/Tp.a.	M/Tp.a.	
ESKOM and OTHER Power generation from COAL		kW	3708	3708	3708	7700	7700	7700	4100	1 new station-then letabo coal runs out
Projected COAL Usage ESKOM - CONVEYORS		Tons p.a.	12	12	12	24	24	24	12	
Projected usage in SA - ROAD [to power stations]		Tons p.a.	0	0	0	0	0	0	0	
Projected Usage in SA -RAIL [to power stations]		Tons p.a.	0	0	0	0	0	0	0	
Total Power Generation OTHER		Tons p.a.	12	12	12	24	24	24	12	
Projected tons COAL - to SASOL - CONVEYOR		Tons p.a.	20	20	20	20	20	20	20	sasolburg continues
Projected tons COAL - to Industry - ROAD		Tons p.a.	0	0	0	0	0	0	0	
Total Tons		Tons p.a.	20	20	20	20	20	20	20	
Tons for Export - RAIL to Richards Bay		Tons p.a.	0	0	0	0	0	0	0	
Tons for export RAIL to Durban		Tons p.a.	0	0	0	0	0	0	0	
Tons for export Road to Durban		Tons p.a.	0	0	0	0	0	0	0	
Tons for Export		Tons p.a.	0	0	0	0	0	0	0	
			M/Tp.a.	M/Tp.a.	M/Tp.a.	M/Tp.a.	M/Tp.a.	M/Tp.a.	M/Tp.a.	
Projected Usage in SA -RAIL [to power stations]		Tons p.a.	4	4	13	13	13	13	13	
Projected tons -COALINK		Tons p.a.	67	70	90	100	100	105	110	first overvaal tunnel double,then lephalale
Projected tons NATCOR		Tons p.a.	2	2	2	0	0	0	0	upgrade, then new wagons
Projected tons-Maputo line		Tons p.a.	2	2	3	4	4	5	5	[Note : until these happen tons
Projected tons to industry -RAIL		Tons p.a.	11	13	12	12	13	13	14	will stay below 70 mtpa.
Projected tons by RAIL		Tons p.a.	86	91	120	129	130	136	142	
Projected tons by ROAD		Tons p.a.	32	31	23	23	24	24	23	

The anticipated depletion of the Mpumalanga coal fields over the next 30 years and the development of new mines in Limpopo will have implications for the demand for rail transport of coal both to industry and to export ports. The actual proportions that will be used for different purposes will depend on a complex interaction of export prices, cost of developing new mines, local demand for power station coal, production costs and rail tariffs. In the table above it has been assumed that about 25% of power generation will be derived from nuclear power stations.

It is apparent that considerable capital development will be required to achieve the suggested levels of export, (if Limpopo coal is to be exported there will be a need for upgrade of the line from Ogies to Lephalale for 30 tonne axle loads), but if the costs are ultimately to be funded by the exports of the coal mining industry there will be the need for evaluation of the tariffs that will be required to cover the developments. The strategic fragmentation of the mining industry has reduced the potential for TFR to obtain forward commitments without which the developments may not take place.

The proposed 95 million tonnes p.a. to be exported through Richards Bay will require very extensive re-engineering, re-equipping and upgrading of the Coallink line as it was built in the 1970s and current performance has reduced over the past 5 years to about 62 million tonnes p.a. due to derailments, cable theft and operational problems. The re-engineering will need to include rationalisation of power supply around Ermelo (standardise current and replace sections worked by diesels) doubling of the Overvaal tunnel, increased passing loops and integration of through lines for traffic from Limpopo.

6.4.1.4 Iron Ore

The Sishen–Saldanha Line handles approximate 39 million tonnes per annum of iron ore from the mines in the Northern Cape. The 861 kilometre line was built by Iscor and opened in 1976 with a capacity of 17,5 mtpa. The line has 10 crossing loops for train crossings spaced 80-90 kilometres apart. Spoornet took over the line in 1977 as a 15 year run-out project; the plan was that the line would revert back to Iscor after 15 years. Assmang started exporting iron ore over the line from Beeshoek (70 km south of Sishen) in 1978.The capacity of the line was increased in 2002/03 by installing intermediate loops increasing these to 20.

Current plans are to expand the line capacity to 45 million tonnes p.a. as a first stage, using a range of operational and infrastructural developments, including revised train configurations, more, longer crossing loops, distributed power locomotives and revised operating schedules. The first stage is in progress and within current budget allocations.

The plan is then to increase the capacity to keep pace with assumed resurgent demand for iron ore exports, which will hopefully take place over the next few years.

Port development will also be necessary to keep pace with the increasing line capacity.

