

Review of the Approach to Capital Investments

September

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This paper examines the RIC's current approach to assessing capital expenditure (Capex), reviews T&TEC's actual Capex and compares this with the RIC's approved Capex for the first regulatory period, and discusses the RIC's proposed approach/measures for the second regulatory control period.

**Consultative
Document**

1.0 Overview

The Regulated Industries Commission (RIC) is responsible for setting price controls for the electricity sector and does so within a regulatory framework that is governed by the RIC Act. This framework provides for the review of the principles for determining rates and charges for services, every five years. In this regard, the RIC completed its first review for the Trinidad and Tobago Electricity Commission (T&TEC) on June 01, 2006, thereby indicating that the first control period would have ended on May 31, 2011.

Capital related costs account for a very significant portion of total costs. As a result, such costs can have notable impact on the final prices paid by customers. Therefore, the regulator's decision vis-à-vis the appropriate level of Capex (capital expenditure) to be allowed into the rate base, is one of the most critical ones. The RIC uses the building block approach to set regulated charges. This is a standard approach adopted by many regulators and allows for the recovery of the efficient costs of service provision through the establishment of adequate revenue requirements. The building block model has three main components: Return on Capital, Return of Capital (Depreciation) and Opex (operating expenditure). These components or "building blocks" are summed in order to establish the revenue requirements. Noting that the building block model is applied to a period of five years into the future, capital related costs allowed will be affected both by the past level of capital expenditure as well as the forward looking Capex forecast, for the period ahead.

1.1 Purpose of the Document

This paper examines the RIC's current approach to assessing capital expenditure (Capex), reviews T&TEC's actual Capex and compares this with the RIC's approved Capex for the first regulatory period, and discusses the RIC's proposed approach/measures for the second regulatory control period.

1.2 Responding to this Document

All persons wishing to comment on this document are invited to submit their comments.

Responses should be sent by post, fax or e-mail to:

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All responses will normally be published on the RIC’s website unless there are good reasons why they must remain confidential. Any requests for confidentiality must be indicated. A copy of this document is available from the RIC’s website at **www.ric.org.tt**.

2.0 Introduction

The RIC was established by Chapter 54:73 of the Laws of Trinidad and Tobago, the RIC Act, as an independent, statutory authority charged with the responsibility of regulating the Electricity and Water and Wastewater Sectors. As such, the RIC’s functions, powers and duties are derived directly from its legislation. Moreover, the Act defines the parameters of all aspects of the RIC’s operation and prescribes, in some manner, the broad approaches that may be considered with regard to the regulation of the utility sectors.

The RIC, according to Section (6)(1)(c) of the Act, has a duty “*to ensure, as far as is reasonably practicable, that the service provided by a service provider operating under prudent and efficient management will be on terms that will allow the service provider to earn sufficient return to finance necessary investment*”. Additionally, Section (6)(3)(a) requires the RIC to consider, “*maximum efficiency in the use and allocation of resources to ensure as far as is*

reasonably practicable, that services are reliable and provided at the lowest possible cost". It must also have regard to:

- *The ability of consumers to pay rates - Section (67)(3)(c); and,*
- *The replacement capital cost expended, least-cost operating expenses which may be incurred, annual depreciation, return on the rate base; Section (67)(4)(a) – (d).*

The Act outlines the duration of the regulatory control period, as Section (48) mandates the RIC *“to review the principles for determining rates and charges for services every five years, or where the licence issued to the service provider prescribes otherwise, at such shorter interval as it may determine”*. Additionally, under Section (47) of the Act, service providers cannot demand or receive a rate greater than:

- *The maximum rates permitted –*
 - *Under the principles established by Regulations made under this Act; or*
 - *By a licence; or,*
- *Any other rate determined by the Commission in accordance with this Act.*

Working within this legal framework, the RIC establishes prices that are expected to recover the efficient costs of providing service, by applying the building block approach to the determination of service providers’ costs and expected revenue requirements. This is done by considering the components or “building blocks”, and is generally given by the following equation (**Figure 1** shows the main elements of the building-block approach):

