



**Draft Port Tariff Methodology
For Tariff Years 2021/22 – 2023/24**

November 2019

The Ports Regulator of South Africa has embarked on a process to review the Multi-Year Port Tariff Methodology.

The details of the Methodology and proposed Guidelines are set out within this document.

Interested parties'/port users are hereby invited to submit comments to the Ports Regulator of South Africa.

Comments should reach the Ports Regulator by close of business on Monday 3 February 2020.

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1. Introduction

In 2007, the Ports Regulator of South Africa ('the Regulator') was established through the promulgation of the National Ports Act, Act 12 of 2005 ('the Act') as '*an independent ports regulatory body*¹', with a mandate to "*exercise economic regulation of the ports system in line with government's objective*²". The Act also sets out the functions of the National Ports Authority ('the NPA / the Authority') as the landlord of South Africa's (SA) ports and requires that "*the NPA must, with the approval of the Ports Regulator, determine tariffs for services and facilities offered by the Authority and annually publish a tariff book containing those tariffs*³".

Subsequently, the Directives to the Act (as approved on 13 July 2009, gazetted on 06 August 2009 and amended on 29 January 2010) require that when considering the proposed tariffs the Regulator must ensure that it allows the NPA 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
- Make a profit commensurate with the risk of owning, managing, controlling and administering ports and of providing port services and facilities⁴.

This mandate, coupled with the history of both SA and the NPA, required regulatory intervention as well as various tools and mechanisms to ensure the ports system of SA is fair, transparent, and competitive.

In line with the functions of NPA, as defined in Section 11 of the Act, the revenue generated from NPA's services is utilised inter alia to:

- Provide and arrange for road and rail access within ports;
- Regulate and control port access (navigation within port limits; enhancement of safety and security);
- Provide and arrange for tugs, pilot boats, and other services and facilities for the navigation and berthing of vessels in the ports; and
- Provide, control and maintain vessel traffic services.

The Regulator's approval is required for the tariffs charged for services and facilities offered by the NPA in accordance with the National Ports Act, 12 of 2005 (the Act).

In terms of Section 72(1) of the Act, and Chapter 7 of the Directives of 2009 promulgated in terms of Section 30(3) of the Act as amended in 2010, the NPA must submit to the Regulator an application regarding the tariffs it proposes to charge for the services and facilities that it offers. The Regulator's

¹ Section 29 of the National Ports Act

² Section 30(1)(a) of the National Ports Act

³ Section 72(1)(a) of the National Ports Act

⁴ Directive 23(2)

approval of such tariffs is subsequently required and therefore takes into consideration the Application, all subsequent submissions, written and oral comments received during the consultation process, including the responses thereto, as well as conducts its own research prior to publishing a Record of Decision (ROD).

Since the commencement of economic regulation with the 2009/10 ROD, the Regulator has issued, on an annual basis, a ROD for each application year in which an assessment of the NPA's compliance with the Regulatory Framework has been made. All RODs have contained an outline of corrective action required.

Furthermore, the Regulator has formulated a long term Tariff Strategy (the 'Strategy') which is based on a 'use and benefit' approach to cost allocation. The Strategy depends on the adapted Revenue Requirement (RR) approach to allocate costs to specific user groups. Tariffs from 2017/18 onwards will be adjusted in accordance with the consulted and adopted Tariff Strategy. The Act, its Regulations, and the Directives constitute the South African Ports' Economic Regulatory Framework which, amongst other instruments, allows for a transparent tariff setting process.

Reference: <https://www.portsregulator.org/about/legislation-regulations-and-policies>

Reference: <https://www.portsregulator.org/images/documents/PRSA-Tariff-Strategy-2015-2016.pdf>

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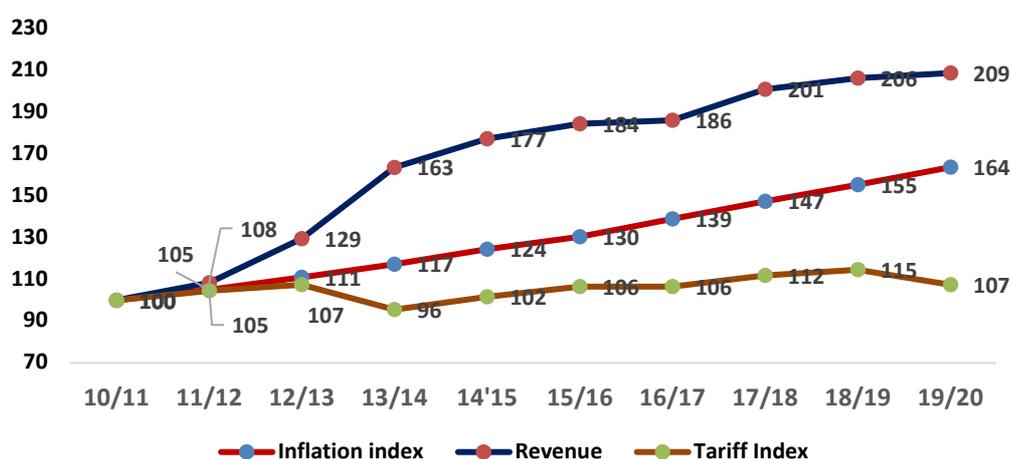
2. The Tariff Methodology

2.1. Background

Significant strides have been made since the first Regulatory decision in 2009/10 and the determination of a multi-year tariff methodology in 2015/16 and again in 2018/19 further contributed to increased regulatory certainty. Whilst retaining the fundamental elements of earlier determinations, the most recent Tariff Methodology was multi-year in its approach, applicable to the 2018/19-2020/21 tariff years, and resulted in increased levels of transparency and consistency in the tariff setting process. The Methodology has allowed a significant smoothing of the Authority’s return and at the same time, it has allowed the Regulator to establish a lower tariff trajectory whilst still ensuring the profitability of the NPA, as can be seen in Figure 1: Tariffs vs inflation below.

This Tariff Methodology, applicable to the 2021/22 – 2023/24 tariff years, seeks to continue and strengthen the transparency and effectiveness of the regulatory tariff setting process whilst expanding its scope and providing greater focus on the embedded incentives inherent to the Tariff Strategy published in July 2015 and updated in 2019.