6.4.1.5 Manganese

Current limitations of the bulk terminal at Port Elizabeth are the major cause of the diversion of manganese by rail from Northern Cape to Durban. The terminal has a capacity of 2-3 million tonnes per annum and although rail capacity could handle the excess tonnage the terminal cannot.

There are 9 trains per week scheduled on that route and there is capacity for more, but the receiving terminal cannot handle additional tonnage so in 2008 approximately 660,000 tonnes was handled at Durban. The estimated volume for 2009 of about 300,000 tonnes per annum are a reflection of the reduced export demand.

Until more terminal capacity is developed at Port Elizabeth or Ngqura, rail or road haulage to Durban will continue if export prices justify the additional costs.

6.4.1.6 Timber

The current pressures by TFR for tariff increases in the transport of timber are likely to result in diversion of significant tonnages of timber from rail to road in the immediate future. The capacity of the rail services on branch lines is highly questionable, as erratic service, slow delivery and increasing costs are being experienced by timber growers in all areas.

A recent announcement by Sappi that they intend to abandon rail in favour of road transport is indicative of the dissatisfaction of the major users, with the rail services provided.

A further development that will change the future situation is that South Africa is likely to experience a reducing output of export roundwood and pulpwood over the next 10 years, with increased emphasis on production of building and construction timber, locally grown or imported.

Pressures on water supplies by the authorities, municipal land valuations, land redistribution, and rising costs are all likely to induce the timber producers to reduce the area of their operations.

6.4.1.7 Maize

The switch of maize traffic from rail to road continues due to the limited services offered by the railways on branch lines, from the maize silos which are the primary storage points for farm deliveries.

In many areas, the silos (which are all located on rail lines) are served totally by road, with no attempt to use rail transport due to erratic services and high tariffs. This is particularly evident in northern KZN, Free State, North West and parts of Mpumalanga.

6.4.1.8 Sugar Cane

The sugar industry in KwaZulu Natal and Mpumalanga has generally abandoned the use of railways over the past 20 years, with the last line transporting significant quantities of sugar cane (Nkwalini 450,000 tonnes per

annum) being abandoned in 2009. Mills that were specifically designed to receive rail transport such as Felixton, have had to adapt to reliance to road haulage and in the north eastern KZN areas, large tonnages of sugar cane are being hauled by road in various directions between mills that compete for the sugar cane produced by growers.

The transport of sugar by rail (which used to be the standard method), now only takes place between two sugar mills (Amatikulu and Felixton) and the terminal in Durban. Sugar haulage has switched to road at all other mills in the industry, due to rail tariff and service limitations apart from a small volume between Noodsberg and Germiston.

5.5.2 Main Line Freight Rail Operations

a) Durban-Gauteng

This route is the main line between Durban and Gauteng, known as "Natcor" by the railway administration. It is regarded as the most important general freight rail route in South Africa, and carries about 20 million tons of traffic on various portions of the route made up of coal, fuel, iron ore, steel, grain, vehicles and containers.

The line delivers approximately 8 million tons of cargo to the Port of Durban and also carries traffic for Richards Bay that is forwarded on the North Coast line.
Varying amounts of traffic feed on to and from the line at different points so that operations are different in the 3 provinces traversed by the line.

Operations on the Durban – Gauteng Line

Route:	Durban – Gauteng via Volksrust
Route distance:	730 km
Infrastructure:	Double track throughout, electrified at 3 KvA, CTC train control
	over entire route. 21.5 ton axleload for wagons
Condition:	Fair to good. Track condition and geometry acceptable for current
	train speeds. Formation and drainage problems in some areas, particularly
	between Durban and Cato Ridge.
Major Commodities:	Containers, Automobiles, Minerals, Coal, Steel,
	Chemicals, Liquid Fuel, Aggregates, Grain, General Cargo
Operation:	Block loads running between Durban and City Deep (Gauteng) on planned schedules
Description:	Durban to City Deep via Volksrust
Annual Tons:	Varies for sections of line - 20 million in total : approximately 8 million tons to Durban
Daily Tons:	4 900 to 5 000 net tons
No of Trains:	3 to 5 southbound
No of Trains:	3 to 5 northbound
Wagons per train:	50
Gross Tons per train:	2 550t
Net Tons per train:	1 500t (when fully loaded, 100 TEU's)
Transit time:	14 – 19 hours
Wagons used:	SMLJ flat cars of various types
Locos used:	3 to 4 Class 18E electric locos
Wagon turnaround:	5 – 8 days
Capacity:	Total capacity of line for through traffic – 75 to 100 trains per day
Capacity used %:	For all traffic, currently 23 – 28% depending on section
Traffic Constraints:	Power cable theft, ESKOM power outages, locomotive and
	staff shortages.

