

A memorandum on the need for Regulatory Impact Assessments in toll road price decisions

Prepared for the Road Freight Association and Afriforum – revised

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1. Introduction

South Africa has made a policy commitment to the user pays principle in infrastructure provision. Making the user pay for infrastructure is both a means of increasing the funding available for such investments, and is an intuitively fair way of collecting funds. However, the costs and benefits of implementing user pays in practice will differ from project to project, and will be influenced by the details of how pricing is put in place.

The Gauteng Freeway Improvement Project (“GFIP”) currently being undertaken by the South African National Roads Agency (“Sanral”) is a high stakes application of the user pays principle in road infrastructure. Although the economic need for this critical economic infrastructure cannot be understated, much of its beneficial impact may be dissipated by problems with institutional design, lack of transparency and state oversight, and issues with the level and structure of tolls.

A practical measure that can and should be taken at this point of the GFIP programme is for the South African Government to conduct a regulatory impact assessment (“RIA”) of the proposed tolling scheme. RIA analysis will provide an over-arching examination of the socio-economic impact of tolling, in comparison to the impact of funding alternatives. It will also provide an independent means of assessing the reasonableness of toll price levels, which are currently subject to neither competitive market discipline or to any price regulation process.

This memorandum highlights a number of areas of concern that can currently be identified in the GFIP toll process. These are the kinds of issues that should be addressed in detail by a RIA process, and which will in most cases require the provision of significant data from Sanral which is currently being withheld from the public. Even given the limited data in the public arena, it is clear that key questions remain unanswered, and thus that further analysis is needed before toll levels can be finalised.

2. Specific areas of concern in the GFIP toll scheme

The following areas of concern can be highlighted as regards the design and implementation of the GFIP tolling scheme. With greater transparency from Sanral, more areas of concern may come to light. However, the burden of evidence presented suggests that an urgent examination of the policy, pricing and regulatory framework of the GFIP is needed.

2.1 Absence of pricing restraints

In perfectly competitive markets, the prices companies set are constrained by the prices set by their competitors, and thus their ability to abuse the customer through excessive pricing is curtailed. However, in practice, many markets have characteristics which limit the ability of competitive forces to constrain prices. In these cases, other steps must be taken to guard against pricing abuses. For example, operators may be contractually obligated to observe certain pricing rules, or may be subject to price regulation by an independent regulator.

In the toll road arena, competitive forces often have a fairly limited ability to constrain toll prices. The central problem is that alternative routes between destinations are often not perfect substitutes for the route which is tolled. The absence of good substitute routes creates market power for the tolling company, which allows it to raise prices above the competitive (ie most efficient) level. In the

case of the GFIP, the presence of acceptable substitute routes is especially limited (which will be explored in more depth in following sections of this memorandum).

A brief scan of international practice suggests that it is common for some form of price restraint to be placed on the level and duration of tolls and other road charges. Examples include the following:

- Price ceilings: price ceilings may be set during the concessioning phase. Price limits have been set in toll concessioning agreements in Malaysia, Hungary, Chile, Colombia, Mexico, Malaysia, and the United Kingdom. The toll fee may then be adjusted over time according to a pre-agreed inflation-based calculation¹
- Fixed term contracts: if the main purpose of tolls is to collect sufficient finances to pay for the construction of roads, then it is logical to put in place limits to how long the toll can be levied for. For example, in Norway the funding stage of a toll road is typically limited to a 15 year contract.²
- Competitive bidding during the concessioning process: prospective concessionaires may be required to specify the toll rate upfront, allowing competition on price to take place before contracting. This approach has been tried in Chile³
- Cost allocation models: road user charges may be determined based on a publicly available cost allocation model. For example, the New Zealand national Department of Transport runs a road cost allocation model, which estimates the cost of road damage associated with various types of vehicles. Costs are estimated net of fixed revenues from local government rates and licence fees, and road user charges are determined based on the findings of the cost allocation model. The model is made available to the public to review.⁴
- Ceiling on return to capital: toll road SR-91 in the United States was subject to a ceiling on the return to total capital (debt plus equity), with no toll rate regulation per se.⁵

Limited information has been provided as to whether any such pricing constraints are in place in the GFIP project. This is of extreme concern. As an independent operating company, servicing a private debt burden, Sanral faces incentives to safeguard its operating profits which may be inconsistent with the public interest. Transparency is needed as to whether Sanral is in fact constrained in any way in the manner in which it sets toll rates, and whether or not such constraints are formally defined or are at the discretion of policymakers.

