MOVING PEOPLE AND GOODS IN THE GAMTOOS VALLEY: A REVEALING CASE STUDY

van der Mescht, J.

Department of Civil Engineering, Port Elizabeth Technikon, Private Bag X6011, Port Elizabeth, 6000 South Africa. Tel: +2741 5043550. Fax: +2741 5043491. E-mail: jvanderm@petech.ac.za

ABSTRACT

Primary transportation infrastructure in the Gamtoos Valley, a fertile agricultural district located to the west of Port Elizabeth, consists of a single-lane surfaced road namely Route 331, as well as a narrow gauge railway line. While the road pavement is in a poor condition due to lack of maintenance and extensive damage caused by an increasing number of heavy vehicles, the rail service is under-utilised and its future uncertain. The railway is used exclusively for the conveyance of export fruit via the Port Elizabeth harbour and is only operational for the duration of the citrus season that lasts from the beginning of April till the end of October.

This paper reports on a preliminary investigation into the possibility of shifting passengers and freight from road to rail in order to relieve the pressure on the road system, to optimise the use of existing transportation facilities and to preserve and extend the working life of valuable road and rail assets. The logistics of hauling both imported and exported goods were analysed to establish what portion thereof could probably be moved by rail instead of by road. Other issues that were looked at included the offering of rail concessions to private companies, the introduction of a passenger service between Loerie and Patensie and the impact that current policies of the national rail operator, Spoornet, have on the provision of a satisfactory service to existing and potential rail clients.

The Gamtoos Valley is typical of many agricultural regions in South Africa and it is envisaged that the results of this study will also apply to other farming areas that are served by both road and rail links. The value to the agricultural sector and its related industries of maintaining two transportation modes in competition with each other, and simultaneously utilising both to their full potential should not be underestimated.

1. THE GAMTOOS VALLEY

The Gamtoos Valley, located to the west of Port Elizabeth, is named after the Gamtoos River, a dominant geographical feature in the area. The Valley extends from Loerie westwards to the confluence of the Kouga and Groot Rivers. The area's original inhabitants were members of the Khoi and San tribes. By 1802, 12 settler families had moved into the Valley and the first citrus trees were planted in 1885. [Du Preez, 1999]. Today the region includes the settlements of Loerie, Hankey and Patensie and is also the gateway to the Baviaanskloof, a vast proclaimed wilderness area. Agriculture, and, to a much lesser degree, tourism are the only significant economic activities in this river basin.

Most secondary businesses are either connected to or dependant on agricultural production. The main commodity is citrus, but other sizable crops include tobacco, wheat, maize, potatoes, chicory and vegetables. All markets for the farming produce are located outside the Valley.

This, together with the fact that most of the exported loads are perishable, implies that the area's economy is extremely sensitive to the efficiency of the transportation network.

Transport infrastructure consists of a single-lane surfaced road, namely Route 331, and a narrow gauge railway line. While the rail line terminates at Patensie, the surfaced section of the road ends approximately 30 km west of the town from where a narrow gravel track, which is not accessible to heavy freight vehicles, continues into the remote Baviaanskloof region.

The surfaced road pavement is currently in a poor state and some sections of it, especially along the shoulders, are rapidly disintegrating. These conditions are aggravated by the fact that the horizontal- and vertical alignment of the existing road, as well as its structural layers, were not designed for modern 22 m long "Superlink" trucks with their 35 ton payloads. Current annual freight traffic volumes are estimated at 5 500 fully loaded trucks per direction. If the return trips are included, it means that certain sections of the road are carrying up to 11 000 heavy freight vehicles per annum. Most of these trucks are of the "Superlink" type with a GVM of 56 tons when loaded to capacity. (A. Vermaak, personal communication, September 20, 2002)

The railway on the other hand is under-utilised and its future is uncertain. This paper reports on the reasons for the decline of rail services in the Gamtoos Valley and examines Spoornet's policy on the continuation of branch line operations in South Africa. Some recommendations towards sustaining both road and rail infrastructure in the Valley are made. This is necessary to ensure competitiveness and flexibility in the transport market, conditions that will benefit both fruit exporters and local businesses.