b) Operations on the Cape Town – Gauteng Line

Route	Cape Town – De Aar – Kimberley – Gauteng
Route Distance	The 1 538-km route between Cape Town and Gauteng via Kimberley is the
	most direct route although there is an alternative route from De Aar to
	Bloemfontein but this is 1 611-km in length.
Infrastructure Details	Double track Cape Town to Wellington, Klerksdorp to Johannesburg.
	Single track on balance of route. Electrified at 3 kV DC from Cape Town to
	B West and Kimberley to Johannesburg, 25 kV AC from B West to Kimberley.
Line Condition	Generally good
Maj. Commodities	Through traffic: Coal, containers, steel, grains, automobiles, general From Kamfersdam (north of Kimberley): Manganese to PE, iron ore to the north, cement to Namibia, Free State, E Cape.
Operation	Block loads for most traffic running on planned schedules
Traffic Description	Through container and coal traffic between Cape Town and Gauteng. Mineral
	trains from Postmansburg to Port Elizabeth via Kimberley and De Aar and to
	Gauteng and KZN
Annual Tons	About 3 million tons of through traffic; 5.6m tons of iron ore and 1.8m tons of
	manganese to north; 2.1m tons manganese to PE;2.5m tons of cement
	and lime to various destinations
Daily Tons	7 500 - 8 000 tons of through traffic; 20 000t Kamfersdam to north; 5 700t Kamfersdam to south
Number of Trains	6 - 8 trains in each direction on section to De Aar; Up to 20 north of Kimberley
	to Potchefstroom
Wagons per Train	40 for vacuum brake trains over entire route; up to 100 for air braked trains
	from Kamfersdam
Gross tons per Train	2 400t for vacuum brake trains; 8 000t for air brake trains
Net Tons per Train	About 1 600t for vacuum brake trains and 6 800 to 7 000t for air brake trains
Transit Times	26 - 30 hours for through trains although express PX trains reduced this to
	16 hours during 1980's.
Wagons Used	All types
Locos Used	6E, 11E and 14E electric locomotives
Wagon Turnaround	6 - 8 days for through trains
Line Capacity	About 60 in both directions between Worcester and Beaufort West; up to
	200 north of Kimberley
Capacity used	15 to 30% depending on section.
Constraints	Electric cable theft; ESKOM power outages; staff and equipment shortages;
	single track line Kimberley to Wellington.

c) Operations on the Gauteng – Beit Bridge

Route	Tshwane – Pyramid - Pienaarsrivier – Polokwane – Beit Bridge
Route Distance	This 555 route kilometre line (from Pyramid to the north) serves the Gauteng
	and Limpopo provinces,as well as international traffic to Zimbabwe
	and countries to the north.
Infrastructure Details	Double track from Pretoria North to Pienaarsrivier. Single track to north
	Electrified at 25 kV AC from Pyramid (north of P. North) to Pietersburg
	CTC train control to Pietersburg, Track Warrant system to Beit Bridge.
	1 in 76 ruling grade to Pienaarsrivier; 1 in 50 to the north
Line Condition	Generally good
Maj. Commodities	Containers, liquid fuel, general to north; Coal, Copper, Asbestos, Timber, Containers to the south. Seasonal refer fruit traffic from lowverld via Tzaneen - Groenbult line
Operation	Block and mixed loads with most trains running on planned schedules
Traffic Description	Through container traffic between Gauteng and Harare (Zimbabwe).
	Block Coal trains from Musina to south; Mixed loads of liquid fuels to north;
	mineral traffic from Zambia, Zimbabwe and DRC, some running via Tzaneen
Annual Tons	About 3 million tons of traffic of which over 1 million was transit traffic to and
	from countries to the north; over 430 000 tons of coal from Musina;,
	nearly 140 000 tons of Fluospar from Pienaarsrivier and 200 000 tons of lime
	products from Bella-Bella to various destinations
Daily Tons	8 000t to 9 000 tons
Number of Trains	8 to 10 trains in each direction from Pyramid to Polokwane.
	6 to 8 trains in each direction per day to Beit Bridge
Wagons per Train	40 for vacuum brake trains over entire route; 60 for air braked coal trains
Gross tons per Train	2 400t for vacuum brake trains; 4 800t for air brake trains
Net Tons per Train	About 1 600t for vacuum brake trains and 3 500t for air brake trains
Transit Times	15 - 18 hours for through trains.
Wagons Used	All types
Locos Used	6E and 10E electric locomotives, Class 34 diesels north of Polokwane
Wagon Turnaround	12 - 22 days for through trains crossing border.
Line Capacity	60 to 80 trains per day in both directions between Pienaarsrivier and
	Polokwane. 35 to 50 north of Polokwane
Capacity used	25 to 30% depending on section. Musina - Groenbult section 50%
Constraints	Electric cable theft; ESKOM power outages; staff and equipment shortages;
	lower carrying capacity north of Polokwane