Figure 1: Tariffs vs inflation



2.2. In Context

The “multi-year” tariff methodology (the ‘Methodology’) in the current instance refers to the calculations of tariffs for the period 2021/22 – 2023/24 based on a single methodology.

The Authority’s multi-year tariff application contains different calculations for each tariff year in the tariff period, consisting of forecasts and calculations of each of the components of the Required Revenue (RR) approach. Annual adjustments to the values of the components will be taken into account through a claw-back (or give-back) mechanism.

The NPA publishes a revised tariff book of all prices reflecting the decisions of the Regulator as set out in the Record of Decision (ROD), for the first year of each rolling multi-year period. In addition, the NPA is required to submit, as part of the application, any proposed changes to the existing tariff book that will reflect increases (or decreases) different from the average tariff increase applied for.

3. Port Tariff Methodology

3.1. Methodology Period

This Tariff Methodology is applicable for the tariff period 2021/22, 2022/23, and 2023/24.

The Regulator has previously allowed for an annual review and an annual adjustment of tariffs within a three-year period as opposed to fixing the prices for the period; this is intended to protect users from possible large step changes in the tariff. In addition, unlike other regulated industries such as electricity or oil and gas pipelines, there are large variations in the users and usage of port infrastructure and services. Therefore, an annual review allows a more efficient and appropriate allocation / distribution of prices to port users as opposed to an adjustment after three years.

Provision for an annual review and adjustment of tariffs within a three-year period is contained within the Methodology, and the NPA is required to apply for a fixed tariff adjustment for the year under review as well as to provide indicative tariffs for the two outlying years. This in turn allows the Regulator, and port users, to take a medium term view of the operational expenses, volume forecasts, and tariff trajectories, whilst at the same time provides the Regulator the flexibility to adjust, in the short term, for economic or other external impacts.

This methodology will therefore apply until the end of 2023/24 tariff year, a definitive outcome on the future of the corporate structure of the NPA, or the establishment of the Transport Economic Regulator, whichever comes first. In addition, the Regulator may, from time to time, make corrections or changes to the methodology as required.

4. The Elements

4.1. Rate of Return Regulation - Revenue Required (RR) Methodology/Revenue Cap

The Rate of Return regulation method is often used to determine fair and reasonable prices for all parties. The prices are considered reasonable as they provide a company the opportunity to recover its costs, as well as to earn a fair return on the capital employed. Simultaneously, the method protects customers from paying excessive monopolistic prices, with the argument being that monopolistic firms should be required to charge the price that would prevail in a competitive market.

The Revenue Required⁵ methodology is one such method that uses the Rate of Return as it enables the firm to make a reasonable return on their assets after covering all operating costs, depreciation and taxes.

This approach further satisfies the requirements of the Act which states that the Regulator must ensure that the approved tariff allows the Authority to:

- Recover its investment in owning, controlling and administering ports and its investment in port services and facilities;
- Recover its costs in maintaining, operating, controlling and administering ports and its costs in providing port services and facilities; and

⁵ The inclusion of a claw back mechanism results in a Required Revenue approach which closely reflects a Revenue Cap approach. For purposes of consistency in terminology we continue to use the term Revenue Requirement (RR).

- Make a profit commensurate with the risk involved in ports services and facilities.

An assessment of the various components of the RR formula is required in order to determine a feasible outcome. In regulatory practice, tariffs for far-lying future years are based on forecasts of various considerations. As a general rule, the longer the forecast period is, the less accurate the forecasts towards the end of the period is likely to be. In time, forecasts can be replaced with actual data for the forecasted variables and when sufficient actual data is available for a tariff year, the tariff is recalculated. Claw-backs or give backs are then calculated to offset any differences. This calculation and subsequent claw-back will be completed during each year of a multi-year tariff decision, as has been the practice of the Regulator. As actual data for tariff year one will only be available in tariff year two, the applicable claw back or giveback, if any, will only be fully implemented in tariff year three.

Actual volumes will replace estimates for the calculation of claw backs or give backs. For future years, more up to date forecasts may be more accurate and in turn lead to smaller tariff adjustments. Such newer forecasts could be implemented each year at the same time that changes as a result of claw backs or give backs are implemented. In years when there are large volume changes, using more recent volume forecasts may reduce the size of the claw back or give back. However, annual volume forecasts will make the calculation of claw backs or give backs much more complicated involving multiple claw backs for a particular year, and thus more prone to human error. However, the use of a three-year period in the current methodology includes a mid-period adjustment, that should, in theory, reduce the volatility over the period as a result of the claw-back.

As the Regulator has utilised the RR approach for determining tariff amendments in response to the NPA's annual tariff applications. The Regulator proposes a continuation of this approach for the 2021/22 – 2023/24 financial years, with some changes as set out below.

The formula for the RR methodology is as follows:

$$\begin{aligned}
 & \textit{Revenue Requirement} \\
 &= \textit{Regulatory Asset Base (RAB)} \\
 &\quad \times \textit{Weighted Average Cost of Capital (WACC)} + \textit{Operating Costs} \\
 &\quad + \textit{Depreciation} + \textit{Taxation Expense} \pm \textit{Clawback} \\
 &\quad \pm \textit{Excessive Tariff Increase Margin Credit (ETIMC)} \\
 &\quad \pm \textit{Weighted Efficiency Gains from Operations (WEGO)}
 \end{aligned}$$

The above formula reflects a standard building block approach to setting the revenue requirement of a regulated service provider and has been used by the Regulator in a similar manner in previous tariff determinations. This approach accords with the rate-of-return revenue requirement calculations by Regulators in South Africa as well as internationally (as modified in the ports regulatory practice over time) and has been used as the basis for assessments by the Regulator in preceding tariff periods.

The Methodology requires that the NPA estimate its operating costs, depreciation, taxation expenses, and return on capital (a product of the Weighted Average Cost of Capital (WACC) as well as the value of assets in the RAB for the period under review. In addition, the methodology contains a claw-back mechanism (that corrects for over or under recoveries in previous tariff periods) and an Excessive Tariff Increase Margin Credit (ETIMC) facility. The ETIMC allows for large increases in required revenue and/or tariffs that may arise from volume volatility or substantial capital expenditure programmes in future years to be partly offset by moderately higher tariff increases in the short-term.