2. HISTORY OF THE PATENSIE BRANCH

Act 40 of 1898 authorized the building of a narrow gauge railway from Port Elizabeth to Avontuur to serve the Langkloof, a fertile agricultural area located between the Tsitsikamma and Kouga mountain ranges. Due to the undulating nature of the region a narrow track gauge of 610 mm was selected as it could more easily follow the contours and be built at a much lower cost than a normal South African standard gauge railway. Construction of the railway started in May 1902 and the 285 km main line to Avontuur was completed in January 1907. [Moir, 1963]

The following notice, which appeared in the Eastern Province Herald of 24 January 1903, gives the primary reason for extending the railway into the Gamtoos Valley: *"A public meeting was held at Hankey last Friday morning. It was unanimously decided to approach Government with a view to obtaining a branch of the Port Elizabeth-Avontuur railway line to Hankey, thus opening up the productive Gamtoos River Valley and assisting the farmers to get their produce to the market."* The 27 km Patensie branch, starting at Gamtoos Junction and terminating at Patensie, was eventually commissioned on 3 April 1914. [Moir, 1963]

In 1927 the railway started hauling limestone from quarries in the Gamtoos Valley to the EP Cement factory in Port Elizabeth. Until the closure of these quarries in May 2000 limestone traffic was the main revenue earner on the Patensie branch. [Brinkman, 2001] With the cessation of stone production the feasibility of maintaining a rail service to Patensie has been under investigation by Spoornet management, but at this stage no final decision regarding the future of the branch line or the rest of the narrow gauge railway has been made. (J. van der Bijl, personal communication, October 28, 2002)

The Patensie branch is currently used solely for the conveyance of export fruit to the Port Elizabeth harbour and is therefore only operational during the citrus season which lasts from the beginning of April till the end of October.

This is detrimental from a financial viability perspective as overhead costs such as staff salaries and maintenance expenses must still be covered for the five-month period during which no income is generated.

3. PATENSIE SITRUS BEPERK, THE ONLY RAIL CLIENT

Approximately 12 citrus farms in the Gamtoos Valley have their own packing sheds and are totally dependant on road transport, primarily because individual farms are not served by rail. Their total production amounts to about 20% of the annual citrus crop in the Valley. Most of the remaining 80% is taken to the packing plant owned by Patensie Sitrus Beperk (PSB). PSB was founded as an agricultural co-operative in 1928 and registered as an independent company in 1998 because of a new deregulated marketing environment. Nowadays the company serves about 100 citrus farmers and its main function is to pack and market the fruit produced by its members. (W.M. du Preez, personal communication, June 1, 2001)

The loading facilities at PSB are served by both rail and road infrastructure. During the 2002 citrus season 34% of the company's products were railed to the export terminal at Port Elizabeth, while the remaining 66%, including loads destined for local markets, were taken out by road. (R. Kritzinger, personal communication, January 28, 2003) According to the current managing director, Mr Anton Vermaak, PSB as the only remaining rail customer in the Gamtoos Valley, is concerned about the possibility that the branch line to Patensie may be closed. (personal communication, September 20, 2002)

The company is in favour of retaining the rail service primarily for the following reasons:

- With the availability of both road and rail infrastructure transport agencies will be compelled to charge competitive rates, a favourable situation for the citrus farmers in the Gamtoos Valley.
- The existing road is in such a poor state that there is a real possibility of damage to citrus fruit while in transit over badly corrugated sections. By using the rail service this risk can be avoided.
- The loading facilities at PSB were designed for rail transportation. To convert these for use by road trucks only will require capital investment that will compromise profits.

4. SPOORNET'S POLICY FOR BRANCH LINE OPERATIONS

4.1 Background

The following information on Spoornet's course of action for future branch line operations in South Africa was obtained from Mr Japie van der Bijl during a personal interview conducted on 28 October 2002. Mr van der Bijl, in his capacity as an executive manager of Spoornet, does not necessarily share the views expressed elsewhere in this paper.

4.2 Classification of rail lines into strategic categories

Spoornet, as part of its market driven strategy, classifies the national rail network into core business (profitable lines) and non-core business (unprofitable operations, including closed and inoperative railway lines).

The strategic categories are therefore defined as follows:

- Core business lines, also referred to as High Density Lines (HDL), are those lines that convey more than 2 million gross ton per annum.
- Non-core lines, also referred to as Low Density Lines (LDL), are lines that carry less than 2 million gross ton per annum.
- Closed or inoperative lines (CL).