d) Operations on the Gauteng – Ressano Garcia

Route	Gauteng - Ressano Garcia (the Maputo Corridor)
Route Distance	478 route kilometre line from Tshwane (Pretoria) to Ressano Garcia
Infrastructure Details	Single track and electrified at 3 Kv DC throughout. Train control by CTC.
	1 in 50 Compensated gradients.
Line Condition	Generally good
Maj. Commodities	Coal, Containers, steel and liquid fuels. Transit mineral traffic and minerals from various branches.
Operation	Block and mixed loads with most trains running on planned schedules
Traffic Description	Through container and coal traffic between South Africa and Mozambique
	Timber traffic from associated branches to KZN and Gauteng
	Mineral traffic from associated branches to various on-line points and KZN
Annual Tons	About 8 million tons of traffic of which about 2 million is transit traffic over
	various portions of the line. There is transit traffic from Mozambique as well
	as coal and chrome ores from branches to KZN. Steel from on-line mills.
	Over 2 million tons of rock phosphate and magnetite move from Phalaborwa
	to Kaapmuiden and Komatipoort, en route to Richards Bay.
Daily Tons	20 000t to 25 000 tons per day depending on section
Number of Trains	25 to 40 trains a day depending on section
Wagons per Train	40 wagons for vacuum brake trains, up to 75 for air brake trains
Gross tons per Train	2 400t for vacuum brake trains; 5 000t to 6 000t for air brake trains
Net Tons per Train	About 1 600t for vacuum brake trains and up to 4 500t for air brake trains
Transit Times	8 - 10 hours for through trains.
Wagons Used	All types
Locos Used	Class 6E1, 10E, 18E electric locomotives
Wagon Turnaround	8 - 12 days for through trains crossing border.
Line Capacity	70 to 120 trains per day in both directions
Capacity used	20 to 50% depending on section.
Constraints	Electric cable theft; ESKOM power outages; staff and equipment shortages;

e) Operations on the Gauteng – Mafikeng line

Route	West Rand Junction – Zeerust - Mafikeng
Route Distance	This 270 route kilometre line (from West Rand Junction to Mafikeng) serves
	the Gauteng and North West Province,as well as international traffic to
	Botswana and countries to the north.
Infrastructure Details	Single track throughout. Train control by the Track Warrant System.
	Ruling gradient 1 in 35 Compensated to Zeerust, 1 in 52 Comp. to Mafikeng
Line Condition	Generally good
Maj. Commodities	Liquid fuel, cement, flouspar, Containers
Operation	Block and mixed loads with most trains running on planned schedules
Traffic Description	Through container traffic between Gauteng and Gaberones (Botswana).
	Liquid fuel traffic from Tarlton to Botswana and points north;
	Cement traffic is generated at Slurry and fluospar from near Zeerust.
Annual Tons	About 2 million tons of traffic of which over 1 million is transit traffic to and
	from Botswana and countries to the north; over 270 000t of cement,
	100 000t of fluospar and 400 000t of liquid fuels.
Daily Tons	5 000t to 6 000 tons per day
Number of Trains	4 through trains between Krugersdorp and Mafekeng
	Extra trains for cement from Slurry to Mafikeng as required
Wagons per Train	40 wagons for vacuum brake trains, 50 for air brake trains
Gross tons per Train	2 400t for vacuum brake trains; 3 000t for air brake trains
Net Tons per Train	About 1 600t for vacuum brake trains and 3 000t for air brake trains
Transit Times	7 - 8 hours for through trains.
Wagons Used	All types
Locos Used	Class 34 diesels
Wagon Turnaround	8 - 12 days for through trains crossing border.
Line Capacity	42 to 44 trains per day in both directions
Capacity used	25 to 30% depending on section.
Constraints	Single track with steep gradients

