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The Authority's comments on the Tariff Methodology

1. Context

The National Ports Authority (the Authority) is one of five operating divisions of Transnet SOC Ltd. It is responsible for the safe, effective and efficient economic functioning of the national port system, which it manages in a landlord capacity. The Authority provides port infrastructure and marine services at the eight commercial seaports in South Africa. It operates within a legislative and regulatory environment created by the National Ports Act 2005 (Act No. 12 of 2005). In line with the provisions of the National Ports Act, the core functions of the authority are as follows:

- to plan, provide, maintain and improve port infrastructure;
- to provide or arrange marine-related services;
- to ensure the provision of port services, including the management of port activities and the port regulatory function at all South African ports; and
- to provide aids to navigation and assistance to the maneuvering of vessels within port limits and along the coast.

The National Ports Act creates a dual role for the Authority whereby it is responsible for the port regulatory function at the ports i.e. controlling the provision of port services through licensing or entering into agreements with port operators to ensure that efficient port services are provided. The *National Ports Act* also establishes the **Ports Regulator of South Africa** and is responsible for the following:

- exercising economic regulation of the ports system in line with government's strategic objectives;
- promoting equity of access to the South African commercial seaports and to the facilities and services provided by these ports;
- monitoring the activities of the National Ports Authority to ensure that it performs it functions in accordance with this Act; and
- hear complaints and appeals under the National Ports Act.

The Authority's service offering is targeted at mainly port users (which include terminal operators, shipping lines, ship agents, cargo owners and clearing & forwarding agents). It therefore manages nine seaports along South Africa's 2 954-km coastline. These ports are Richards Bay, Durban, East London, Ngqura, Port Elizabeth, Mossel Bay, Cape Town, Saldanha Bay and Port Nolloth.

The service offering can be divided into two primary categories:

1. Provision of port infrastructure; and
2. Provision of maritime services which include dredging, aids to navigation, ship repairs and marine operations.

The Port infrastructure comprises of the following five commodity sectors:

- Containers
- Dry bulk [such as coal, iron ore, manganese, chrome ore, copper, woodchips]
- Liquid bulk [such as petroleum products, chemicals, vegetable oils]
- Break-bulk [such as fruit, steel, scrap steel, Ferro alloys, pig iron, fish & fish products]; and
- The automotive sector.

These are essential infrastructures and services that are critical for economic growth. With the responsibility of providing infrastructure, the Authority's role affirms the developmental agenda of providing high quality competitively priced infrastructure for the purpose of lowering the cost of doing business as well as maximising its broader contribution to support economic growth.

2. Introduction

On 31 July 2014 the Ports Regulator of South Africa ("the Regulator") issued a Regulatory Manual ("Tariff Methodology"). The approved Tariff Methodology is multi-year in its approach (3 years) and allows for an annual review and an annual adjustment of tariffs within the three year period as opposed to fixing the prices for the full period.

The current Tariff Methodology was set to be applicable from FY 2015/16 to FY 2017/18. The Regulator has initiated the process of the review of the methodology to all stakeholders. An invitation has been extended to all stakeholders to submit inputs and proposals as part of the revision exercise. It is envisaged that once approval is obtained, the revised methodology will continue to apply in the same multi-year approach as in the past (i.e. a fixed tariff adjustment in FY 2018/19 with indicative tariff adjustments for the following 2 years). Furthermore, it is assumed that the new methodology would be applied for at least the next 3 years.

3. Objectives

Regulatory price determination is not an exact science and therefore significant opportunities for discretion may arise. Discretion leads to a reduction in interest to investment or a higher rate of return to compensate for the uncertainties. With the invitation to give inputs, the Authority would like to suggest improvements to some elements of the current methodology in order to achieve certainty and consistency in tariff determinations and approved revenues. In addition this will ensure that the regulatory framework follows best international practice in setting parameters applied in the methodology.

