

PLACING RAIL OPERATIONS BACK ON TRACK: THE LANGKLOOF AS A CASE STUDY

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ABSTRACT

The Langkloof, a fertile agricultural district producing mainly deciduous fruit for export, can be described as a narrow, elongated valley wedged between the Tsitsikamma- and Kouga mountain ranges. Transportation infrastructure serving this region is limited to a single-lane surfaced road, Route 62, and a narrow gauge railway line. While the road pavement is deteriorating at an alarming rate because of damage caused by an increasing number of heavy freight vehicles, the rail capacity remains under-utilised.

The future of the rail link has been in jeopardy because of negative growth in income-generating traffic. However, since the beginning of 2003, a determined and successful effort has been made to shift bulk freight from road to rail to improve usage of existing rail assets. The increase in rail borne traffic has necessitated the re-opening of previously abandoned sections of the railway and has also reduced heavy vehicular traffic on the R62.

This paper reports on progress towards improving the efficiency and profitability of rail operations. It is anticipated that retaining and expanding the rail service in the Langkloof will not only complement existing road transport, but also serve as a competitive alternative, which can only impact positively on the economy of this region.

1. THE LANGKLOOF AND ITS UNIQUE NARROW GAUGE RAILWAY

The Langkloof is essentially a long, narrow valley wedged between the Tsitsikamma and Kouga mountain ranges in the Southern Cape. It stretches from Kareedouw in the east to Avontuur in the west and also includes the settlements of Twee Riviere, Joubertina, Krakeelrivier, Louterwater, Misgund and Haarlem.

Production of deciduous fruit for the export market is the primary economic activity in this region. Most of the secondary industries and businesses are either directly or indirectly linked to the growing, harvesting, packing, marketing or distribution of fresh fruit and its related products.

Transportation infrastructure in the valley consists of a single-lane surfaced road, Route 62, and a narrow gauge (610 mm) railway line. The railway is unique in the sense that it is the last of its type still operational in South Africa. All the other 610 mm lines in the country have either been scrapped or abandoned. While Route 62 provides an effective road link between the Langkloof and the export harbours of both Port Elizabeth and Cape Town, the rail service is more restricted as it can only carry traffic destined for Port Elizabeth. Another limitation of the railway is that it is not connected to the rest of the country's rail network because of its narrower track gauge.

Construction of the railway started in May 1902 at Port Elizabeth and the final section of the 285 km main line to the terminus at Avontuur was commissioned in January 1907 (Moir, 1963). Lewis and Jorgensen (1978) recall how in the 1970s, during the peak fruit season, up to 20 trains were

required per day to move cases of export fruit to the pre-cooling sheds in the Port Elizabeth harbour.

Presently the narrow gauge railway in the Langkloof continues to deliver a service to communities along its route. However, its future is uncertain, as the rail service has lost most of its income-generating traffic in the struggle to compete with road transport.

2. THE MODAL SHIFT FROM RAIL TO ROAD

2.1 Background

Far-reaching changes in the overland movement of freight occurred with the gradual deregulation of transport in South Africa between 1977 and 1990. The full removal of restrictive legislation enabled road transport to replace rail as the principal freight carrier over long distances (Stander & Pienaar, 2002).

Up until the mid-1980s the narrow gauge railway in the Langkloof enjoyed a monopoly for the conveyance of export fruit to the harbour at Port Elizabeth, mainly because the rail service was protected against competition through the controversial Motor Carrier Transportation Act, Act 39 of 1930 (Van Lingen, 1960: 171). After deregulation, private road transport companies managed to capture most of the revenue-earning traffic that was previously carried by rail. This has led to a substantial increase in the number of heavy commercial vehicles on Route 62 and a severe curtailment of rail operations because of the modal changes in freight movement.

2.2 Growth in the Long-Distance Road Transport Market

New vehicle sales statistics released by the National Association for Automobile Manufacturers of South Africa (NAAMSA) show a continuous growth in annual truck sales, regardless of fluctuating results in the other automotive market sectors. The table below reflects the sales figures of both heavy and extra heavy commercial vehicles (the long-distance freight haulers) in comparison with other road vehicles over a 5-year period.

Table 1. NAAMSA new vehicle sales statistics: Number of units sold per annum.