4.3 High Density Lines

The primary objective with the operation of HDL's is to be profitable or at least be able to recover costs. Spoornet, as part of its drive towards becoming more market orientated, is focussing almost exclusively on its 350 main customers who are responsible for 90% of the company's income. The intention is to promote growth amongst these top clients while a withdrawal strategy is to be followed with non-profitable traffic. With general freight the current tendency is to increase tariffs to recover costs and to discourage smaller customers from using the rail service. This strategy is causing a shift of freight less than ten wagon load consignments from rail to road and is reducing the amount of rail traffic on many of the LDL's.

4.4 Low Density Lines and Closed Lines

Because most of the LDL's are operating at a loss, Spoornet is reluctant to commit resources to unprofitable business. It is the company's intention to reposition those LDL's and CL's that have commercial potential externally for selling, leasing or concessioning. With the handing over of some LDL's and CL's to private contractors and entrepreneurs, Spoornet will no longer be required to cross-subsidise services on these lines. (At the moment produce such as grain, timber and deciduous fruit are conveyed at a loss on several LDL's.)

The LDL's and CL's are therefore grouped into the following categories:

- Lines with repositioning potential (5 035 km);
- Non-viable lines (2 576 km); and
- Lines with no service (2 065 km).

The intention with the non-viable lines and the lines with no service is to prepare them for scrapping after which the land will be sold. The Port Elizabeth-Avontuur railway, including the Patensie branch, has been classified as a non-viable line, which means that Spoornet management is sceptical about its ability to operate as a profitable business unit.

5. THE PATENSIE BRANCH: AN ASSESSMENT OF ITS COMMERCIAL POTENTIAL

5.1 Limitations of the existing rail service

The Port Elizabeth-Avontuur railway, because of its narrower gauge, is not connected to the rest of the country's rail system. This imposes costly and time-consuming transhipment of general freight, including bulk loads destined for local markets, at the Baakens River rail terminal in Port Elizabeth. Because of this restriction it is difficult for the railway to compete with road transport companies who can provide a door-to-door service with much less handling required.

Currently export citrus are conveyed in pallet loads in specially modified rail wagons. It is anticipated that in future 12 m standard containers will replace the pallet system. (A. Vermaak, personal communication, September 20, 2002) The Patensie branch cannot carry 12 m containers because of clearance restrictions on some of the small radii curves. It is technically possible to overcome this problem by re-aligning certain sections of track, but Spoornet is understandably cautious to invest capital on a line with questionable commercial potential. The answer may be to draw up a concession contract with a private operator who will then be responsible for financing capital costs. Failure to adapt existing rail infrastructure to accommodate containerised loads will force PSB to use road transport only. This will definitely signal the end of rail services on the Patensie branch.

A larger than normal percentage of PSB's 2001 export citrus crop was diverted to Cape Town's harbour due to limited capacity at the pre-cooling facilities in Port Elizabeth and also because of Cape Town's lower storage tariffs.

Fruit destined for Cape Town is not carried over the Patensie branch, it is taken out by road because there is no direct rail link between the two centres. [Van der Mescht, 2002]

With Spoornet's focus on full trainload consignments, it is virtually impossible at present to meet the expectations of small customers. This has obliged many rail clients to convert from rail to road transport. In the Gamtoos Valley, incoming fruit trains nowadays run empty because no attempt is being made to regain traffic for rail. This unfortunate situation could, with a deliberate marketing effort and some capital investment, be reversed to improve the effectiveness of the rail service in the Valley.

5.2 Conveying the annual citrus crop

Export citrus is railed directly from the PSB premises to the pre-cooling facility at Port Elizabeth's harbour, an arrangement that makes the railway self-contained and very competitive for the delivery of export consignments. A new pre-cooling warehouse was recently commissioned in the Port Elizabeth harbour. This facility will remove the restriction of inadequate capacity for the handling of export fruit and could benefit the rail service if a larger portion of PSB's export citrus is channelled via Port Elizabeth.

Road trucks are used to transport PSB citrus destined for the VALOR fruit juice plant in Port Elizabeth from Patensie to the factory in Deal Party. Annually this accounts for a substantial portion of PSB's total citrus production. (R. Kritzinger, personal communication, January 28, 2003) Bearing in mind that the VALOR plant is served by a normal gauge rail siding the feasibility of re-loading pallet loads from narrow to normal gauge at the Baakens River rail terminal is worth investigating. Such an arrangement could extend the lifespan of the road into the Gamtoos Valley and reduce traffic congestion, because of the estimated 400 truckloads that will now be shifted from road to rail. In addition rail's market share in transporting PSB products will increase from the current 34% to 56%.