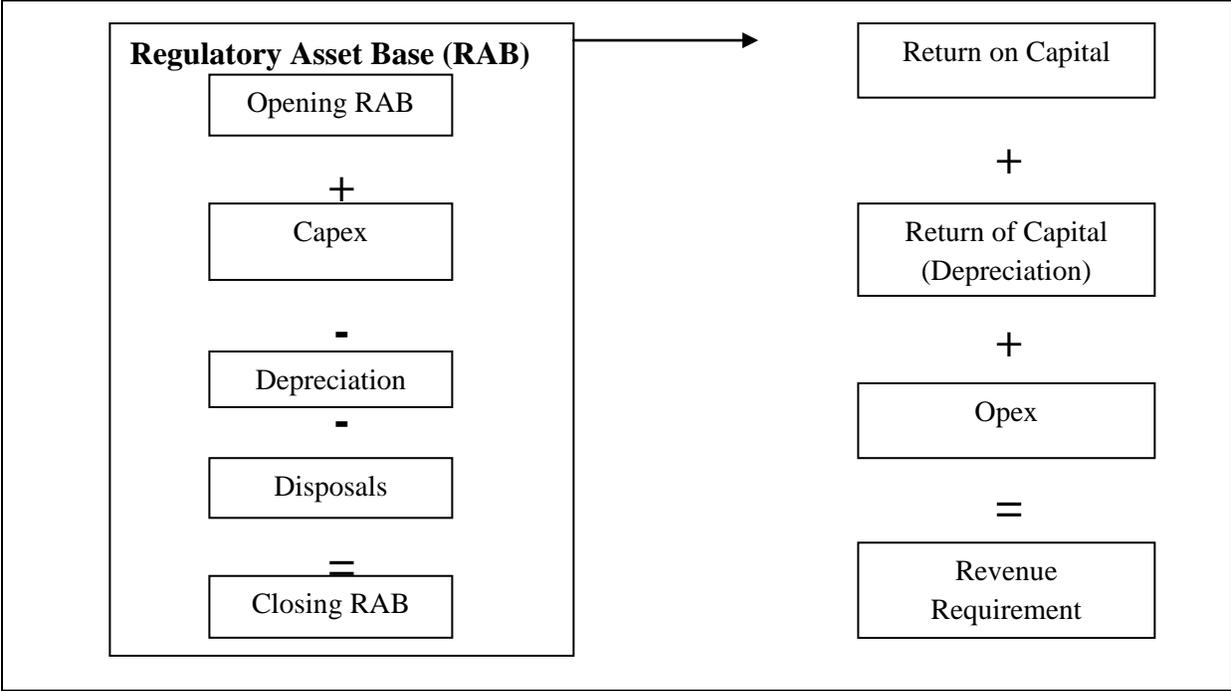
$$Rev = (WACC \times RAB) + Dep + Efficient Opex$$

Where:

- *Rev is the allowed revenue requirement*
- *Dep is regulatory depreciation*
- *Opex is the forecast efficient operating expenditure*
- *RAB is the regulatory asset base*
- *WACC is the weighted average cost of capital*
- *WACC × RAB establishes the return on capital allowed over the same period.*

Capex enters the revenue requirement of service providers indirectly through the return on capital ($WACC \times RAB$), which enables the recovery of costs related to the providers of equity and debt and through the return of capital or depreciation, which is based on the forecast RAB and enables the recovery of invested capital. More specifically, past Capex is included in the starting RAB and the forecast Capex is added to the forecast of the annual RAB in the forthcoming control period.

Figure 1 – Building-block Approach to Revenue Requirement



The RIC engages in careful and thorough assessment of the service provider’s proposed capital programme, to ensure that approved Capex is prudent, and consists of projects that are necessary to deliver a satisfactory and adequate level of service, that is provided at the most efficient cost. In fact, the assessment involves two steps:

- Review of the actual Capex of the previous control period (ex-post assessment) - this is done in order to determine the prudent and efficient level of Capex that would be included in the opening value of the RAB, at the start of the next regulatory control period; and
- Review of the forecast Capex for the subsequent (future) regulatory control period to establish the efficient and necessary level of Capex that will be required for the

provision of services. This Capex is included when the RAB is rolled forward, thereby establishing the values of the RAB for each year of the regulatory control period.

The opening and annual RAB values determined by regulators are key inputs and determinants in the allowance for a return on assets and the allowance for a return of assets (depreciation). The RAB is in fact adjusted for additional Capex, depreciation and the disposal of assets. More specifically, new, efficient (approved) Capex is added to the forecast RAB and the return provided on this forecast RAB, is based on the application of a calculated weighted average cost of capital (WACC). The WACC is one of the most commonly used methods that regulators employ to determine the allowed return on capital, and takes into account an appropriate rate of return to debt and equity.