VEHICLE TYPE	YEAR				
	1999	2000	2001	2002	2003
Passenger cars	189 370	224 122	239 087	231 687	247 314
Light delivery vehicles (≤3 500 kg)	96 169	105 235	115 145	104 733	104 880
Medium commercial (3 501 – 7 500 kg)	4 668	5 162	5 331	5 612	6 030
Heavy commercial (7 501 – 15 000 kg)	2 609	2 669	2 864	3 032	4 115
Extra-heavy commercial (>15 000 kg)	2 513	3 192	3 605	3 940	5 285
Buses	446	702	856	1141	802
Total	295 775	341 082	366 888	350 145	368 426

It is interesting to note how the sales of extra-heavy commercial vehicles have jumped from 3 605 units in 2001 to 5 285 in 2003, an increase of 47%. Likewise, the corresponding escalation in heavy vehicle sales over the same period has been 44%, from 2 864 units in 2001 to 4 115 in 2003. These figures contrast sharply with overall vehicle sales, which show an increase of only 0.4% from 2001 to 2003.

The number of units sold in the heavy and extra-heavy segments of the commercial vehicle market increased by 84% within a 5-year period, from 5 122 in 1999 to 9 400 in 2003. This is an obvious indicator of the rapid and continuing growth in long-distance road haulage in South Africa.

While economists and logistics experts are keen to highlight the benefits of road transport over rail, the question of how the increasing number of heavy freight vehicles will impact on reducing the lifespan of rural roads is often left unanswered. Perhaps it is time to include long-term road rehabilitation costs when doing an economic comparison of road versus rail.

2.3 Road Versus Rail, The Client's Perspective

Since 1999 the railway in the Langkloof is no longer used for the conveyance of export fruit to the harbour in Port Elizabeth (Van der Mescht, 2002).

Fruit producers interviewed cited the following reasons why their produce is moved via road and not by rail:

- The non-existence of a direct rail link with Cape Town's harbour;
- Existing infrastructure on the narrow gauge railway cannot accommodate modern 12m refrigerated containers;
- It is not profitable for the rail service to handle small consignments of fruit;
- Road transport can provide a direct door-to-door service. This gives road haulers a competitive advantage over rail, especially where farmers' packing sheds are not served by rail sidings;
- With perishable products the time factor is of critical importance. Average travelling time to Port Elizabeth by road is 3 to 4 hours for a fully laden freight vehicle. A narrow gauge locomotive hauling 10 loaded goods wagons will take approximately 9 hours to cover the same distance.

It is evident that the railway in the Langkloof, with its outdated technology from the pre-containerisation period, cannot at this stage provide the same level of service to the fruit exporters as the road transport companies. Extensive modernisation of rolling stock and loading facilities will be required for rail to regain a market share in the haulage of export fruit.

3. THE NARROW GAUGE RAILWAY: ON THE BRINK OF CLOSURE

With the loss of the fruit traffic to road transport, the viability of maintaining a rail service in the Langkloof came under investigation. In 1999 Mr Saki Makozoma, at the time the Chief Executive Officer of Transnet, fuelled speculation about rail closures in the Eastern Cape by predicting that only the main line between Port Elizabeth and the Reef will eventually be retained (Van der Mescht, 2002). Spoornet management has in fact classified the entire Port Elizabeth – Avontuur railway as a non-viable, light-density line. In accordance with current company policy such lines should be prepared for scrapping after which the land is to be sold (Van der Mescht, 2003).

Although the narrow gauge line continued to serve the timber industry in the Kareedouw and Humansdorp areas into the new millennium, by 2001 freight trains were seldom spotted west of Assegaaibosch. The poor condition of the track, the neglected appearance of stations and sidings and the visibly overgrown railway reserve between Joubertina and Avontuur were clear signs that the last 71 km section of the main line had been abandoned. For the Port Elizabeth-Avontuur railway the possibility of permanent closure was becoming a reality.

4. REVIVAL OF RAIL OPERATIONS IN THE LANGKLOOF

4.1 Regaining Traffic for Rail

Despite the uncertain future of low-density rail lines in South Africa, rail operations in the Langkloof are firmly back on track. At the beginning of 2003 the management of the narrow gauge railway initiated an assertive marketing drive amongst potential clients to regain remunerative traffic for rail. To date their efforts have resulted in a significant increase in rail tonnages, necessitating the re-opening of the main line west of Joubertina all the way to the terminus at Avontuur.

Commodities now carried by rail include cement, fertiliser, apples, citrus fruit, building material and timber. The year 2003 also saw the introduction of a daily commuter service for the local workforce. Details of current rail services in the Langkloof are discussed below.