5.3 General freight

To cover the cost of the return journey the option of bringing in bulk loads of general freight on empty fruit trains should be considered. The following items, with estimated tonnages shown in brackets, are brought in via road annually: cement (850); building bricks (606); fertilizer (23 000) and packing material (6 800). (A. Vermaak, personal communication, September 20, 2002) A number of these loads originate in Port Elizabeth and such assignments, irrespective of their size, could simply be taken from the supplier to the Baakens River rail terminal where they can be loaded onto outgoing fruit trains.

However, for a satisfactory level of service for the handling of general freight adequate storage and loading facilities will be required at both rail terminals. This in turn will necessitate capital expenditure and unfortunately will not happen while the line is under Spoornet control due to the company's policy of no longer committing resources to LDL's.

5.4 Other agricultural products

Apart from citrus, the possibility of transporting other agricultural produce by rail should be looked at. Sizable crops, with estimated annual production tonnages shown in brackets, include maize (12 000), wheat (3 500), potatoes (54 000), vegetables destined for local markets (26 943) and chicory (9 615). (A. Vermaak, personal communication, September 20, 2002)

It is possible to transport potatoes and vegetables destined for the Port Elizabeth market by rail, but only when large shipments can be made up. Potatoes for instance are packed in 10 kg pockets and could be loaded onto pallets and conveyed in the covered rail wagons which are normally used for citrus. This will improve utilisation of existing rolling stock, especially outside the citrus season.

It is however doubtful whether the railway can compete with the flexible services offered by road transport agencies. There are several factors that count against the use of rail in this case, including the inconvenience to farmers who need to deliver their produce to the nearest rail siding and the inability of rail to handle small consignments. Loaded rail wagons are also vulnerable to pilferage while they are stationary at sidings and in shunting yards. Road transport companies on the other hand offer a door-to-door service and can convey both small and large consignments.

Chicory produced in the Gamtoos Valley is transported via road from individual producers to the processing plant at Alexandria, a distance of approximately 180 km. (J. du Preez, personal communication, January 24, 2003) These loads cannot be transported by rail as the railway line to Alexandria has been abandoned. At this stage wheat and maize are loaded on road trucks and taken directly from individual farms in the Valley to the grain silos at Humansdorp. It is simply not practical to use rail transport for these loads as additional handling is required at the rail terminal and the transit time by rail is much longer than by road.

Prior to 1995 tobacco loads, made up in 100 kg bales, were sent by rail from the Gamtoos Tobacco Cooperative in Patensie to Port Elizabeth for further distribution. Nowadays the entire tobacco crop (total production for the 2002 season amounting to 600 tons) is transported by road to a factory in Boksburg. The rail service is no longer used because the reloading in Port Elizabeth resulted in time delays and damage to bales while in transit. (V. Nel, personal communication, January 24, 2003)

5.5 Passenger services

A study of the history of the Port Elizabeth-Avontuur railway shows that its passenger service has never been much of a revenue earner. Passengers were initially carried on scheduled trains. However, with their numbers dwindling over the years due to competition from buses operated by the then South African Railway's Road Motor Service, the railway authorities eventually had to terminate this service. [Moir, 1963] Passenger trains into the Langkloof were discontinued during the late 1940's, but limited passenger accommodation was retained on some freight trains until the 1970's. [Lewis & Jorgensen, 1978] A short suburban branch line to serve the town of Walmer (at that stage on the outskirts of Port Elizabeth!) was brought into operation in 1906. This service showed a loss from the start because of lack of community support and was abandoned in 1928. [Moir, 1963]

At this stage approximately 500 workers commute between Hankey and Patensie and about 100 between Loerie and Patensie on a daily basis during the citrus season. PSB has to maintain a fleet of vehicles and hire additional buses to assist with the transportation of its workers, as public transportation in the Valley is virtually non-existing. (R. Kritzinger, personal communication, January 24, 2003) The introduction of a rail passenger service between the various settlements is a possibility, but, based on past experience, it is unlikely that it will be a profitable venture. PSB will probably have to subsidise such a commuter service, but the cost to the company could be less than the current expense of operating its own shuttle service. With the introduction of a rail service the approximate 100 scholars residing in Thornhill and Loerie and attending the secondary school in Hankey will also have access to affordable transport. [Muller, 2003]

5.6 Increasing rail's market share: Is it achievable?

An analysis of current freight movements in the Gamtoos Valley shows that rail carries less than 10% of all exported produce and 0% of imported goods. The railway's strength lies in its ability to provide an efficient and economical service for the conveyance of citrus to the Port Elizabeth harbour. It is possible to increase this traffic considerably by employing two or three forklift trucks with drivers that could transfer pallet loads from narrow to normal gauge rail wagons for final delivery to the VALOR fruit juice plant.