¹ Fisher & Babbar 1996, 7

² Clough & Guria 2008, 29

³ Fisher & Babbar 1996, 23-24

⁴ Clough & Guria 2008, 14

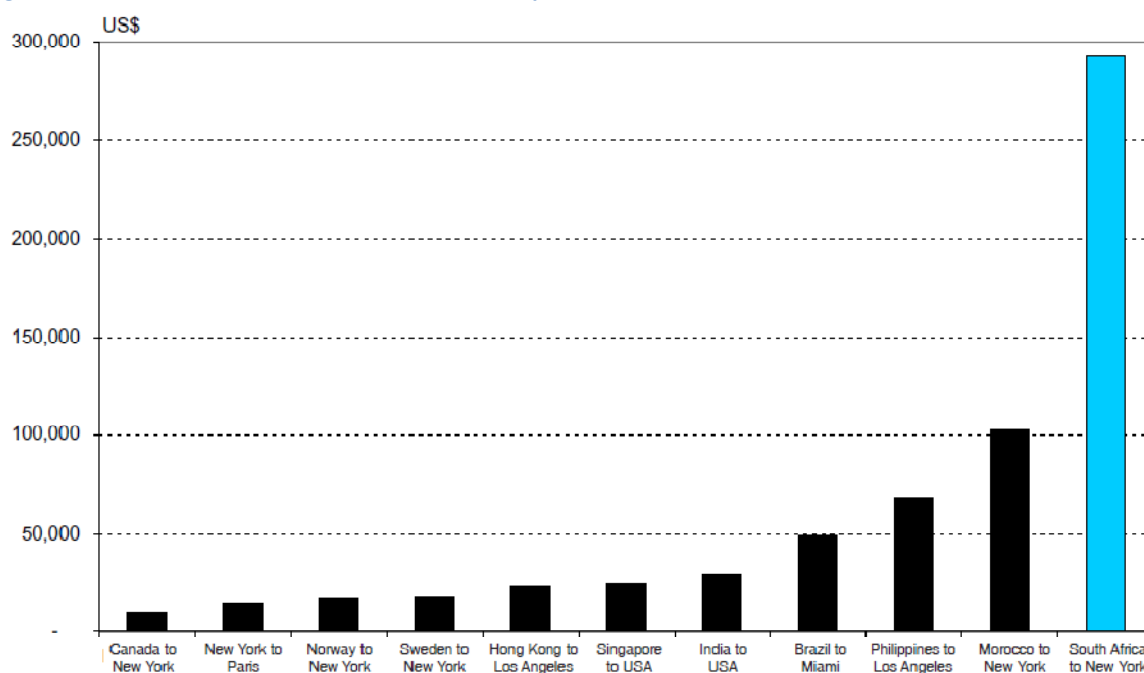
⁵ Fisher & Babbar 1996, 8

2.2 Excessive pricing in South African state entities

Sanral is an independent operating company, wholly owned by the South African government. Therefore it does not face the same pressures to maximise profits that are placed on privately owned companies. However, the different institutional structure in place at Sanral does not necessarily guarantee that the company has no incentive to excessive price or abuse market power. Specifically, Sanral may face incentives to overprice key routes such as those covered by the GFIP, in order to cross-subsidise other operations; and lack of competition may place insufficient incentives on Sanral to operate efficiently, in which case excessive prices cover the costs of inefficiency.

Evidence of these kinds of pricing behaviours in other South African state owned enterprises is widely available. In 2004, for example, Telkom had set prices for international bandwidth on the SAT-3 submarine cable 399% higher than the international average price, as shown in the figure below. At the same time, the French telecommunications regulator had made a judgement that the cost of supplying bandwidth via the SAT-3 cable (i.e. the same cable used by Telkom) amounted to €887 per month per mbps. This implies that Telkom was making in the region of 1000% profit on this line at the time in question – despite being a partially government-owned entity, with development objectives, and subject to guidance from line departments.