Whilst the Methodology as set out below contains an efficiency variable (the Weighted Efficiency Gains from Operations) and will incentivise operational efficiencies, the Regulator still retains the right to include, at any time during this methodology period, positive incentives in support of any national objectives or positive operational or financial outcomes in the Records of Decision.

The exposition of the Revenue Requirement approach is:

$$RR = (v - d + w)r + D + E + T \pm C \pm ETIMC \pm WEGO$$

Where:

<i>RR</i>	=	<i>Revenue Requirement</i>
<i>v</i>	=	<i>Value of the assets used in the regulated services</i>
<i>d</i>	=	<i>Accumulated depreciation on such assets</i>
<i>w</i>	=	<i>Working Capital</i>
<i>r</i>	=	<i>Regulated Return on Capital</i>
<i>D</i>	=	<i>Depreciation accounted for in the period of the tariff</i>
<i>E</i>	=	<i>Operating costs (OPEX)</i>
<i>T</i>	=	<i>Taxation expense</i>
<i>C</i>	=	<i>Claw-back</i>
<i>ETIMC</i>	=	<i>Excessive Tariff Increase Margin Credit</i>
<i>WEGO</i>	=	<i>Weighted Efficiency Gains from Operations</i>
$(v - d + w)$	=	<i>Regulated Asset Base (RAB)</i>

4.2. Regulatory Asset Base (RAB)

The RAB represents the value of those assets the NPA is allowed to earn a return on. As the return earned on these assets is expressed in real terms, the value of total assets in the RAB is indexed to inflation each year - the Trended Original Cost (“TOC”) approach. Each year, estimated capital expenditure (CAPEX) and depreciation is added to the closing balance for the previous year to arrive at an updated closing balance for the current year. The expected working capital balance is added to arrive at a total RAB estimate, which is averaged over the year to account for the progressive spending of capital works in progress (CWIP) over the period.

4.2.1. Calculation and Adjustment of the RAB

The methodology is premised on the principles of capital maintenance which presents the following approaches and which were comprehensively discussed in the discussion paper of February 2018:

- Financial Capital Maintenance (FCM) is based on the Historic Cost (HC) and Trended Original Cost (TOC) models;
- Physical Capital Maintenance (PCM) is based on the Depreciated Optimised Replacement Cost (DORC) model; and
- Economic Capital Maintenance – asset values are calculated on a deprival value and Net Present Value and Deprival Value.

The Regulator concluded that the appropriate (minimum) criteria elements, as determined by the Regulator for the purpose of setting an appropriate RAB and asset valuation system must:

- be based on a principled and sound rationale;
- produce a reasonable asset value for existing assets;
- result in an acceptable price-path;
- ensure financial capital maintenance;
- encourage efficiency and caution with respect to new investment decisions on the part of the NPA;
- be reconcilable back to the NPA asset register, at least at a particular point in time; and
- minimise regulatory information asymmetry problems.

The Regulator concluded that the TOC approach (Financial Capital Maintenance) based on the capitalisation dates and values in the NPA asset register best meets the criteria, however, some concerns related to the older assets capitalised before 1990 remain. Assets with capitalisation dates before 1990 will therefore be treated at historical costs. The underlying assumption is that assets in existence by 1990 have been in existence for a long period of time and, for most of that time, have been depreciated on a trajectory following the historic cost method. The Regulator therefore treats these assets on the historic cost method, while treating any assets created from 1991 onwards on the basis of the TOC approach.

The following is the approach to be implemented:

- i. TOC values provide a viable approach to setting the RAB and will be applied to new (post 1990 assets).
- ii. The Regulator will differentiate between assets in existence in 1990 and those with capitalisation dates after 1990 and will treat the older assets on a Historical Cost basis.
- iii. The Regulator will allow the NPA sixty days from publication of this methodology to correctly allocate capital maintenance applied to pre-1990 assets as appropriate in the asset register on condition of:
 - a. Evidence of each capital maintenance project must be provided on a case-by-case basis.
 - b. All relevant expenditure and adjustments to the remaining useful lives of these assets as a result of the relevant capital expenditure must be detailed and provided to the Regulator on each capital asset.
 - c. These capital maintenance line items must be allocated separate asset numbers and allocated to the appropriate capitalisation dates for inclusion in the asset register.
 - d. These assets will thereafter, if to the satisfaction of the Regulator, be considered for treatment on a TOC basis.
- iv. On application by the NPA as part of its annual Tariff Application, the Regulator may, in considering the revenue impact of the implementation of the methodology decide to accelerate the depreciation period of the pre-1990 assets in order to smooth out the revenue impact thereof.

4.2.2. Rules for Inclusion

The RAB covers all assets employed/owned by the NPA in the provision and supply of port capacity and services. The following are the conditions that must be met in order to include an asset in the RAB. The following rules set out the criteria for inclusion and valuation of assets and treatment of maintenance on the RAB:

Prudency test applicable to new and used assets for inclusion in the RAB

The amount by which the capital base may be increased in any specific year is the amount of the actual project capital expenditure incurred in that specific year provided that:

- i. The amount does not exceed the amount that would be invested by a prudent landlord port owner acting efficiently in accordance with good industry practice to achieve the lowest sustainable cost of delivering the required services; and
- ii. A least one of the following conditions is satisfied:
 - a. The anticipated incremental revenue (subjected to the claw back mechanism in outer years if found to not true) generated by the capital expenditure exceeds the investment cost;
 - b. The NPA can satisfy the Regulator that the new capital expenditure has system wide benefits that, in the Regulator's opinion, justify its inclusion in the capital base; or
 - c. The new capital expenditure is necessary to maintain safety and integrity in the system.
- iii. The fixed asset is long-term in nature and is operationally used and useable;

Fixed and other assets that are not in an operationally used and useable (useful) form will not be included in the RAB;

- iv. The asset is used and useable and should be in a condition that makes it possible to supply demand for port services in the short to medium-term (within 12-36 months).

