A brief history of transport infrastructure in South Africa up to the end of the 20th century

Chapter 4: The rise and fall of rail – fluctuating fortunes for modern rail infrastructure up to the 21st century

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INTRODUCTION

Whilst railways had played a major role in building up South Africa during the late nineteenth and early twentieth century, they unfortunately also became a "political toy". Many politicians "got to parliament" by promising voters their own branch lines, and far too many lines were built – which even today the successor to the early rail authority is trying to make profitable. Despite this, railways played a major role in the early development of South Africa. Unfortunately the "once mighty" rail system had, by the end of the Second World War, degenerated so much in the condition of its infrastructure that a massive effort was necessary if it was to be restored to its earlier prime role in transportation in South Africa. Added to this was the problem facing railways worldwide – the dawn of the era of road traffic. Just as inland water transport (canals) had developed, reached its peak and then subsided, to be replaced by the steam engine, so too was rail approaching the end of its dominant era, and was shortly to be replaced as the prime mover of goods and people by the new invention – the road motor vehicle powered by the internal combustion engine.

MASSIVE RECONSTRUCTION PROGRAMME

Recognising the challenge facing the rail mode of transport at the end of the Second World War, a massive reconstruction plan that was to herald the dawn of thirty more golden years for rail was put in place. A new post of Chief Technical Officer (Reconstruction) was created to plan and execute the most pressing new works. However, shortages of trained staff and money made the work difficult, and it was not until 1950 that the tempo of work on essential facilities really began to meet demands.

At that time the network was a mature one, and more or less established in extent. It was, however, necessary for a programme of expansion to be put in place in respect of new mechanical workshops, new stations and buildings, and extended marshalling yards, as well as other rehabilitation works. Improvements were also to be made to the existing routes in the form of new lines, doubling or extra crossing loops, and re-railing with heavier rail. Added to this was the electrification of some, mainly urban area, lines, and a process of improved signalling and centralised traffic control (CTC) to increase the capacity of the existing lines. In the first ten years of this reconstruction programme, R452 million (in rand values of those days) had been spent on improvements to the rail system.

An interesting element of this programme of expansion relates to the "non-development" at an early stage of an electrified network. Years earlier, a scheme for a system of electrified railways had been prepared. The idea was accepted, but not generally implemented because of the high cost at the time, even though worldwide there was a move from steam locomotives to electric powered units. The then new National Party government, however, felt that steam locomotion would have to continue serving its purpose and was not yet "finished" in respect of its utility value. During the early fifties the concept of electrified network was mooted – but still not universally implemented throughout the network for financial reasons. Later, under the influence of North American interests, a decision was taken in the mid-fifties in favour of diesel locomotives as the main hauling unit for rolling stock. A pilot project in the use of diesel locomotives was embarked upon in 1959 in the then South West Africa – this proved successful and the introduction of diesel locomotives into South Africa went ahead.

The growth in freight traffic in the fifties and sixties, aided by a strictly regulated system for the movement of freight, which prevented the conveyance of many types of general freight by road, together with the then run-down condition of the existing rolling stock, necessitated a major expansion in the acquisition of new rolling stock. In general, this was of a new type, which meant that existing mechanical workshops could not easily handle its maintenance. Consequently a programme, which lasted from the fifties right up to the seventies, was put in place to upgrade existing workshops and build new ones.

UPGRADE OF MAIN LINES

The permanent way infrastructure also required major improvement to handle traffic demands during this period. The Durban to Johannesburg line was the most important section in the network and was given priority. During the decades of the mid-fifties to mid-seventies this line received considerable attention. It was doubled throughout, and in addition to being re-railed with heavier section rail, numerous improvements to its alignment were made. A notable feature at the time was the construction of many new tunnels to shorten and improve the route to a 1 in 50 ruling grade. The Boughton to Cedara dual tunnels constructed between 1957 and 1960 were, at four miles in length, the then longest railway tunnels in South Africa (a project which incidentally the author worked on as a young engineer). Other tunnels built on this line were those in the Heidelberg area, and in the Drakensberg near Van Reenen, where a spiral tunnel was constructed. In general, all tunnelling at the time was carried out by departmental forces, which had gained a worldwide reputation in tunnelling. New stations on the deviations were also built

and extensive improvements to the track made. The line was also electrified throughout.