4.2 Container Traffic

A fleet of flat rail wagons is available for carrying standard 6 m containers. In addition, the narrow gauge railway has its own truck mounted side-loader to facilitate road/rail interchange of containers. With the side-loader it is now possible to provide a door-to-door container delivery service for rail customers. At this stage containers are used mainly for the conveyance of bags of cement and fertiliser in bulk, with loads of up to 10 tons per container (O. Ncube, personal communication, November 6, 2003).

The table below contains data of container traffic on the narrow gauge over the last 7 financial years. (A financial year in this context is the period from 1 April in year n to 31 March in year $n+1$). Although the figure for 2003/04 only covers the 9-month period up to 31 December 2003, it does point towards a significant increase in the number of containers carried by rail during 2003.

Table 2. Container traffic: 1997 – 2004.

	1997/98	1998/99	1999/00	2000/01	2001/02	2002/03	2003/04*
Containers (S6m)	5	20	100	200	157	130	395

*From 01/04/03 to 31/12/03

4.3 Moving Apples by Rail

A new rail service for the transport of freshly picked apples from orchard to packing shed was introduced early in 2003. This concept was initiated by Mr Hannes Stapelberg, the General Manager of Letabakop Farms (Pty) Ltd, in collaboration with the management of the narrow gauge railway. During the period 3 April 2003 to 9 May 2003 6 060 crates of apples (a loaded crate weighing about 385 kg) were railed from orchards in the Misgund area to Letabakop's packing shed at Louterwater, a distance of 19 km (C. van der Kuil, personal communication, November 21, 2003).

There is great potential to expand this service to other farms where the railway line is in close proximity to apple orchards. Trains could be brought to a halt anywhere along the line to facilitate loading at the farmer's convenience, provided of course that the operation does not disrupt through traffic.

The ability of the rail service to reduce the number of fully laden, slow-moving trucks on Route 62 is worth mentioning. A train with 10 fruit wagons can carry up to 200 crates of apples at a time. It will require 10 trucks or 5 truck-trailer combinations to move the same amount of freight over the same distance.

4.4 Passenger Services

Due to limited patronage at the time, scheduled passenger trains into the Langkloof were discontinued during the late 1940s (Lewis & Jorgensen, 1978: 88). In 2003, after an absence of more than 50 years, a regular passenger service was reintroduced in the Langkloof.

It is essentially a twice-daily commuter service for Letabakop's workers between the settlement of Ravinia and the company's packing shed at Louterwater (H. Stapelberg, personal communication, May 27, 2003).

The passenger train consists of 4 antiquated coaches and 3 crudely converted goods wagons. The 3 makeshift wagons were urgently pushed into service to accommodate workers from other farms in the area.

Unfortunately the commuter service is restricted by the non-availability of narrow gauge passenger coaches. Attempts to obtain surplus rolling stock from the Alfred and County Railway (ACR) in Kwazulu-Natal have been unsuccessful. Some of the redundant ACR wagons have been abandoned on unused rail sidings that are no longer accessible by road or by rail (O. Ncube, personal communication, May 22, 2003).

To build new passenger coaches is an option, but it is unlikely that revenue from passenger fares will yield a satisfactory return on the investment. A sustainable passenger service will require either cross-subsidy from profitable freight operations or direct subsidy from central or provincial government. The rationale for running a subsidised operation is that Spoornet could provide a much-needed service in an area where reliable public transport is almost non-existent.

4.5 Bulk Building Materials

Towards the end of 2003 a contract for the transportation of building materials for low-cost housing projects in the Langkloof boosted rail tonnages considerably. This consisted of pre-cast masonry blocks and gravel for road construction. In total 2 443 pallets of masonry blocks (a loaded pallet weighing about 1 ton) were delivered by rail. In the same period 45 rail wagons, each with a capacity of 20 tons, were loaded at the St. Albans rail siding with gravel destined for construction sites at Joubertina and Louterwater (O. Ncube, personal communication, November 6, 2003).

4.6 Citrus Fruit

An intricate logistical operation, in which rail transport plays a prominent role, exists with the export of citrus fruit through the Port Elizabeth harbour. Pallet loads of citrus produced in both the Gamtoos- and Sundays River Valleys are stored under contract by LANKO, a major fruit packing company in the Langkloof. From here the citrus is railed in full trainloads to Port Elizabeth. The movement of the fruit trains is coordinated to coincide with the arrival of ships in the harbour. In addition, the shifting of fruit in bulk makes it possible to load ships to capacity (S. Grundling, personal communication, June 11, 2003).

During the 2003 citrus season 3 388 tons of fruit were brought in by rail from the Gamtoos Valley for storage at LANKO's pre-cooling facility at Louterwater, while road transport delivered another 1 582 tons from the Sundays River Valley. Rail transport was used exclusively for the final overland trip to Port Elizabeth.