Additional notes regarding assets include:

- o Assets will be included in the RAB and subjected to the TOC methodology as set out if the expected life of the asset exceeds five years.
- o The asset's lifespan is five or less years (i.e. depreciation periods of five years or less at the acquisition of said assets will attract straight line depreciation to be included in the tariff calculation). Maintenance on these "short term assets" may have maintenance costs included if used beyond full depreciation.
- o The NPA shall, with each tariff application, provide a list of temporary and long term unused assets (i.e. all assets not used operationally). This list will be published
- o All capital expenditure must be approved by **formal** PCC and NPCC resolutions.⁶
- o All capital expenditure must be submitted to the Regulator on an annual basis as part of the Annual Tariff Application for consideration by the Regulator on 1 August of every year.

4.2.3. Calculation of the RAB

- i. Working capital will be included in the RAB for the purposes of calculating the return as per the Tariff Methodology.
- ii. The return on capital will be based on the trended original cost (TOC) value of the assets (for assets with capitalisation dates post 1990) and historical cost value for assets predating 1990 to ensure financial capital maintenance.
- iii. A *real* return will be applied in the case of assets that is valued on a TOC basis and a *nominal* return will be applied to the HC asset values in the RAB.
- iv. The net TOC value is determined by calculating the accumulated and annual depreciation on a straight line basis over the elapsed life for those assets that are depreciated (with appropriate adjustments for refurbishments etc.).
- v. The historic asset base as at 31 March 1990 will be used as an opening asset base (This asset base will be used as a basis to determine the current trended net value of NPA's assets).
- vi. Concession funded assets and prepayments (e.g. concessions that resulted in assets transferring back to the NPA) will be recorded on the regulatory asset base at R1.

4.2.4. RAB Depreciation

- i. Accumulated depreciation is the cumulative straight line depreciation of regulated property, plant and equipment.
- ii. The depreciation should be calculated on the historical cost of an asset (this is independent of the amortization of the trended portion) and be based on the remaining useful life of each asset; See Annexure A.

⁶ This is in part to dis-incentivise the over-investment or replacement of fully functional and usable assets early.

- iii. The total accumulated depreciation and accumulated amortisation is deducted from the TOC cost of the RAB to obtain the RAB on which the return is calculated. See Annexure A.
- iv. Mothballed and/or impaired assets will not earn a return although the maintenance of mothballed assets with a definite plan for future use, will be allowed in the operating expenses.⁷
- v. Similarly, the maintenance on assets still in use, but fully depreciated, will be allowed in the operating expenses.
- vi. A complete list of assets in this category must be compiled and updated on an annual basis by the NPA.

4.2.5. Maintenance

- i. Maintenance to be treated as *operational expenditure* (i.e. not capitalised and included in the RAB) for purposes of tariff calculation and will be defined as: “work undertaken within the port system with the intention of:
 - a. re - instating the physical condition of an asset to a specified standard (e.g. dredging to the specified depth);
 - b. preventing further deterioration or failure;
 - c. restoring correct operation within specified parameters;
 - d. replacing *components* of assets at the end of their useful/economic life with modern engineering equivalents;
 - e. making temporary repairs for immediate health, safety and security reasons; and/or
 - f. assessing assets for maintenance requirements (e.g. to obtain accurate and objective knowledge of physical and operating condition, including risk and financial impact, for the purpose of maintenance).”
- ii. Maintenance or projects that **may be included** in the RAB as *capital expenditure* when it results in the following:
 - a. an increase in the asset’s useful function or service capacity (e.g. dredging to a greater than specified depth);
 - b. an extension of the useful life of an asset;
 - c. an improvement to the quality of the service(s) delivered through utilisation of the asset (e.g. the installation of a mooring system in Ngqura);
 - d. a reduction in future operating costs; and/or
 - e. the upgrade or enhancement becoming an integral part of the asset.
- iii. Maintenance dredging must be subjected to the criteria above.

Annexure B summarises the treatment of different assets descriptions in the RAB.

⁷ See annexure A for complete list of asset differentiation

4.2.6. Calculation of the RAB

The RAB value for the period under review is determined using the following formulas:

$$RAB_y = \frac{1}{2} [RAB_{c,y} + RAB_{o,y}] + w_y$$

$$RAB_{c,y} = RAB_{o,y}(1 + CPI_y) + CWIP_y \cdot (1 + CPI_y) - D_y$$

Where:

RAB_y	=	value of the RAB used to determine the returns for the period y
$RAB_{o,y}$	=	opening value of RAB for the period y
$RAB_{c,y}$	=	closing value of RAB for the period y
w_y	=	forecast average net working capital over period y
$CWIP_y$	=	value of expected capital investment over the period y
D_y	=	depreciation allowance for assets over the review period y
CPI_y	=	annual rate of general inflation expected over the period y

4.3. Depreciation

The fundamental contextual decision for the Regulator in determining the appropriate application of depreciation centres around the aim of regulation, specifically the intention to satisfy the principle of financial capital maintenance. Currently, to fully take into account capital expenditure and inflation, the following formula is used in the calculation of depreciation:

$$Depreciation = (RAB_{(o,y)} + (RAB_{(o,y)} \cdot CPI_{(y)}) + (Capex_{(y)} / 2 \cdot CPI_{(y)})) / RUL$$

It must be noted that the completion of the Asset Valuation Methodology and on the implementation thereof, the Tariff Methodology includes asset specific depreciation rates being used as opposed to an average asset life. The treatment of those assets that have exceeded their expected lifespan and/or depreciation periods are dealt with in Annexure B.

In addition, depreciation will only be allowed in the calculation of the tariff upon commissioning, and as such will require an annual re-investment of the return on equity proportional to the depreciation calculated for non-completed investment projects and will be added at the end of the project life in order to ensure a NPV of 0.

4.4. Inflation Trending

The inflation rate for calculating the trend in the value of assets between rebasing periods will be the appropriate Price Index forecast for each asset type in each financial year during the tariff period. The same inflation rate is used in the calculation of the Weighted Average Cost of Capital (WACC).

Due to the Regulator finalising a RoD by 01 December, it may not be possible to utilise a final National Treasury published CPI forecast from the Mid-Term Budget Policy Statement. The Regulator will therefore utilise estimates from the National Treasury's October/November publication of a CPI figure, the South African Reserve Bank, the Bureau of Economic Standards, other institutions, and its own economic forecasts in its assessment of future price changes.