The Johannesburg to Cape Town route also enjoyed attention at the time. Because of its much greater length, and lesser traffic volumes, a decision was taken not to double the route in its entirety, but rather to build long crossing loops, facilitated by improved CTC signalling to handle the increased traffic volumes. There were, however, some major deviations constructed on this route. These included those in Biesiespoort and the Laingsburg areas. Towards the end of this period of expansion, in the late eighties, the infamous crossing of the Hex River Mountains in the Cape was eliminated through the construction of what is now the longest rail tunnel in South Africa, the Hex River Tunnel. This 13.5 km long tunnel was the subject of much controversy and acrimonious negotiation with the contractor concerning "changed geological conditions" from those put forward at the tender stage and led to legal action being taken in respect of massive claims for extra payment.

An important activity on this route in particular, but also on other routes, was to "make safe" the many dangerous level crossings, i.e. crossing points between rail and road traffic. Accordingly, a programme for the elimination of level crossings by the construction of overpass bridges for the now rapidly growing road traffic was put in place. This work was financed through a separate fund termed the Level Crossings Elimination Fund. The fund was augmented by equal contributions from the rail and road authorities, and from the Treasury, and played a large role in improving safety for, particularly, road traffic.

The other links in the rail network, which had virtually been fully established at the turn of the twentieth century, were also upgraded and improved. A notable area of new construction was in the Eastern Cape where the routes from East London and Port Elizabeth to De Aar received considerable attention. A feature of this work was once again the construction of numerous tunnels to eliminate steep and difficult sections on the existing line.

To handle the large traffic movements efficiently, it also became necessary to construct vast marshalling yards to "make up" train sets. Unfortunately, these marshalling yards were later to become white elephants with the advent of containerisation in the early eighties. In addition to these yards, major goods depots/yards were constructed at Kazerne on the Witwatersrand and Culembourg in the Western Cape.

ATTENTION TO URBAN LINES

Parallel with these inter-city improvements, much work also took place in upgrading the network in urban areas, for mainly commuter traffic. The Western Cape System particularly enjoyed the benefits of much of this expansion to serve the rapidly burgeoning housing areas on the Cape Flats, and also northwards to Saldanha – both products of the separate development policy of the government at the time.

Government had by the mid-sixties fully developed its segregation policy with separate living areas for different racial groups, and the burden fell strongly on the railways, at the time, to handle the vast volumes of commuter traffic generated by this political policy. Much expenditure was devoted towards new infrastructure to handle this "artificial" traffic demand. Unfortunately, the Treasury, whilst initially playing a role in the extra funding required, at a later stage (in the early eighties) withdrew its financial support. This led to acrimonious debate between the rail and financial authorities. The rail authority's viewpoint was that they were unable to charge "economic" fares for this traffic, for political reasons. This fell on deaf ears within Treasury and led to an eventual decision by the then Transnet to disinvest in the commuter rail and rolling stock facilities. The seed was unfortunately sown by this obduracy for the vastly under-financed, and dangerously outdated, commuter rail system operating during the nineties, and even up to today. The South Africa Rail Commuter Corporation (SARCC) and its successor continually and constantly raised the issue of an unsafe and inadequate commuter rail system with the financial authorities – to no avail – until very recently. For example, in the year 2000 at a Department of Finance Infrastructure workshop, the SARCC estimated that an annual capital investment in commuter rail of R2 050 million per annum was necessary for "dynamic growth" of its operations, whereas at the time the actual investment amounted to R355 million per annum. The result of this under investment was a serious deterioration of its rolling stock, its signalling facilities and the permanent way.

STATION UPGRADES

During the vast rail expansion programme of the fifties, sixties, and seventies it also became necessary to upgrade certain stations, notably those at Johannesburg (Park Station), Cape Town and Durban. The Park Station redevelopment was a major feat of railway and civil engineering, which has won worldwide acclaim. Because this station was situated in a very densely developed CBD area, it was not feasible to build the new improved station at ground level, but rather it had to be located below the ground. This major task, undertaken during the fifties, involved sinking underground a whole new station, on an "open line", without disrupting traffic. That this was done without a single train delay during the entire nine-year construction period is a major tribute to the careful planning and construction work of the railway civil engineering team.