The main driver in the suggested improvements is to steer the methodology into a regulatory regime that is conducive to long term investments. It must also consider the introduction of incentive regulation that rewards the Authority on improving efficiencies in operating cost within its control. The regulatory framework should also support an economic environment within which the Authority operates:

- Operational performance: - can be used to assess a relationship between supply and demand for port capacity
- Tariff comparisons: - to determine if the level of tariffs is within a reasonable range
- Financial performance: - to determine if the port system is able to fund the infrastructure when required

The Authority is steered by Transnet's Market Demand Strategy (MDS), which aims to expand and modernise the country's ports, rail and pipelines infrastructure with a view to achieve a significant increase in freight volumes, over a period of time to promote economic growth in South Africa. In essence, the MDS forms the centerpiece of government's growth strategy through investment in

infrastructure. It is a key component of enabling the achievement of the New Development Plan incorporating skills development, youth employment and efficiency targets. In addition, the Authority together with the Ports Regulator is in the process of implementing a new tariff strategy. This implementation is based on a phased approach over the next ten years. The tariff strategy, which is based on the user pay principle, aims to create a fair, transparent and cost-reflective port pricing structure. In essence the tariff strategy considers which port users are the greatest users of which asset and to what degree are they responsible for the costs of this asset.

4. Rate of Return (RoR) with Required Revenues Methodology

In terms of the Port Directives[1], when considering the tariffs of the Authority, the Regulator must ensure that the tariffs allow the Authority to:

- recover its investment in owning, managing, controlling and administering Ports and its investment in port services and facilities;
- recover its costs in maintaining, operating, managing, controlling and administering Ports and its costs in providing port services and facilities; and
- earn a return commensurate with the risk of owning, managing, controlling and administering ports and of providing port services and facilities.

The Authority is currently regulated by the Regulator on the RoR methodology which determines the Authority's revenue needs on the required revenue basis. The RoR methodology is based on the concept of setting the price on the same basis as the competitive market, which assumes the efficient costs plus a market-determined return. It represents a cost service which gives a full recovery of capital and operating costs to the Authority, which are assumed to be determined on the same basis as what a competitive entity would have achieved, whilst protecting customers from paying exorbitant prices. There have been variations between the revenue applied for and the determinations by the Regulator in past tariff applications. Some of these variations were caused by differences in the parameters used. However the RoR has ensured that the pattern of evaluating the Authority's tariff applications is consistent and logical and therefore can be relied upon.

Transnet's MDS intends to spend half a trillion rand in the next 10 years with the Authority making up just under R60bn thereof. Given this infrastructure capex spend supporting the country's developmental agenda, the Authority is of the view that the RoR methodology continues to serve as an appropriate basis for the organisation's tariff determination. The RoR ensures the full recovery of the investment with the following formula:

[1] Port Directives were approved on 13 July 2009 (gazette on 06 August 2009) and amended on 29 January 2010.

Revenue Requirement (RR)

= Regulatory Asset Base (RAB) x Weighted Average Cost of Capital (WACC)

+ Operating Costs + Depreciation + Taxation Expense ±Claw-back

± Excessive Tariff Increase Margin Credit (ETIMC)

The components of the RR formula has been summarised in the Tariff Methodology as follows:

a) ***Regulatory Asset Base (RAB)***: *The RAB represents the value of assets that the Authority is allowed to earn a return on. The value of the assets in the RAB is indexed by inflation each year based on the Trended Original Cost ('TOC') approach.*

b) ***Vanilla Weighted Average Cost of Capital (WACC):*** *The WACC represents the risk adjusted opportunity costs of capital and is the minimum return for an investment in order to continue to attract capital, given the risks. A real WACC is applied, given that the RAB is indexed by inflation.*

c) ***Operating Costs:*** *The Regulator will analyse the operating cost estimates for the period on a detailed line by line basis. The Authority is required to provide a detailed and complete motivation for each of the expenses applied for.*

d) ***Depreciation:*** *The depreciation of the assets in the RAB will be calculated as a straight line 40 year on the average balance of the RAB.*

e) ***Taxation Expense:*** *The Regulator will use the pass-through tax approach where the vanilla WACC will be applied to the average RAB for the period under consideration, less the interest cost of debt and the corporate tax rate to determine the tax liability to be treated as an expense in the RR calculation.*

f) ***Claw-Back:*** *The key purpose of applying the claw-back is to ensure that the Authority or any port user is fairly treated and is not subjected to unfair gains and losses. The Regulator will spread the total impact of over/under recovery of revenue over a period of two tariff determinations.*

g) ***Excessive Tariff Increase Margin Credit (ETIMC):*** *The Regulator considers it prudent to avoid future tariff spikes by retaining and increasing the Authority's ETIMC.*