4.5. Capital Works in Progress (CWIP)

Detailed projections for the tariff period, per asset class, per service, and per project, as well as monthly planned expenditure schedules are to be submitted by the NPA, to the Regulator, with the annual Tariff Application. These projections are to serve as motivation for the inclusion of the CWIP in the RAB. All CAPEX which has been approved and not fully implemented is taken into account as part of the claw-back process and the RAB, and its return is then adjusted accordingly.

The Regulator has in the past relied on the PCCs to “in principle” approve or support the NPA’s CAPEX requirements, however, the NPA’s ability to implement projects, recent CAPEX implementation record, as well as the appropriateness of the CAPEX plan will be taken into consideration in future. In addition, each project in the application must contain the underlying motivation (business case) for all CAPEX projects, including volume projections etc. (See Annexure A: Information Requirements). Whilst the NPA will be allowed to approach the Regulator to amend the RAB within the cycle, any amendments will require the same rigorous probity assessment. This is particularly important in the early stages of the implementation of the Methodology during the ramp up in terms of business case submissions.

As such, the assessment of determining the final closing balance at the end of the CAPEX period will require an assessment of actual achievement of the approved CAPEX plan. This will require an assessment of the various construction elements including disbursements, actual outputs, and cumulative project specific *Bills of Quantities*.

4.6. Working Capital

The regulatory purpose of the RR approach is to determine the revenue required by the NPA to recover its costs and an appropriate return. This must include the concept of the time value of money as in many (most) cases, the time at which a particular cost is incurred is not necessarily matched with the associated tariff. Therefore, capital is required to cover the time delay, however there is a cost associated with the additional capital requirement. In order to correct for the inherent assumption in the RR approach (that expenses and revenues occur at the same point in time), an allowance for the time difference is included.

The estimate of working capital included to adjust for the cash requirements related to CAPEX requirements, equates to the actual *net* working capital as per the latest available NPA annual financial statements (not the change in working capital), consisting of accounts receivable plus inventory less accounts payable (i.e. operating cash is excluded), adjusted by forecast volume growth and CPI inflation for the following year. In addition, CWIP *payables*, which are estimated at 1/12th of the capital expenditure projected for that year is included. Volume and CPI forecasts used in the calculation of outer years’ working capital will be updated as and when these numbers become available as part of the claw-back mechanism.

4.7. Weighted Average Cost of Capital (WACC) - Vanilla WACC

In general, 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 (the cost of equity and the cost of debt) will be applied and expressed in Vanilla terms (i.e. post-tax cost of equity and pre-tax cost of debt). Accordingly, a separate allowance for the tax expense in the RR formula is required.

$$WACC_{vanilla} = k_d \cdot g + k_e(1 - g)$$

Where:

k_d	=	<i>pre-tax cost of debt</i>
k_e	=	<i>post tax cost of equity</i>
g	=	<i>gearing, which is debt over total capital</i>

4.8. Cost of Equity (k_e)

The post-tax Cost of Equity is calculated with reference to the Capital Asset Pricing Model (CAPM), which is expressed as:

$$k_e = r_f + \beta \times MRP$$

Where:

r_f	=	<i>Real risk free rate</i>
β	=	<i>Measure of NPA's exposure to market (non-diversifiable) risk</i>
MRP	=	<i>The market risk premium measuring the premium over and above the risk free rate that investors might expect to earn</i>

The exclusion of the return on equity from the claw back calculation ensures that the use of a CAPM calculation establishes a clear and consistent determined risk premium above the RFR, significantly reducing the NPA's revenue risk as well as additional tariff volatility.

4.9. Risk Free Rate (r_f) (RFR)

In establishing a risk profile for a regulated entity like the NPA, the main risk facing the business is that of the interest rate. In addition, cost uncertainty and regulatory risk further contributes to their risk profile. With regards to the latter two risks, namely cost uncertainty and regulatory risk, the RR methodology, as implemented by the Regulator in this instance, adequately covers the perceived risk. In the first instance, the granting of operational expenditure as a revenue item and the inclusion of a claw back, together with a transparent tariff methodology sufficiently compensates the NPA for the associated risk. To compensate for the interest rate risk, regulators are generally in agreement that longer dated government bonds should apply for two reasons, firstly to retain consistency in the calculations, the RFR should be set on a basis that is consistent with other variables in CAPM, notably the MRP. Secondly, to ensure alignment with the average length of remaining life of an asset in the RAB or at least the remaining debt maturity periods.

This Methodology utilises the South African Reserve Bank's published time series KBP2003M "Yield on loan stock traded on the stock exchange: Government bonds - 10 years and over" in order to avoid anomalies in single data series bond as an appropriate measure of the RFR, and is seen to adequately reflects the market's perception of sovereign risk and inflation over the regulatory period. The average RFR is calculated as a monthly average over a five-year period.

The *Real* RFR is deduced by using the Fisher Equation.

$$1 + i = (1 + r)(1 + E(I))$$

Where:

i	=	Nominal rate
r	=	Real rate
$E(I)$	=	Expected inflation

4.10. Market Risk Premium (MRP)

The MRP is in essence forward-looking and therefore cannot be observed but must rather be forecasted. A general consensus exists that the historical premium is, in fact, the best estimate of the forward looking MRP. For this purpose, the Regulator uses the latest available Dimson, Marsh and Staunton (DMS) estimate of the mean MRP as measured against bonds for South Africa to determine an MRP for the NPA's cost of equity calculation. The existence of negative serial correlation in the returns on South African equities results in an overestimation of the MRP when using the arithmetic mean. In addition, the relative (and recent) changes in terms of market diversification, improvements in the regulatory and legal frameworks safeguarding investors points to the appropriate risk premium forecast to be at the lower end of the long term view. As such the Regulator will retain the use of the geometric mean of the DMS MRP.

In addition, the calculation of the MRP average is done over the full period available in the DMS dataset as the cost associated with the larger standard error of a shorter period surpasses any advantages of a more updated MRP.