At the same time a new station was constructed in Cape Town as part of the foreshore development programme. The primary problem in this work was the necessity to work in an archeologically rich area without damaging any artefacts. This was also a very successful project, which has considerably enhanced the lower Adderley Street area of the Mother City.

The third major station to require upgrading during this period was in Durban. This new station was unfortunately built in a location remote from the CBD. This fact, together with the subsequent alterations to the rail network in the area, mitigated against the development of a rail-based commuter transport system for Durban, which was at the time being promoted by the Department of Transport, similar to the well-known and successful Melbourne Loop in Australia. However, in the intervening years the area surrounding the "once remote and little used" Durban main line station building has gradually become developed – and with good planning the station could be re-invented to become an integral part of Durban's passenger traffic pattern.

IRON ORE AND COAL EXPORT LINES

The growth in the export potential of coal led to the construction of two major new railway projects – the Sishen to Saldanha rail route for conveying iron ore, and the "Coal Line" between the Eastern Transvaal (Mpumalanga) coalfields and Richards Bay.

The Sishen to Saldanha line was planned and constructed on behalf of ISCOR, by private sector consulting engineers and con-

tractors as a means of conveying iron ore, mined at Sishen, to the overseas markets. Against the wishes of the SAR administration, who would have preferred to convey the ore via existing lines to the Eastern Cape harbours, Iscor opted for a new and innovative line to a new harbour opened for this purpose at Saldanha, previously a fishing port. The design approach was unusual in that its basis was not that of conforming to the then usual design and location approach, but was rather part of the overall design of the ore export project, in which economic viability was the key issue.

Based on the latest worldwide railway developments at the time, the line was developed to accommodate heavily loaded trains, each 2.2 km in length and carrying 20 000 tons of ore, travelling at a speed of 70 km per hour for 860 km with only one stop to change its operating crew. Returning empty trains were passed at crossing loops to allow the loaded trains right of way on the through tracks, with a maximum 1 in 200 ruling gradient. The project was a major one, even by world standards, and broke much new ground in railway engineering. It was opened to traffic ahead of schedule on 28 April 1976 and was taken over by SAR on 1 April 1977.

The coal line was constructed in the late seventies because of the need for the efficient movement of approximately 10 million tons of export coal per year from inland coalfields to the newly constructed Richards Bay harbour, a distance of some 500 km. The line was constructed to very high standards of gradient and curvature to accommodate long and heavily loaded trains, and required numerous tunnels and long viaducts to achieve this.

DEMISE OF THE BRANCH LINES

Towards the latter part of the twentieth century, from the eighties onwards, as the use of road traffic to convey freight grew rapidly, the rail "branch lines" which were a feature of the early development of the rail network, and which brought a form of comfort to many remote villages, became uneconomical. The SAR embarked upon a programme, against much opposition from local communities, of closing down branch lines, with the consequence that many remote villages virtually died. There were others, however, which enjoyed good road access and hence survived. Recently, there has been a revival of some of these branch lines with the advent of "tourist rail" routes. In addition, the stressed rural roads network has led to a renewed call to maintain some of these branch lines to aid the stressed road network.

CONCLUSION

From the mid-eighties up to the turn of the century (and even beyond), the attraction of rail transport to commerce and industry has considerably waned in relation to road transport. The rail system has gradually deteriorated, and despite its surplus infrastructural capacity, it has not succeeded very well in winning back general freight transport from the road sector, though the iron ore and coal lines remain very well used. Rail authorities have said much about the financial and economic "unevenness of the playing field" between rail and road, and attempts are actively being made to win back traffic to rail. In May 2004 Spoornet announced a plan to spend more than R14 billion over five years to upgrade and revamp assets and infrastructure in an attempt to win back custom in the freight market. Perhaps this signifies a start to the resuscitation of our rail network, a much needed development. The rail authorities have been active in this respect, though this is a subject for a later, still to come "history of rail "in South Africa. □