5. Components of the RR formula

Regulatory Asset Base (RAB)

To compensate the asset owners for the cost of capital, regulators allow a:

- Return on capital relative to the risk of the asset investment
- Recovery of Capital (or depreciation) to compensate for any consumption of the asset value due to physical or economic loss, and provide for the means to replace such assets at the end of useful life

In a competitive environment the value of an asset is determined by reference to the market price and its estimated future economic return. However if the value is not by the market price there is a need to

look at alternative means to assess its value so that an appropriate and fair return on capital can be calculated.

The initial RAB proposed by the Authority at inception of regulation was determined using the Depreciated Optimised Replacement Cost (DORC). Since the establishment of the RAB, asset values have been rolled forward using the Trended Original Cost (TOC) method in the Tariff Methodology to establish an asset value on which returns are calculated. This asset value has not been formally accepted by the Regulator but has served as the RAB on an interim basis until the Regulator completes its own studies. There are a number of different asset valuation methodologies used by regulators.

In 2007, the Authority appointed ZLH Projects and Naval Architecture (Pty) Ltd ("ZLH") as specialist engineering service provider to perform the required physical asset valuation. As part of the process, ZLH performed an industry wide scan which yielded various possible valuation approaches as summarised in Table 1 below:

Table 1: Summary of various Asset valuation Methodologies

Methodology	Description	Advantages	Disadvantages
• Historical Cost Approach	• Asset Value is set equal to the depreciated original cost or net book value of the assets, as published in the annual accounts	• Objective and simple to implement as the values are tied to the financial records of the company	• Understating of economic values of assets during the times of inflation and technological advances leading to price shocks when assets have to be replaced.
• General Purchasing power adjusted Historical Cost	• This method calculates the asset value to be equal to the asset base in the previous year updated for annual investment, depreciation and inflation as measured by the Consumer Price Index (CPI) or the industry specific index.	• Provides better estimates for the value of large assets without underestimating depreciation	• There is no guarantee that a simple indexation will lead to a value of assets which is fairly equal to their respective market values. • Difficulty in choosing an appropriate price index • The Historical Cost of the Authority is unknown
• Replacement/Depreciated Optimised Replacement Cost (DORC)	• Replacement cost refers to an approach of allocating the capital cost of assets, under which the asset base is periodically revalued to be equal to the price of constructing or buying a modern equivalent asset. • DORC is a replacement cost depreciated and optimised. • The asset is depreciated to reflect the shorter remaining life of the existing asset. • It is necessary to optimise the value of an asset in order to reflect the most efficient delivery of service, given the constraints applicable to the asset • Measures the cost of replicating the service potential in the most efficient way possible (from an engineering perspective) whilst correcting for the service life of the asset which has expired	• Values assets at their current unit prices • Prices may be verified by reference to arm's length quotations	• DORC values are dependent on certain optimisation factors and maybe subject to alternative views

Methodology	Description	Advantages	Disadvantages
• Net Realisable Values	• The value of an asset at the end of a period determined by its current value.	• Assets lives and depreciation are considered in determining the value	• It needs to establish a net realisable value through an open tender process.
• Future Discounted Cash-Flows	• It reflects an estimated discount stream of net returns that can be attributed to the asset	• It is an appropriate representation and estimation of the current asset value	• Future discounted net returns are uncertain
• Asset Specific index number adjusted historical cost	• It is the same as General Purchasing power adjusted Historical Cost except that indexation is done per specific asset class	• Provides an estimated asset value which is based on the general price level	• None of the available specific price indexes maybe relevant for the particular asset on hand.