4.11. Beta (β)

As the NPA is not a traded company, there is no published beta (β) which reflects its risk relative to firms listed on the Johannesburg Stock Exchange (JSE). Therefore, a β has to be set in order to reflect the risks faced by the NPA under the RR methodology that will ensure an appropriate return (for the risk faced).

The inclusion of a claw-back mechanism reduces exposure to systematic risk and the existence of an interventionist regulatory regime requires the Regulator to use a β substantially lower than that of large firms listed on the JSE such as the JSE top forty. In addition, the unique nature of the NPA (a regulated monopoly with an implied government guarantee) makes any comparison with other port companies impossible.

As such, the consistent returns allowed by the Regulator and the claw back mechanism that effectively removes systemic risk (mainly through decreasing volumes) combined with the view that the β must be considered as endogenous to the methodology applied, argues for a lower beta and due to the complexity of establishing the correct β , the Regulator will apply an asset beta of 0.35 over the period.⁸

The Hamada equation will then be used to re-lever the beta to result in an equity β .

⁸ The actual calculated beta of the NPA is closer to 0 due to the reasons set out above.

4.12. Gearing (g)

The Regulator, taking into consideration previous applications, previous patterns of variation in the applications, various submissions, and its own analysis of the NPA's gearing, has determined that an appropriate gearing for the entity (an infrastructure heavy landlord monopoly) for the period is (at least) 50%. Further, this reflects a median position in a sample of ports as well as adequately signalling a required reinvestment of profits into the port system whilst balancing costs with a lower cost of debt.

4.13. Cost of Debt (k_d)

NPA's *actual*, embedded (adjusted for an *effective weighted*) debt costs should be used to determine the cost of debt applied within the WACC. The use of the Transnet Group short term vs long term debt structure will be applied to determine an efficient deemed short term vs long term debt ratio for the NPA.

The NPA is required to submit the initial calculation of the variable as well as revised average embedded debt costs based on the average embedded **NPA allocated** Transnet Group cost of debt on a group level, on an annual basis as part of the annual tariff application. This forecast will be corrected on an annual basis based on audited financial information through the claw back mechanism.

4.14. Taxation Expense (T)

The Regulator will accept the current corporate tax rate of 28% (t) (to be adjusted if amended by the National Treasury) adjusted for a proportional Transnet Group taxation rate for the period. As the current corporate structure of Transnet enables the Group to offset profits of one operating division against losses elsewhere, a taxation allowance granted to the NPA may result in increased regulated tax revenue, whilst a reduced taxation liability exists on a group level. A proportional tax rate, based on the assumption that the NPA is treated as an operating division, as opposed to a subsidiary of Transnet Group, will be calculated and corrected through the claw back mechanism. The effective rate will be calculated as a ratio of the Transnet taxation liability due under the current corporate structure to a calculated Transnet Group tax liability under an assumption of subsidiaries based on the before tax profits as published annually in the Audited Transnet Group Annual Financial Statements.

The Vanilla WACC will be applied to the average RAB for the period under consideration, less the interest cost of debt, and wear and tear, and other tax allowances.

Any over or under recoveries in terms of the estimated vs actual taxation allowed due to "group effects" will be included or offset in the ETIMC facility.

4.15. Operating Costs

The Regulator currently analyses the operating cost estimates for the period on a detailed, line by line item basis. The NPA is requested to provide detailed and complete motivation for each of the expenses applied for, especially on large items such as labour and energy costs.

The Regulator continues to allow the inclusion of the Transnet Group costs in the total allowed expenses, subject to the requirement that the NPA submits detailed explanations and motivations for the amounts to be transferred to the Transnet group. These are expected on a level of detail that will allow assessment of its necessity, as well as the actual services/goods received, and for

which function of the NPA it will be utilised. Adjustments are made on an annual basis if and when the Regulator determines any group cost component to be inappropriate based on audited reports.

In addition, the NPA shall provide an externally and independently audited financial report (with all supporting documentation and detailed explanations including basis of allocation and policy documents that support such allocation) on all line items that form part of the group costs that have been expended for the NPA each year. This shall be provided in the year after the close of the financial year or until an alternative methodology or amendment of this methodology is published.

Furthermore, the Regulator reserves the right to claw-back all or any portion of the amount in future tariff decisions, should the Regulator not be satisfied that the expenditure is within the scope and mandate of the NPA, and that the amounts are reasonable, or reasonably allocated to the NPA.

Comprehensive information requirements must be met with for each application. See Annexure A.

4.16. Claw-Back

The key purpose of applying claw-backs is to ensure that the NPA or any port user is fairly treated and is not subjected to unfair gains or losses that are the result of incorrect forecasting, inaccurate information and system shocks. This includes the reducing and the sharing of risks faced by all port system participants including the NPA. Its main application is to reduce the impact of differences between allowed revenue (based on a number of forecasts and assumptions) calculated at the time of the tariff application, and actual audited figures, and is intended to ensure the coherence and integrity of the regulatory regime. The volatility of trade volumes and the difficulty in forecasting imports and exports accurately presents significant problems, especially regarding the prediction of volumes in outer years of a multi-year tariff period.

However, the following variables that are estimated (in line with the Regulatory Manual) on an annual basis, prior to the start of the following tariff year, for claw-back purposes are the:

- RAB (excluding CAPEX): The RAB is adjusted annually to reflect actual working capital requirements in line with AFS numbers and inflation trending;
- Depreciation: Depreciation is recalculated based on the adjusted RAB;
- Volumes: Actual volume numbers are used to calculate the claw back;
- Inflation (CPI): Whilst the return on equity does not change, the actual inflation rate is used in the recalculation of a number of variables, including the trending of the RAB, working capital forecasts, and other latest estimates during the assessment; and
- Taxation (TAX). The taxation allowance will be corrected to adjust for the “Group effect” based on Transnet Group actual audited financial statements.

The forecast or estimation of these variables is conducted annually and actual data is used in determining the claw-back pertaining to the previous tariff year where the 50% rule applies. The final claw-back is determined in the following year when actual numbers are available.

As noted in section 4.8, the Return on Equity will be fixed upon assessment for claw-back purposes – the amount included in the claw-back will still depend on RAB corrections.