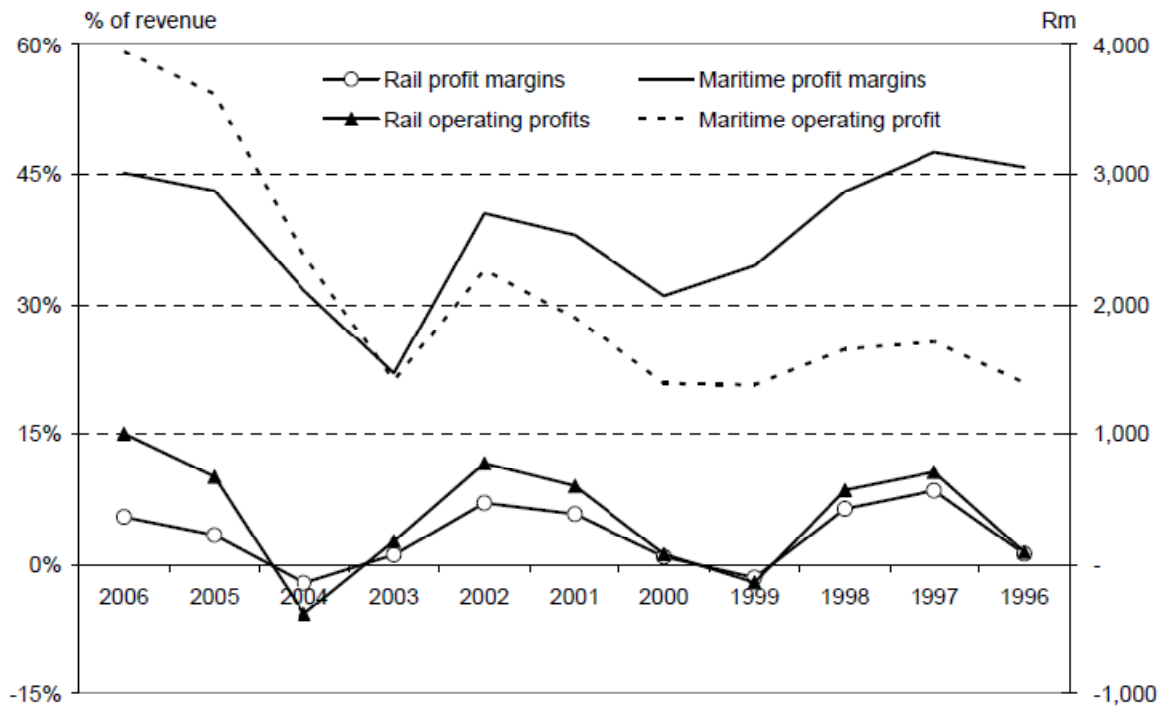
Figure 1: International leased lines, annual fee for 2mbps



Source: Genesis Analytics 2004

A similar example of this kind of pricing behaviour can be observed at Transnet. For years, Transnet has used its monopoly power at South African ports to cross-subsidise its less profitable rail operations, which face intermodal competition from road transport. In particular, extremely high wharfage fees have been set in order to maximise returns from port operations (Goode, 2008).

Figure 2: Transnet rail and maritime divisions financial performance compared



Source: Genesis Analytics 2008

These kinds of pricing practices are extremely difficult to eradicate once instituted, and have serious implications for the economic efficiency of state-run infrastructure, and thus for the ultimate competitiveness of the South African economy. Insufficient transparency at Sanral raises the risk that these kinds of abuses will occur in the GFIP tolling process, either to allow cross-subsidisation of less profitable tolling schemes, or to cover internal inefficiency costs at Sanral. Immediate attention must be paid to ensuring that this does not occur, and the transparency of the toll determination process must be sufficient to allow the public to evaluate whether cross-subsidisation does in fact occur.

2.3 Limited substitutes

Ideally, toll prices are set so as to maximise economic efficiency. However, if toll prices are not set at an appropriate level, they may have substantial negative impacts on regional and national economies. The size of the economic costs imposed by tolls depends largely on two factors: how far from the optimal level toll prices are set; and whether or not the consumer is able to use substitute transportation methods. The higher the price, and the fewer the transport substitutes, the worse the potential for economic damage.

In the case of the GFIP, many of the roads concerned do not have substantial alternatives. Not only are alternative road routes, such as the Old Johannesburg/Pretoria road, narrow and already subject to congestion, but intermodal transportation options are extremely limited. South Africa has no navigable waterways, and issues with the quality of rail infrastructure and services restrict its use for many types of freight. For example, in 2006 the average time taken to transport goods from Durban to Johannesburg via rail was estimated at 8.5 days, with a standard deviation of 60 hours – in other words, the customer could expect the trip time to vary between 6 days and 11 days,⁶ a distance that can be covered by a truck in under a day. As a result, in 2009 88.7% of South African freight tonnage was transported via road, with 49% of total freight travelling via metropolitan roads.⁷

In the absence of an efficient and effective rail sector, much of the need of South African business for transportation has been met by the road freight sector. This has allowed many businesses to stay competitive and continue to deliver a high quality of service to customers, particularly in sectors where reliable and cost effective delivery is of paramount importance. If tolls are set at inappropriate levels, these businesses will be faced with a choice between attempting to absorb cost increases, transferring cost increases to customers, or reducing their level of economic activity. South African corporates already struggle to stay competitive in international markets, and a further increase in the cost of doing business should not be undertaken lightly.