DORC is defined as the replacement cost of an 'optimised' system, less accumulated depreciation. An optimised system is a reconfigured system using modern technology designed to serve the current capacity with current technology, with some allowances for growth. This method excludes any unused or underutilised assets and allows for potential cost savings that may have resulted from technological improvement. DORC uses a current cost approach which is usually justified on the basis that it results in prices which closely reflect the cost of replacing the current infrastructure or providing additional capacity. Increasingly, estimating the cost of services using a DORC asset valuation method with straight line depreciation has become a conventional approach of valuing existing infrastructure assets and it is utilised by most overseas regulators in industries such as gas, electricity, telecommunications and rail. Furthermore, from the ZLH study above, DORC is a function of the current replacement cost of the infrastructure, growth rate and the required average cost of capital (rate of return), which are in alignment with the RoR methodology.

The Authority undertakes revaluation of assets every 3 years with the application of inflation trending in the intervening years for accounting purposes (i.e. International Financial Reporting Standards). The reason for this approach is due to past experience and simulations undertaken that indicate by merely adopting the DORC values at inception and trending asset values for long periods of time results in an understated fair value of assets. This could expose the Authority to risk of insufficient reserve or provisions for replacement of assets as and when they become due.

Recommendation

As an adequate replacement asset valuation approach, the Authority recommends an adoption of a DORC. The determination of the asset values through the use of DORC will be established periodically (i.e. every 3 years) and assets will be trended with inflation in the intervening years.

Weighted Average Cost of Capital (WACC)

In order to earn a return commensurate with the risk of owning, managing controlling and administering ports and of providing ports services and facilities, the WACC is applied to the RAB. In addition, the Authority also recommends the continuation of the Capital Asset Pricing Model (CAPM) in determining the cost of equity as it is an approach commonly used by practitioners and regulators to calculate the cost of equity. However, as part of suggesting improvements, the Authority proposes changes to the determination of the components of the CAPM as follows:

Risk Free Rate (RFR)

The current Tariff methodology is based on a twenty year government bond as an appropriate measure of the RFR, with the R186 bond instrument yield to maturity serving as the benchmark adequately reflecting the market's perception of sovereign risk and inflation going forward. It should be noted that the R186 matures on 21 December 2026. It is therefore effectively a short to medium term bond as opposed to a long term bond.

Recommendation

It is recommended that the Regulator reassesses the appropriate benchmark for the risk free rate and use a long term bond as a benchmark for the risk free rate. The Authority would prefer a long dated bond of say thirty (30) or forty (40) years given the long term useful life nature of the majority of its capital investments. However, such bonds currently have a history of less than five years and thus would not be suitable for the Regulator's purposes given the use of a historical average of five (5) years in determining the risk free rate.

Accordingly, the Authority recommends that the R214 South African government bond be used as a benchmark for the risk free rate. The R214 government bond should be changed immediately when the remaining years to maturity becomes less than twenty (20) years and thus be replaced with another government bond which has no less than 20 remaining years to maturity.

Market Risk Premium (MRP)

The current tariff methodology is based on an MRP on a forward-looking basis in the determination of the cost of equity. The Regulator has adopted the Dimson, Marsh and Staunton (DMS) estimate of the mean MRP as measured against bonds for South Africa. The DMS dataset calculates the MRP over the full 113 year period on a geometric mean to better address concerns related to correlation in excess returns and mean reversion.

The MRP means are important and somewhat controversial measurements of the past and future investment returns. Numerous publications have discussed the pros and cons of these measurements as well as relationships between geometric and arithmetic means. Yet, the controversy surrounding arithmetic and geometric averages appears to persist.

During the first issue of the Interim Regulatory Manual, the regulator applied the arithmetic mean in the MRP calculation. However the use of DMS in a 3 year tariff methodology was based on geometric mean and needs to be reassessed. A period of 113 years of historical information is considered long to capture the expected market returns going forward. To further apply a geometric mean compounds the problem. The DMS, MRP hardly ever changes year on year, 2012 = 5.3%, 2013 = 5.3%, 2014 = 5.4%, 2015 = 5.4%. The constant MRP is cause for concern as it does not reflect recent market performance reality.