2.1 RIC's Current Approach to Assessing Capex

The overall aim of assessing the service provider's Capex is to ensure that proposed investments are necessary, efficient and should be funded within the price limits. Therefore, the level of Capex and the associated capital programme that is allowed is generally undertaken utilising a number of tools and methods such as:

- Regulatory Assessment and Testing;
- The Bottom-Up Approach;
- The Top-Down Approach; and
- Benchmarking.

All standard forms of incentive based regulation set an ex ante allowance for Capex as part of calculating the price limits and the broadly standard approach is to review the service provider's submitted business plan, primarily through bottom-up expert analysis. An adjustment for achievable efficiencies is applied, generally via benchmarking. Additionally, consumers are given ample opportunity to comment on the service provider's proposed Capex.

In order to assess T&TEC's proposed Capex, the RIC adopted relatively intensive ex ante review of projects and undertook a number of measures. These measures and other decisions pertaining to Capex included:

- The retention of a consulting firm to independently advise on an appropriate method for the valuation of T&TEC's assets and on whether or not T&TEC's proposed Capex was reasonable. In the case of the latter, the consultant was required to perform:
 - (i) **Efficiency Tests** – this would determine if the proposed Capex was representative of the best way to meet customers' needs for services.
 - (ii) **Prudence Tests** – such tests seek to establish whether or not the decision to invest is prudent, given the particular and specific circumstances at the time.
 - (iii) **“Used and useful” Tests** – essentially examines whether or not the particular assets/equipment/plant etc. are utilised in and contribute to, the provision of the particular service.
- Discussions/correspondence with T&TEC so that full and complete information could be provided to the consultant to undertake the required assessment. This facilitated the bottom up assessment of the capital programme and supported the decisions taken concerning the selection and execution of the programme.
- The categorisation of Capex according to four major categories: Transmission, Distribution, Other Network Related and Non-Network Related projects, thereby allowing in-depth analysis of the level and the timing of the proposed investments.
- A decision by the RIC to undertake ex-post review and assessment of T&TEC's Capex (ex-post prudence review) prior to the beginning of the second control period, with a clear indication that adjustments may be made for divergences of the actual outturn from forecast Capex.
- Providing a financial incentive to T&TEC through the adoption of an efficiency carryover mechanism. Such financial incentive mechanisms are used to encourage utilities to incur efficient expenditures. The RIC sought to incentivise T&TEC to improve its efficiency in delivery of the capital programme by establishing a Rolling Carryover

Mechanism, which would allow T&TEC to retain a share of efficiency gains¹, in the delivery of the capital programme, over a five year period.

- The employment of a Capex monitoring programme that required quarterly and annual reporting by T&TEC on its capital expenditures.

3.0 Actual Capex Outputs, 2006 -2011

The main objectives in the review of T&TEC's Capex are to assess whether the Capex has been incurred efficiently and the expected benefits have been achieved. Therefore, the RIC will examine the outturn expenditure with the allowed expenditure and the reasons for the differences between the allowed Capex and the outturn Capex.

T&TEC spent far in excess of the amount allowed in the Determination, on its capital programme. More specifically, the RIC approved a total of \$800 million to be spent over the entire control period, June 2006 - May 2011. However, by March 2011, T&TEC had utilised approximately \$1.9 billion for capital projects of which \$738.6 million was spent on Government projects which were ring-fenced² by the RIC in its 2006 Price Determination, and for which Government only provided \$33.7 million. Thus project costs amounting to \$704.9 million which were to be funded by the State were in fact funded using tariff revenues. T&TEC's Capex for the five year period, on **RIC approved projects** was in excess of \$405 million over its allowed allocation. Further details are given in **Table 1** below.

¹ Efficiency gains are essentially savings in Capex resulting from completion of projects below forecasted costs, where outputs have not been delivered late or at the expense of deterioration in service to customers.

² Projects that are ring-fenced are not included in the approved capital programme and therefore there is no provision for returns on or of capital, for such projects. As a result, the capital related costs of these projects are not included in the revenue requirement and therefore such projects are meant **not** to be funded through tariff revenues.