⁶ Genesis Analytics 2008, 39

⁷ CSIR & Imperial Logistics 2011, 20

2.4 Capital repayment schedule

If the GFIP constitutes an application of the users pays principle, then the GFIP toll system should be set so as to collect enough revenue to repay the cost of the project, and cover maintenance costs. An initial examination of the capital repayment schedule of the project however suggests that this is not the case.

Sanral has publicly stated that it expects its monthly toll revenue to be R300 million per month, which our estimates suggests is possibly conservative. We start by establishing an average vehicle toll cost, as shown in Table 1 below. As can be seen, even after generous assumptions for e-tag discounts, regular usage discounts as well as public transport discounts, the average per kilometre vehicle income for Sanral should be around 55 cents.

Table 1: Average per vehicle, per kilometre toll costs

Type of vehicle	Actual discounted fee	Share of revenue	Category share
Motorcars	0.40	51.0%	0.20
Minibuses	0.16	2.1%	0.00
Buses	0.74	1.2%	0.01
Motorcycles	0.24	0.8%	0.00
LDVs (bakkies)	0.37	21.9%	0.08
Trucks	1.11	23.0%	0.26
Per vehicle kilometre cost			0.55

Source: *Economists.co.za & DNA economics.*

Note the following assumptions:

- 80% of drivers have an e-Tag
- all buses & taxis qualify for public transport discount
- average cumulative discount for commercial bakkies and trucks is 37.5%
- average cumulative discount for cars and motorcycles is 15%
- average time of day discount is 5%
- only half of bakkie kilometres travelled are commercial
- Commercial trucks and bakkies spend 33% more time on the highway than average motor car.

This estimate can then be combined with estimates of total traffic volumes to derive toll revenue estimates. Traffic volume projections used in a study on the Gautrain project suggest that, as a daily average, 184 682 vehicles will travel between Pretoria and Johannesburg in 2011.⁸ If traffic volumes achieved on this 50km stretch are similar to those achieved on the rest of the GFIP network, and depending on estimates of the average distance travelled by each vehicle, an analysis of the fairness of a R300 million monthly toll revenue estimate can be made.

A high end/low end estimate is shown in Table 2 below. As can be seen, if even the average trip length is only 15km (i.e. 30kms travelled on a round trip), and if the rest of the network achieves only 80% of the traffic on the Pretoria-Johannesburg route, average monthly revenues of R293 million are achieved. With some relaxation of these assumptions, revenue estimates quickly exceed R500 million per month. Sanral revenue estimates of R300 million per month thus seem fairly

⁸ Environmental Impact Assessment: Proposed Gautrain Rapid Rail Link, Chapter 8

conservative, even if collection losses due to problems with the licensing system, for example, are quite high.

Table 2: Toll revenue high end/low end estimates

	Low end	High end
Total GFIP average daily traffic	583 595	683 323
Cost per km (R)	0.55	0.55
Average distance travelled (km)	30	50
Daily revenue	R 9 629 319	R 18 791 394
Monthly revenue	R 292 891 801	R 571 571 552

Source: Research team calculations, *Environmental Impact Assessment: Proposed Gautrain Rapid Rail Link, Chapter 8 Assumptions:*

- Low end: traffic on the rest of the GFIP is only 80% of the volumes achieved on the 50kms from Pretoria to Johannesburg; average trip distance is 30km
- High end: traffic on the rest of the GFIP is equivalent to the volumes achieved on the 50kms from Pretoria to Johannesburg; average trip distance is 50km

We therefore conclude that the Sanral estimates of an income of R300 million per month seem realistic and collectable, if not somewhat conservative. We now examine the implications of this rate of toll collections for the repayment period of the loan (financing model).

The following data is available on the finances of the GFIP scheme:

- Sanral has stated that the cost of the GFIP is R20 billion⁹ and that estimated monthly income will be R300 million
- The term of the loan is 20 years
- The rate that Sanral is currently paying on loans issued to date is in the region of 10% (as per the Sanral 2010 annual report)
- The cost of maintenance and repairs on the current Sanral road system is in the region of 1.2% of asset value (Sanral 2010 annual report)

Table 3 shows the implications of this data for a number of repayment scenarios:

- The first column shows the monthly amount needed to repay a R20 billion loan over 20 years. At R193 million it is substantially less than Sanral's projected income level.
- The only way that monthly repayments of R300 million could extend for 20 years would be if the interest rate increased to 17%, which is substantially above current levels.
- At a 10% interest rate and R300 million monthly payments, it would in fact take only 8.2 years to repay the loan.