Furthermore, in practice the determination of the MRP is normally inferred from historical as opposed to forward looking data given the lack of available forward looking data.

Recommendation

It is recommended that the Regulator reverts back to the DMS arithmetic mean MRP as per the initial issue of the Interim Regulatory Manual; this will address current concerns on the 113 years which is considered too long to reflect recent market performance reality without changing the preferred source of the Regulators MRP.

Beta

The Authority is not a traded company, there is no beta published reflecting its risk relative to firms listed on the Johannesburg Stock Exchange (JSE). A beta has to be set to reflect the risks faced by the Authority when used in the RR methodology. This must ensure an appropriate return for the risk faced. The Regulator uses a constant asset beta of 0.5. There is no indication how this asset beta was determined. It is concerning that the asset beta of 0.5 is constant year on year which is not reflective of asset beta behaviour in the stock markets.

Recommendation

It is recommended that the Regulator determine the asset beta of the Authority based on the Authority's peer companies. The Authority recommends that the following peer companies be used:

Peer Name	Ticker Name	Relative Index
Adani Ports and Special Economic Zone	ADSEZ IN Equity	SENSEX Index
Dalian Port PDA Co Ltd	2880 HK Equity	HSI Index
Jiangsu Lianyungang Port Co Ltd	601008 CH Equity	SHASHR Index
Jinzhou Port Co Ltd	900952 CH Equity	SHBSHR Index
Novorossiysk Commercial Sea Port PJSC	NMTP RM Equity	INDEXCF Index
Piraeus Port Authority	PPA GA Equity	FTASE Index
Port of Tauranga Ltd	POT NZ Equity	NZSE Index
Rizhao Port Co Ltd	600017 CH Equity	SHASHR Index
Shanghai International Port Group Co Ltd	600018 CH Equity	SHASHR Index

Peer Name	Ticker Name	Relative Index
Shenzhen Chiwan Wharf Holdings Ltd	200022 CH Equity	SZBSHR Index
Thessaloniki Port Authority SA	OLTH GA Equity	FTASE Index
Tianjin Port Co Ltd	600717 CH Equity	SHASHR Index
Wuhu Port Storage & Transportation Co Ltd	600575 CH Equity	SHASHR Index
Yingkou Port Liability Co Ltd	600317 CH Equity	SHASHR Index
Chongqing Gangjiu Co Ltd	600279 CH Equity	SHASHR Index
Hamburger Hafen und Logistik AG	HHFA GR Equity	DAX Index
Nanjing Port Co Ltd	002040 CH Equity	SZASHR Index
NCB Holdings Bhd	NCB MK Equity	FBMKLCI Index
Xiamen Intenational Port Co Ltd (Hong Kong)	3378 HK Equity	HSI Index

Taxation

The taxation approach of a simple profit before tax determination is relatively easy to apply.

Recommendation

It is recommended that the taxation expense should apply as approved in the last ROD for Financial Year 2016/17.

Operating Expenditure

The Directives allow the Authority to recover its costs in maintaining, operating, controlling and administering Ports and its costs in providing port services and facilities. These are operating expenses associated with the day to day operations of the Authority in support of the strategic initiatives. The RR formula is based on the cost plus rate of return approach where all operating costs are allowed in the revenue required as it informs the revenue needs of the Authority. The Authority has in the last tariff application demonstrated that some of the savings made off the operating costs are due to deliberate efforts to reduce costs whilst delivering the same level of service needed by customers. These savings are clawed back in favour of customers without any incentive for the Authority to focus on delivering more with less. The Authority would like to retain some of these savings as an incentive to reduce operating costs and over time lower port costs.

Recommendation

The Regulator considers setting up an incentive scheme that compensates reduction of costs and lowering port costs.

Depreciation

Depreciation relates to the capital maintenance charge that is included in the annual revenue requirements. The capital maintenance applies to all assets which the Authority has the responsibility to maintain and replace. The ports infrastructure and other assets contains of components with different lifespans. The current average depreciation term of 40 years was based on a sensible and practical approach at the inception of regulation. Given the maturity of tariff regulation and the implementation of the Tariff Strategy, it will be logical for tariffs to reflect pricing signals which correlate to the underlying assets useful life. The asset amortization periods as expressed in the Authority's Annual Financial Statements presents a more realistic view of the useful life of the Authority's assets.