Table 1: T&TEC's Capital Expenditure 2006 - 2011 (TT\$ Millions)

| | 2006 - 2007 | 2007 - 2008 | 2008 - 2009 | 2009 - 2010 | 2010 - 2011 | <i>Total 2006 - 2011</i> |
|---|----------------------|----------------------|----------------------|----------------------|----------------------|------------------------------|
| T&TEC's Total (Actual) Capex | 228.00 | 385.00 | 268.00 | 204.00 | 859.04 | 1,944.04 |
| T&TEC's Expenditure on RIC Approved Projects | 100.90 | 134.60 | 90.20 | 120.80 | 758.94 | 1,205.44 |
| <i>RIC Approved Capex</i> | <i>153.20</i> | <i>191.40</i> | <i>169.40</i> | <i>137.80</i> | <i>148.20</i> | <i>800.00</i> |
| Difference (T&TEC Expenditure on RIC projects – RIC Approved Capex) | -52.3 | -56.8 | -79.2 | -17.0 | 610.74 | 405.44 |

*****Note that whilst the totals in the far right column are correct, the annual figures are to be adjusted, since inadequate information about the annual expenditure on ongoing projects, has been provided by T&TEC.**

There has been no indication from T&TEC, of the root cause of the 50.7% increase in Capex above the RIC's allocation for the approved list of projects. In practice, increases of actual, over forecast expenditures, may be attributed to a number of reasons including: higher than anticipated prices of materials and or services used in the undertaking or delivery of projects; inappropriate or poor choice of forecasting methodology or inaccurate assumptions, resulting in an under-estimation of expected project costs; or poor implementation of the capital programme. In other instances, utilities have deliberately understated project costs in Capex forecasts, in order to have said projects included in the rate base, with full knowledge that in actuality such costs may be notably higher. Notwithstanding the particular reason(s) for T&TEC's overspending in this regard, it may be fair to assume that in an attempt to undertake both Government-directed and RIC-approved projects, notable competition for resources (financial and otherwise) may have resulted, which in turn could have led to a number of RIC-approved projects not being completed, and in other instances, not being started.

As previously stated, T&TEC has not been able to complete many of the projects that were viewed as being of critical importance to service delivery. Moreover, in many instances those that were completed or have been started have cost more than was either approved or projected, therefore T&TEC did not really consider the benefits to be derived from the incentive carryover mechanism. Over the regulatory period, T&TEC has undertaken just over 64% (or 69 of 107) of the projects that the RIC approved for the entire period. Thus 38 capital projects that were

approved have not been begun. The details of the number of projects delivered by T&TEC are presented in **Table 2** below. Where the service provider can show that avoided Capex is due to efficiencies on its part, it is allowed to retain the revenue associated with the unspent Capex for a period of five years under the rolling retention of efficiency savings, as approved by the RIC. However, the RIC had specified that reduction of volumes of investment would not simply be accepted as efficiency. Consequently, the RIC will reset the RAB in line with outturn and will claw back any revenue associated with unspent Capex. The claw back mechanism is further discussed in Section 4.2 below.

Table 2: Number of Approved Projects Undertaken by T&TEC

| Category | Sub- Category | No. Approved | No. Completed | No. Incomplete | No. Not Started |
|------------------------------|--|---------------------|----------------------|-----------------------|------------------------|
| <i>Transmission</i> | Substation Rehabilitation | 14 | 5 | 1 | 8 |
| | New Substations | 16 | 8 | 2 | 6 |
| | Sub-Total | 30 | 13 | 3 | 14 |
| <i>Distribution</i> | Network Upgrade | 19 | 0 | 11 | 8 |
| | Substation Upgrade | 29 | 11 | 9 | 9 |
| | Sub-Total | 48 | 11 | 20 | 17 |
| <i>Other Network Related</i> | Sub-Total | 4 | 1 | 3 | 0 |
| <i>Non-Network Related</i> | Upgrade of Information Technology Systems | 14 | 10 | 3 | 1 |
| | Establishment of Customer Service and Call Centres | 2 | 1 | - | 1 |
| | Strengthening Of Administrative Services | 9 | 1 | 3 | 5 |
| | Sub-Total | 25 | 12 | 6 | 7 |
| Grand Total | | 107 | 40 | 29 | 38 |