4.17. Excessive Tariff Increase Margin Credit (ETIMC)

The Regulator regulates in the long term interest of the industry. This requires that the Regulator not only confine itself to the immediate tariff decision, but also considers ways to ease any future shocks to the system. It is generally accepted that capital expenditure may spike at some point in

the foreseeable future, but that these projects have not as yet been specified to a level of detail that allows for accurate prediction. In addition, external market related factors such as unexpected (or expected) fluctuations in volumes, inflation, the RFR etc. may result in significant spikes to the tariff as well.

As such, the Regulator has, in the past, considered it prudent to avoid excessive future tariff changes by retaining and increasing the NPA's Excessive Tariff Increase Margin Credit (ETIMC), in order to allow the smoothing of unaffordable tariff spikes over multiple periods in the future or to apply a countercyclical tariff decision in time of depressed economic activity.

As the ETIMC is 'revenue collected from port users' before the NPA is entitled to it, it should yield a return for users to compensate them for the opportunity cost of their capital. The ETIMC will therefore earn a return which is equal to the WACC allowed by the Regulator as the opportunity cost of the fund available to the NPA is indeed the WACC. The return on the ETIMC will be factored into the balance and the calculation of the total available under the ETIMC facility will be published annually.

Currently, the Regulator further deems it necessary to define the use of the ETIMC facility in the following way:

"The Regulator may authorise the release of part, or the whole, of the value of the ETIMC facility to influence tariff levels whenever it deems necessary including, but not limited to, spikes in tariffs (defined as an average tariff increase in excess of the CPI inflation forecast) due to a sharp increase in capital expenditure, volume volatility, or any market related factor. Further, the Regulator may consider national objectives when making decision to add to, or to utilise the ETIMC facility to adjust tariffs. "

5. Volume Forecast

The NPA is required to submit detailed volume forecasts with reasons as well as revenue calculations based on the forecast volumes and current tariff levels as well as proposed tariffs for the period.

6. Weighted Efficiency Gains in Operations (WEGO)

The incentives built into the RR methodology do not favour increased efficiency or competitiveness as the claw back mechanism takes away the gains from higher efficiency with additional market volume effects. This must therefore be addressed in an integrated way through the inclusion of an efficiency measure within the RR methodology. Whilst the introduction of efficient pricing through the Tariff Strategy will have positive effects, these will only impact over the long term. An approach is then required, on a more urgent basis, to identify and differentiate between volume gains (or volume losses) due to efficiency impacts and market effects. The introduction and continued evolution of the Terminal Operator Performance Standards (TOPS), Rail Operator Performance Standards (ROPS), Road Operator Performance Standards (HOPS), as well as the Marine Operators Performance Standards (MOPS), is of high interest to the Regulator. The measurement and monitoring role that the operator performance standard systems play will produce an input for the tariff system in order to establish more transparent and concrete incentive targets with benefits to both the port owner as well as port users.

In particular, the inclusion of an efficiency variable Weighted Efficiency Gains from Operations (WEGO) is proposed as set out in the RR formula (page 6&7) where:

$$WEGO_t = EG_{t-1} \times 0.075 \times Re_{t-1}$$

Where:

Efficiency Gain (EG) = Agreed efficiency gain through operations, excluding the effect of market driven volume growth.

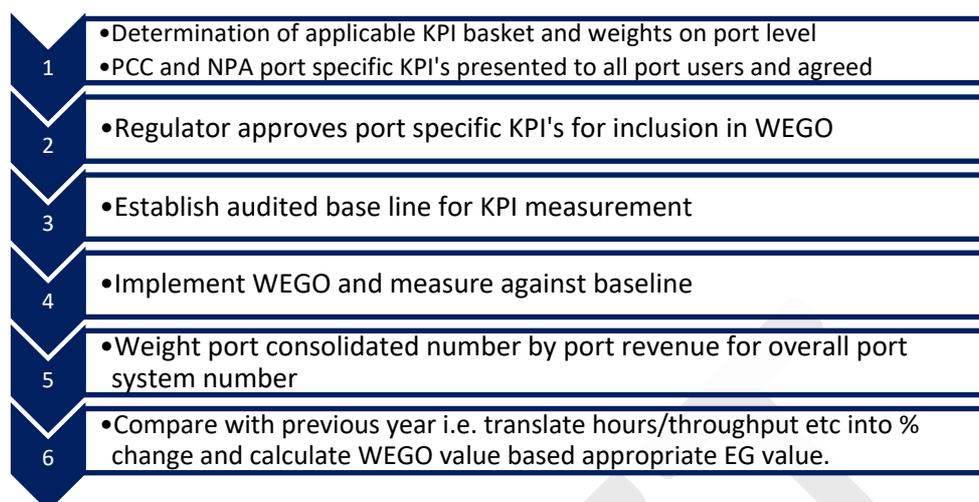
Return on Equity (Re) = return on equity as determined in the ROD.

Composite Ports System Efficiency Gain % as calculated	EG for inclusion in the WEGO formula
≥15%	1
12%	0.9
10%	0.8
8%	0.7
6%	0.6
5%	0.5
4%	0.4
3%	0.3
2%	0.2
1%	0.1
0%	0
-1%	-0.1
-2%	-0.2
-3%	-0.3
-4%	-0.4
-5%	-0.5
-6%	-0.6
-8%	-0.7
-10%	-0.8
-12%	-0.9
≤-15%	-1

EG will be a weighted average growth rate of a selected group of audited performance results on a port by port basis. These key performance indicators, as well as the appropriate weightings for every port, will be selected by the Regulator in consultation with port users through the PCC process as well as with the NPA. It will be required that the WEGO TOPS and MOPS results must be signed off by PCC representatives at a port level and agreed to with the Regulator.

For the calculation of operational efficiency, port revenue contribution will establish the weighted contribution on a per port basis to calculate the overall EG, however, all ports' PCC's must present signed off results to the Regulator for consideration and inclusion in the Tariff Assessment. Efficiency gains in individual KPI's per port will be capped for calculation purposes at 15%, similarly, reductions in efficiencies will be capped at 15%. Growth will be calculated against a previous year's (best) target (the Baseline). A declining or negative value of EG_{t-1} will result in an increased claw back over period t .