Recommendation

The depreciation calculation should be based on the different Asset Categories as calculated in the Annual Financial Statements.

Claw back

The clawback is the mechanism used to account for differences between actual and forecasted information in order to ensure that the Authority and port users are fairly treated and not subjected to unfair gains or losses. The current methodology considers changes in some of the elements of the RR formula as well as volume forecasts.

However with regards to the use of the consumer price index (CPI) and the Weighted Average Cost of Debt (WACD) it has been noted that the actual CPI has not been used to replace the forecast CPI as far as asset trending, computation of real cost of debt and real cost of equity rates is concerned. Furthermore the forecast WACD is not replaced with the actual WACD in claw back determination.

With regards to the forecast WACD, it should be noted that there is more than a one year gap between the forecast and the actual WACD. The forecast WACD also does not take into account the interest rate impact of future Monetary Policy Meeting (MPC) decisions, credit rating agencies decisions and any potential changes in Transnet's funding strategy during the tariff year.

The application of a forecast CPI and forecast WACD when computing the claw back is inconsistent with claw back principles which seek to make correction of forecast information to avoid undue losses or benefits to either the Authority or the Ports users.

The claw back is a mechanism that is more prudent to restore fairness over gains and losses through removing "overs and unders" caused by inaccuracies in budgeting and volume forecast.

The clawback also considers the preceding two tariff periods with a final adjustment for the year in which actual data is available and an interim adjustment (with a 50% rule) for the year with forecasted data. Clawback is important in refining the incentive regime as it will ensure that excessive profits are not earned but also efficiency gains are split between the Authority and customers.

Recommendation

It is recommended that the actual and not the forecast CPI (in asset trending, real cost of equity and cost of debt rates) and the actual WACD be taken into account in determining claw backs. Furthermore claw backs should be calculated only after the Authority has been allowed to retain its incentives on costs reductions.

Excessive Tariff Increase Margin Credit (ETIMC)

The ETIMC facility is the mechanism used by the Regulator to ease future shocks to the system. The ETIMC allows the Authority to earn revenues in advance for capital expenditure etc. that may spike in the foreseeable future. The ETIMC facility is a liability in the books of the Authority. In addition, the ETIMC is funded at a higher cost than the cost of financing that Transnet is able to raise debt**.** Furthermore, the ETIMC attracts tax upon receipt whilst it was allowed without any tax allowance and this result in the Authority having to fund the tax payment as a result of the ETIMC.

Recommendation

The Authority makes the following recommendation:

- ***The ETIMC should attract interest at Transnet's WACD.***
- ***The ETIMC should be phased out year on year by making the amount available to fund discount schemes in the public interest in stimulating beneficiation of raw materials into finished goods.***

The Authority has a responsibility to provide basic ports infrastructure. In doing so, the Authority has to ensure that there is expansion and provision of capacity in the ports ahead of demand. With this responsibility the Authority has to also ensure that there is enough funding of capital to deliver on this infrastructure and lastly ensure that infrastructure investments at the ports are inclusive. As a result it is important that the tariff trajectory should be predictable and the Authority must be financially sustainable. It therefore becomes imperative that the Regulator ensures that the tariff trajectory is predictable, that the regulatory framework enables the Authority to recover the returns that are exactly intended to be recovered as approved.

6. Conclusion

The above review of the Tariff Methodology recommends the continued use of the Rate of Return, multi-year tariff methodology in the same manner as it currently applies (i.e. a fixed tariff adjustment in FY 2018/19 with indicative tariff adjustments for the following 2 years afterwards) with an addition of Incentive Regulation on operating costs. The Authority further proposes certain changes to the treatment of the RAB, depreciation and certain components of the WACC. These suggestions in the review of the methodology seek to ensure that the Authority is able to deliver on its strategic intent i.e. to enable the effective, efficient and economic functioning of an integrated port system to promote economic growth.