A railway's inherent weakness, caused by the limitations of a fixed track, is its inability to compete with the door-to-door services offered by road transport companies, especially for the carrying of general freight and small loads. Despite this restriction the rail operator on the Patensie branch could charge a competitive tariff by bringing in bulk commodities such as cement, fertilizer, packing material and empty pallets on returning fruit trains and employing local contractors to distribute consignments to individual customers.

From a purely economic perspective the introduction of a passenger service may be regarded as an unnecessary burden on the current or future rail operator. However, the convenience of such a service to a community without access to affordable public transportation cannot be measured in monetary terms only. According to the 2001 annual report of The South African Rail Commuter Corporation rail commuter services in the major metropolitan areas in South Africa received a subsidy amounting to R1 727 million from Government during the 2000/2001 financial year. There is no reason why a branch line providing a much-needed service in a rural area should not qualify for some financial support as well.

6. CONCLUSIONS

This preliminary investigation has shown that there is potential to increase the amount of revenue-earning traffic on the Patensie branch and that a profitable rail service is therefore a possibility. The next step is a detailed audit of income on the one hand versus operating costs and capital expenditure on fixed and moving assets on the other to determine the economic viability of sustaining a rail service in the Gamtoos Valley. The investigation also revealed that rehabilitation of existing facilities is a prerequisite for generating more rail traffic. As Spoornet is not prepared to invest capital on LDL's, the only alternative is to offer the rail service to a private contractor on a concession basis. The onus will then be on the concession holder to ensure that the income stream is sufficient to cover operating costs and to finance capital investment.

If the final results of this research indicate that the Patensie branch could be operated as a profitable business unit, Spoornet should reconsider its current status as a non-viable line and reposition it for possible leasing or concessioning to the private sector.

7. ACKNOWLEDGEMENTS

Special thanks to Mr Japie van der Bijl, Executive Manager, Spoornet, and Mr Anton Vermaak, Managing Director, Patensie Sitrus Beperk, for providing crucial information for this study. They do not necessarily support the views expressed by the author.

8. REFERENCES

[1] Brinkman, B. (2001, December). 73 Years of Limestone Traffic. SARail 40 (4), pp. 226 – 229.

[2] Du Preez, W.M. (1999) Sitrusbedryf – Gamtoosvallei. Letter dated 5 May 1999 to Ms B. Rood regarding the history of the citrus industry in the Gamtoos Valley.

[3] Lewis, C.P. & Jorgensen, A.A. (1978). The Great Steam Trek. Struik, Cape Town, RSA. ISBN 0-8317-4018-3

[4] Moir, S.M. (1963). Twenty-four inches apart. Oakwood, Essex, UK.

[5] Muller, W. (2003, January 23). Skole in O-Kaap begin wankelrig. Die Burger, p1.

[6] Van der Mescht, J. (2002). Providing a sustainable rail freight service on the Port Elizabeth-Avontuur narrow gauge railway. Paper delivered at the 21st annual South African Transport Conference, Pretoria, on 17 July 2002.

[7] Johan van der Mescht, Pr Eng

MOVING PEOPLE AND GOODS IN THE GAMTOOS VALLEY: A REVEALING CASE STUDY

van der Mescht, J.

Department of Civil Engineering, Port Elizabeth Technikon, Private Bag X6011, Port Elizabeth, 6000 South Africa. Tel: +2741 5043550. Fax: +2741 5043491. E-mail: jvanderm@petech.ac.za

Biography

The author obtained a B. Eng. (Civil) degree from Stellenbosch University in 1985 and, after two years of National Service, started his career in the Design Division of the Port Elizabeth Municipality. He is currently employed as a lecturer in Civil Engineering at the Port Elizabeth Technikon and works on a contract basis for consulting engineers Steffen, Robertson & Kirsten. He also serves as an officer in an infantry regiment of the South African Army.