f) Operations on the Gauteng – Port Elizabeth Line

Route	Hotazel - Port Elizabeth (via Kimberley, De Aar and Noupoort)
Route Distance	1 024 kilometre on the route from Hotazel to Port Elizabeth
Infrastructure Details	Single track and electrified at 3 Kv DC from Hotazel to Kimberley. 25 Kv AC
	from Kimberley to De Aar, Noupoort and Port Elizabeth
	Train control by CTC. 1 in 100 gradient Hotazel to Noupoort, 1 in 72 and .
	1 in 80 gradients to Port Elizabeth.
Line Condition	Generally good
Maj. Commodities	Export manganese ore
Operation	Block loads with trains generally running on planned schedules
Traffic Description	Manganese ore
Annual Tons	About 2 million tons of export traffic and 1.8 million tons for domestic use.
	The domestic traffic is routed northwards from the main line junction north of
	Kimberley.
Daily Tons	20 000t to 25 000 tons per day depending on section
Number of Trains	7 to 8 trains a day on Hotazel line. One train a day to Port Elizabeth
Wagons per Train	100 wagons for export air brake trains
Gross tons per Train	8 000 tons
Net Tons per Train	6 300 tons for block loads of export manganese
Transit Times	22- 25 hours
Wagons Used	Various CR ore wagons
Locos Used	Class 6E1 and 10E electric locomotives
Wagon Turnaround	4 - 6 days
Line Capacity	Hotazel - Kimberley: 48 to 90 trains per day in both directions
	Kimberley - De Aar: 90 - 100 trains; De Aar - P.E. 90 - 120 trains per day
Capacity used	20 to 40% depending on section.
Constraints	Electric cable theft; ESKOM power outages; staff and equipment shortages;

g) Operations on the Bloemfontein – East London

Route	Bloemfontein - Springfontein - East London
Route Distance	614 kilometres on the route from East London to Bloemfontein which includes
	the 142 km section of the Free State main line from Bloemfontein
	to Springfontein
Infrastructure Details	Single track and electrified at 25 Kv AC from East London to Springfontein
	Diesel operated from Springfontein to Bloemfontein. Train control by CTC.
	1 in 50 gradient East London to Queenstown; 1 in 40 Queenstown to .
	Burgersdorp; 1 in 80 to Springfontein and Bloemfontein
Line Condition	Generally good
Maj. Commodities	Grain traffic, liquid fuels, cement, containers, beer
Operation	Largely Block loads with trains generally running on planned schedules
Traffic Description	Cement and grain traffic is normally run in block loads. Other traffic is mixed
Annual Tons	About 1 million tons of which some 780 000 tons is received and 75 000 tons
	is generated. . About 150 000 tons is intrastate, mainly beer and associated
	materials between Port Elizabeth and East London
Daily Tons	2 500t to 3 000t over line
Number of Trains	3 - 4 trains per day, depending on section.
Wagons per Train	Air brake trains can run in 50 wagon lengths but most are shorter
Gross tons per Train	2 500 - 3 000 tons
Net Tons per Train	2 200 tons for block loads of grain
Transit Times	15 to 18 hours
Wagons Used	Various DG, DZ, FZ, XP wagons
Locos Used	Class 34 Diesel locos from Bloemfontein to Springfontein.
	Generally Class 10E electric locomotives from Springfontein to East London
Wagon Turnaround	4 - 6 days
Line Capacity	Bloemfontein - Sprinfontein: 60 to 80 trains per day in both directions
	Springfontein - East London: 50 - 60 trains trains per day
Capacity used	15 to 20% depending on section.
Constraints	Electric cable theft; ESKOM power outages; staff and equipment shortages;

i) Maputo Main Line Rail Operations

The main rail line to Maputo connects to the South African system at Komatipoort that is the end of the Witbank-Nelspruit-Komatipoort line. Locomotives are changed for the run from Ressano Garcia to Maputo with a branch to the Matola Terminals and the port of the port of Maputo.

Cargo destined for Maputo either travels the length of the line from Gauteng or in the case of iron ore, enters the line from Phalaborwa at the Kaapmuiden junction. There are 8-10 trains per day in each direction hauling 3.5 million tons p.a.

There is a major bottleneck between Komatipoort and Maputo. The line is a single line with nine passing loops, but currently has an 18.5 ton axle load restriction.

The trains would normally be hauled by 4 Class 35 diesels with gross train weights of 4000 tons. Because some bridges are in disrepair there is a restriction on the weight of locomotives, to two Class 35 diesels on any single train; thereby restricting the gross trailed weight of trains to 2,100 tons. This severe restriction has been in place for a long time whilst bridge repairs are being done, but it is reported that the restrictions on the bridges and axle loads will be lifted in the near future. As soon as this happens the infrastructure capability of this section of railway will match that on the South African section of the line.

It will of course then be necessary for the CFM to provide locomotives of an appropriate size and for the CFM and TFR to provide adequate numbers of wagons for the total journey. Past experience suggests this may take time to implement.