4.7 Other Freight Traffic

The following table shows annual freight tonnages for various commodities for seven successive financial years.

Table 3. Bulk freight tonnages for timber and other products: 1997 – 2004.

	1997/98	1998/99	1999/00	2000/01	2001/02	2002/03	2003/04*
Wooden poles	2 120	5 125	9 153	2 495	1 691	1 716	212
Pulpwood	11 661	18 100	12 472	27 415	28 923	33 405	37 516
Packing material	2 107	1 037	1 138	1 533	608	0	0

*From 01/04/03 to 31/12/03

The decline in the number of wooden poles carried by rail can be attributed to the fact that a growing percentage of the poles are shipped to clients in 12 m containers. These containers are transported by road, as the narrow gauge railway does not have suitable rail wagons to accommodate them (C. van der Kuil, personal communication, November 21, 2003).

The data reflects a steady growth in pulpwood traffic. The timber, mostly from unwanted wattle plantations, is transported on narrow gauge timber wagons to Port Elizabeth where it is transferred onto normal gauge wagons for shipment to a paper mill at Richard's Bay (Van der Mescht, 2002).

It is noticeable that since 2002 packing material is no longer brought in by rail. In an interview with Mr E. Stewart, a local agent for packing material, he explained that road is currently the preferred mode of transport. According to him, unlike rail, road transport companies can handle both small and urgent consignments (personal communication, June 11, 2003).

4.8 Measuring Progress

Total rail tonnages have increased from 36 421 tons in 2002/03 to 52 324 tons in the first nine months of 2003, showing a 44% improvement in less than a year. This growth in revenue-earning freight traffic on the narrow gauge railway is a clear indication of the success of the marketing strategy implemented during the first quarter of 2003. It also proves that this low-density rail line may have the potential to be operated as a profitable business unit, despite the continuing threat of permanent closure.

The following table provides a summary of total rail freight tonnages in the Langkloof over a 4-year period.

Table 4. Total freight tonnages: 2000/01 – 2003/04.

	2000/01	2001/02	2002/03	2003/04*
Apples	0	0	0	2 333
Citrus	0	0	0	4 970
Wooden poles	2 495	1 691	1 716	212
Pulpwood	27 415	28 923	33 405	37 516
Packing material	1 533	608	0	0
Pre-cast cement blocks	0	0	0	2 443
Gravel	0	0	0	900
Containers S6m (fertilizer/cement)**	2 000	1 570	1 300	3 950
TOTAL	33 443	32 792	36 421	52 324

*From 01/04/03 to 31/12/03

**Assuming a 6 m container is loaded with approx. 10 tons of freight

Although the figures in Table 4 point towards an increase in revenue, a full cost-benefit analysis will be required to determine the viability of sustaining a railway in the Langkloof. However, such a study should not be limited to economic considerations only, but must also reflect the possible social and environmental benefits of maintaining a rail service in a rural area.

5. CONCLUSIONS

In the Langkloof, Spoornet is back in business due to the efforts of a few committed employees. The freight tonnages for 2003 are considerably higher than those of the preceding years and the potential for further growth exists. Even more significant is the fact that the narrow gauge railway in the Langkloof has emerged as a possible alternative to road transport. Retaining valuable rail infrastructure while simultaneously reducing heavy vehicular traffic on Route 62 could impact positively on the regional economy.

6. ACKNOWLEDGEMENTS

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7. REFERENCES

- [1] Moir, S.M. (1981). *Twenty-four inches apart*, (Second Edition). Janus Publishing Company, South Africa, p. 21, 31.
- [2] Lewis, C.P. & Jorgensen, A.A. (1978). *The Great Steam Trek*. Struik Publishers, Cape Town, p. 89.
- [3] Stander, H.J. & Pienaar, W.J. (2002, July). Perspectives on freight movement by road and rail in South Africa. Paper presented at the 21st annual South African Transport Conference, Pretoria.
- [4] Van der Mescht, J. (2002, July). Providing a sustainable rail freight service on the Port Elizabeth-Avontuur narrow gauge railway. Paper presented at the 21st annual South African Transport Conference, Pretoria.
- [5] Van der Mescht, J. (2003, July). Moving people and goods in the Gamtoos Valley – A revealing case study. Paper presented at the 22nd annual Southern African Transport Conference, Pretoria.
- [6] Van Lingen, A. (1960). *A Century of Transport, 1860 – 1960 (Part I)*. Da Gama Publishers, Johannesburg.

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