⁹ 10 March 2011 correspondence between Sanral and Afriforum

- Finally, if we assume a generous maintenance allowance of 3% of asset value, repayments would reduce to R250 million per month, and the loan would still be repaid in only 11.1 years.¹⁰

Moreover, other studies such as the Gautrain Study estimate the growth of highway traffic in the province at 5% per year. Other than the 2008 decline, car sales in the province have averaged well over 10% per year over the last decade. This shows that a 2% increase in GFIP traffic flows is very conservative. A larger traffic flow is thus very possible and as such will ensure more revenue for Sanral than the projected R300 million per month.

Furthermore, price increase may ensure even more revenue. When analysing consumer price inflation, administered prices (the category which will contain toll fee increases) have generally increased well above the inflation rate over the last 12 years. So, assuming an annual increase of 5% in toll fees will not be inappropriate. In fact, it is on the low side as administered prices have registered average increases in the region of 8.5% per year over the last decade.

Table 3: Repayment terms and interest rate under various assumptions

	Actual repayments needed	Possible repayment schedule - implied interest rate	Repayment term if full collections used	Repayment term if full collections used, less 3% maintenance costs
Loan amount (million)	R 20 000	R 20 000	R 20 000	R 20 000
Monthly payment amount (million)	R 193	R 300	R 300	R 250
Payment period (years)	20	20	8.2	11.1
Interest rate (annual)	10%	17%	10%	10%

Source: Research team calculations some of the actual calculations are in an appendix.

3. Conclusion

A brief examination of limited publicly available data has revealed the following areas of concern with regards to the GFIP toll scheme:

- There are no transparent effective price control mechanisms in place on the GFIP, giving Sanral considerable discretion to set prices at an excessive level if it should choose to do so
- Sanral's financial projections suggests that it plans to collect toll revenues far in excess of what is needed to pay for the building and maintenance of the GFIP – suggesting that cross-subsidisation of the rest of the Sanral network is being considered.

Despite the obligation on SOEs to serve the public interest, in practise South Africa is full of examples of excessive pricing and cross-subsidisation by SOEs. Whether excessive prices are set to maintain overall company profitability, to fund extravagant vanity projects, or simply to reduce the need for

¹⁰ It should be noted that the inclusion of revenue and cost escalation factors do not change the overall conclusion significantly. For example, if it is assumed that vehicle volumes grow by 2% annually, and toll price inflation is 5% annually, which results in a 7% average annual increase in toll collections and maintenance costs, then the repayment term of the loan drops from 8.2 years to 7.9 years.

SOE staff to work efficiently and cost effectively, the ultimate impact on the economy remains overwhelmingly negative. When prices levels on key pieces of economic infrastructure such as the GFIP are set too high, the competitiveness of the entire domestic economy can be affected.

Immediate attention is needed as regards the GFIP toll determination process. At the very least, Sanral must share sufficient data with the public so that the price setting process can be interrogated. In order to ensure that prices are set in accordance with the public interest, a formal price review process must also be put in place, either through the institution of a sector regulator, or contractual obligations, or via the requirement that regulatory impact assessments be undertaken when GFIP toll levels are revised. Without such checks and balances, there is a substantial risk that the GFIP will become an obstacle to the South African development process.

Bibliography

Clough, P. & Guria, J. 2008. *Literature review: Road use charging & cost allocation*. Report to Ministry of Transport by NZIER

CSIR & Imperial Logistics. 2011. *7th State of Logistics Survey for South Africa*. Available from http://www.csir.co.za/sol/docs/7th_SoL_2010_March.pdf

Fisher, G. & Babbar, S. 1996. *Private Financing of Toll Roads*. RMC Discussion Paper Series 117, World Bank

Genesis Analytics. 2004. *Telecommunications prices in South Africa: An international peer group comparison*. South Africa Foundation Occasional Paper No. 3/2004.

Genesis Analytics. 2008. *Prices, Investment and Efficiency on the Railways: A Sectoral Review of Efficiencies in Administered Pricing in South Africa*. Commissioned by NEDLAC

Goode, R. 2008. *Administered Prices Study on Economic Inputs: Ports Sector*. Commissioned by NEDLAC

Washington State Department of Transportation (WSDOT). 2005. *Highway Construction Costs*. Available from <http://www.wsdot.wa.gov/biz/construction/CostIndex/pdf/HighwayConstructionCosts2005.pdf>