4. Issues Arising from Capex Assessment and RIC's Proposals

4.1 Undertaking Government Projects and the use of Tariff Revenues

The extent of spending on Government projects for which funding was neither approved by the RIC in its 2006 Final Determination, nor fully provided by Government itself, no doubt affected T&TEC's ability to undertake and complete the projects that were selected by the RIC for the final approved capital programme, to ensure that rate payers received improved services over the period. In this regard, the RIC is putting forward a number of proposals to ensure that the use of tariff revenue for purposes other than that outlined in the Final Determination is discontinued, including:

- (i) Writing to the relevant line Minister about the RIC's concerns, identifying proposals to address same, and seeking the Minister's assurance that said concerns would be addressed.
- (ii) The RIC will require the Board of T&TEC to provide self-certification assurances, in writing, for items such as the "Use of Tariff Revenues", that will provide a documented commitment of T&TEC's Board to fulfil certain regulatory mandates and desist from particular actions, not approved by the RIC.

4.2 Under or Over-spend on Capex, and Incomplete Projects

As previously identified, Capex forms part of the utility's revenue requirement via a provision for depreciation and a return on capital applied to the RAB, which is reflected in the final rates charged. T&TEC's total spending on the RIC's approved projects in the control period, June 2006 – May 2011 is higher than the approved amounts, yet there are many projects that are incomplete (and over budget) and others that have not been begun. Therefore, there must be some strategy or mechanism(s) employed to account for under and over spend on projects, projects not undertaken and those that were not completed. In general, the RIC will allow incomplete projects to be completed and make the required adjustments to the RAB only upon the completion of those projects.

With respect to under and over spend on Capex, the RIC had discussed three possibilities for adjustment of the RAB:

- The addition of actual expenditure for the past period to the RAB, subtracting out any excess returns due to the under-spending (clawing-back)³, however this option reduces efficiency incentives, and is best suited in instances where initial Capex projections/forecasts are not trustworthy.
- The addition of actual expenditure for the past period to the RAB, but without the “claw-back” of excess returns. This option gives utilities strong incentives to inflate Capex upfront in their projections.
- The retention of the anticipated expenditure in the RAB with no adjustment for actual spending. This option provides strong efficiency incentives, as utilities would benefit from earning return on the forecast rather than the actual RAB, thus providing an incentive for utilities to reduce their actual spending on the approved capital programme.

In the final analysis, however, the RIC decided for the first regulatory period, to add only the actual efficiently incurred Capex. This principle will be applied to those projects that have been completed in the current regulatory control period. However, T&TEC’s lack of execution of the approved capital programme has resulted in 38 projects not being undertaken. The RIC’s allocation for these projects was \$170.1 million, thereby resulting in excess returns (on capital) provided via the revenue requirement of about \$13.6 million, which must be treated with. This is tantamount to an over-recovery of revenues. In this regard, the RIC is now considering three options:

- Adjusting the revenue requirement for the forthcoming regulatory period, this is in fact, the normal practice of regulators. However such an approach will send inaccurate price signals to customers about the cost of service and will not facilitate energy conservation or support demand management initiatives.

³ Claw back results in a downward adjustment of the revenue requirement for the subsequent regulatory period.

- Providing cash rebates to customers to account for the excess returns provided. This option would send strong signals to T&TEC about the importance the RIC places on the completion of priority projects, and the consequences of not undertaking them.
- Identifying specific projects that the amount (the excess returns) would be spent on in order to improve services. However, this would introduce issues relating to appropriate project selection, as any project selected would have to be such that there is no perceived bias in terms of the beneficiaries thereof.

In a few instances, T&TEC made changes to the approved capital programme by substituting approved projects with others, on the basis that the new projects achieved better outcomes than the originally approved ones. The RIC's view on investment funds provided ex ante, for projects which in actuality, have been cancelled or delayed, is that the service provider should retain the revenue associated with such projects, provided that the decision was based on sound reasoning, and that the overall outcome of such a decision, is beneficial to customers. This is consistent with good regulatory practice, as is evidenced by the 1997 determination by the Monopolies and Mergers Commission (MMC), in the United Kingdom, concerning Northern Ireland Electricity, in a similar matter, in which it stated, "in cases where improved demand management, equipment utilization or alternative solutions had been adopted, the company should be allowed to keep the revenues associated with the investment". Thus such a decision by the RIC would be appropriate where the utility's delay or cancellation of projects is prudent and results in more efficient outcomes than if the projects were executed as originally planned.