7. Operational Performance Calculations



The Regulator has, in the final year of the previous tariff methodology (2019/20), developed and consulted on key performance indicators that form part of the WEGO over the Tariff Methodology period. The approved results from 2017/18 formed the baseline for measurement in the first year of this Tariff Methodology (2018/19) and the process will continue on an annual basis with the “best recorded achievement” the baseline.

The process and requirements from of the different role-players in establishing the key performance indicators for inclusion in the tariff setting process is outlined below.

Process	Y1	Y2	Y3 etc.
Process for port users	Port by Port KPI determinations presented to port users by PCC	Port by Port KPI determinations presented to port users by PCC	Port by Port KPI determinations presented to port users by PCC
Process for NPA	Port by Port KPI determinations presented to port users by NPA Report on achieved performance to PRSA by year end to establish an annual result and baseline	Application to include report on actual audited KPI performance in 2019/20. Report to PRSA on actual performance Port by Port KPI determinations presented to port users by NPA	Application to include report on actual audited KPI performance. Port by Port KPI determinations presented to port users by NPA
Tariff Setting Process	Regulator to approve final Port by Port and national KPI's Implement WEGO as per audited KPI performance through the claw-back mechanism.	Regulator to approve final Port by Port and national KPI's Implement WEGO as per audited KPI performance through the claw-back mechanism.	Regulator to approve final Port by Port and national KPI's Implement WEGO as per audited KPI performance through the claw-back mechanism.

8. Annexure A: Information Requirements

The following information requirements must accompany the annual application of the NPA.

- All CAPEX projects (infrastructure and capital acquisitions) underway (to include, but not limited to, information pertaining to project stage, tender specifics, construction progress etc.), as well as business cases for all proposed CAPEX inclusive of volume forecasts for the full six-year period under consideration;
- Business cases must be provided on all CAPEX projects in excess of R10 million in the following stages:
 - During every application, business cases for the next three years will be required.
 - The nature of the content and detail of business will be further defined and developed between the Authority and the Regulator. Furthermore, the nature and content of the business case submissions would be summarised to focus on the more salient aspects including:
 - Objective of project
 - Demand to be addressed
 - Alignment to Port Development Plans
 - Solution alternatives
 - Project Costing
 - Financial Returns and Payback periods
 - Timing of Delivery
 - Key Risks
- All acquisition of land and other Capital Assets (including motivation thereof);
- All disposal/or removal of land and assets (including motivation thereof);
- Lease Register setting out all lease information;
 - Copies of all new agreements and licences entered into or issued in the quarter, as well as the supporting documentation thereof, including Sections 79s, 72s, 56s, 57s, and lease agreements (inclusive of all annexures, including but not limited to updated rentals and terminal operator tariffs); and
 - All applicable B-BBEE certificates for the abovementioned licences and agreements;
 - Schedule of vacant properties available for lease.
- Data, results and progress applicable to the implementation and monitoring of Operator Performance Standards, as per TOPS/ MOPS/ ROPS/ HOPS;
- Key performance indicators relating to port capacity, port performance, volumes and maintenance programmes per port as determined by the Regulator;
- Audited Financial Statements (NPA and Transnet Group);
- Historical information: All NPA relevant annual debt stock levels as well as annual debt redemption payments itemised, as well as the relevant debt instruments and applicable interest/coupon rates since the inception of Regulation;
- Current debt cost information including estimated debt costs (calculation and forecasts) for the current tariff year (i.e. the year that the application is made in) as well as the outlying tariff year. Also reflect the estimated annual change in to NPA relevant debt stock levels as well as annual debt redemption payments itemized, as well as the relevant debt instruments and applicable interest/coupon rates; and

- Itemized maintenance schedule for the next three years for all planned and unplanned maintenance projects above R1 million, categorized as OPEX as well as “capitalized maintenance”.

9. Annexure B

The example below illustrating the calculation of depreciations and the TOC value (for new assets and those that postdates 1990 capitalisation dates) of the RAB is based on the following basic assumptions:

- Historical cost of R100 m.
- Inflation 5% per Annum.
- Depreciation on a straight line basis over 30 years life of asset.
- Service life of the asset is 30 years.
- No adjustment in the Remaining Useful Life.

RAB Calculation		Yr 0	Yr1	Yr2	Yr29	Yr30	
		R'm					
Original Cost	1	100.00	100.00	100.00	100.00	100.00	
Capex	2	100.00	-	-	-	-	
Depreciated original cost brought forward	3	-	100.00	96.67	6.67	3.33	
Current period depreciation	2/RUL	4	-	3.33	3.33	3.33	
Depreciated original cost carried forward	3-4	5	100.00	96.67	93.33	3.33	
	6						
TDC opening balance	13	7	-	100.00	101.50	26.13	13.72
Accumulated trend	8	8	-	-	4.83	19.47	10.39
Current period trend	7*cpi	9	-	5.00	5.08	1.31	0.69
Trended balance on which Return earned	8+9	10	-	5.00	9.91	20.77	11.07
Trend depreciation allowance	10/RUL	11	-	0.17	0.34	10.39	11.07
Accumulated trend carried forward	10-11	12	-	4.83	9.57	10.39	-
TDC closing balance	5+12	13	100.00	101.50	102.90	13.72	-
	14						
Total depreciation and amortisation	4+11	15	-	3.50	3.68	19.72	14.41
	16						
Regulatory Asset Base	3+10	17	-	105.00	106.58	27.44	14.41

10. Annexure C

Asset description	Remaining Useful Life	RAB depreciation and Valuation treatment	Maintenance allowed as part of operational expenditure	Return allowed (included in RAB calculation for return purposes)	Notes
Short term assets	5 years or less	Straight line Historical Cost	Yes	Yes	
Existing assets in use not fully depreciated	More than 5 years	TOC	Yes	Yes	
Existing asset in use-fully depreciated	Any	If leased – lease revenue will be assumed value If not leased (e.g. breakwater – maintenance on the asset may be capitalised)	Yes/optional	Allowed to capitalise maintenance. Value on RAB for return calculation will be 0.	Risk of gold plating requires prudency assessment and NPCC approval for capex inclusion in RAB
Assets no longer in use	Any	Removed from RAB	Yes	No	

Notes:

Capitalisation dates will be 1990 if no capitalisation date post 1990 is available