4.3 The Capex Incentive Mechanism

Government or State owned utilities often do not respond to financial incentives as private firms, which generally seek to maximise their revenue. This may be largely due to how the Government perceives and executes its ownership function, and the type of financial support/arrangements provided. If a Government owned utility were operated as

a commercial enterprise, where its viability depended on its ability to recover costs and improve efficiency, it would respond more favourably to efficiency incentive mechanisms. The RIC intends to revisit the issue of the efficacy of incentive mechanisms when applied to State owned utilities, but favours the use of some tool to incentivise utilities, whether via efficiency carryover or other types of incentives mechanisms. Such mechanisms would include:

- **Capex Triggers** – When charges have been set for a control period, a guaranteed level of revenues is allowed based on projected levels of Capex and as such, there may be an incentive for the service provider to delay the investment. A Capex trigger can address this issue by making allowances in charges conditional on the achievement of certain project milestones. Triggers can be positive or negative, thereby either increasing or decreasing revenues if an event occurs. Generally, the RAB based approach encourages the deferral of investment or bringing it forward, in order to influence the size of the RAB. The use of triggers would be most suitable for large, clearly identifiable projects. Capex triggers can be complex to design and deciding the proportion of revenue that should be at risk for not meeting the target or project milestone is also not straight forward.
- **Provisions for the inclusion of Contingent Projects in the revenue determination** – contingency projects are those that are reasonably necessary, but which are excluded from the ex-ante allowance in the revenue requirement, on the basis of uncertainty of the projects themselves or of their costs. The provision is exercised only in the event that such contingent projects are actually undertaken, in which case, the service provider will be allowed the revenue, with the regulator's approval. The cost of such contingent projects should exceed some minimum or threshold amount, such as a given percentage of the allowed revenue. This mechanism is appropriate for large scale projects. T&TEC's AMI (Advanced Metering Infrastructure) project is one example of a project that was excluded ex-ante from the

revenue requirement, but which may be suitable for the application of the Provision for Contingent Projects.

- **Logging Up** – this allows for the inclusion of Capex not previously funded in the current price control to be included and accounted for in the subsequent price control settlement.

4.4 The Capex Reporting Framework

The RIC is of the view that monitoring of and reporting on projects, is critical to ensure the successful execution of T&TEC's capital programme. As a result the following measures are being proposed:

- Establishing an annual or semi-annual reporting framework in which T&TEC will be required to submit Capex reports (in a format to be determined beforehand by the RIC), which are suitable for public release by predetermined (fixed) dates. Thus it places the onus on T&TEC to prepare the reports. In addition, by making the report public, the RIC is hopeful that T&TEC will be motivated to more conscientiously undertake and complete the approved capital programme. Specifically, this will include:
 - bi-annual reporting (every six months) on the status of projects; and
 - providing detailed data on each project annually.
- Establishing fixed dates by which T&TEC must meet and achieve certain Capex related Directives, holding T&TEC to account for instances where such deadlines are not met.
- Conducting a mid-term review of Capex.
- Implementation of a Capital Expenditure Safety Net – this allows for the review of the Capex allowance where the Capex in any given year of the control period, is in excess of 15% - 20% below the allowed Capex for said year.

- Employment of the Public Disclosure of Non-Compliance and Public Register notices on the RIC's website. Through these notices, the RIC will publish, without hesitation, when and how T&TEC has not complied with any targets set for its achievement.

4.5 Other Issues

In order to improve the quality of Capex submissions, and in a more general way, treat with the other issues that have arisen in the past control period, or may arise in future, relating to T&TEC's execution of the approved, capital programme, the RIC suggests:

- The use of a self-assurance process, the details of which must be submitted by T&TEC to the RIC, in which there is an assurance by T&TEC's Board that Capex projections accurately reflect the underlying information base. This is an internal process which does not necessarily entail external scrutiny or assurance.
- The development (if not already existent) and submission of detailed Asset Management Plans, alongside longer term capital investment plans, with a view to assess how T&TEC's proposed Capex relates to, and corresponds with, same. The RIC may also require the service provider to include in its business plan a review of "unit cost" trends, where possible.
- The establishment of a Stakeholder Monitoring Group to oversee the implementation and delivery of the approved Capex plan against T&TEC's actual outturn.
- The continuation of detailed ex-post efficiency reviews of T&TEC's performance with respect to capital expenditures.

5.0 Conclusion

The capital programme that is approved by the regulator is an important consideration in the price setting process, and directly and significantly, impacts on the final rates paid by customers. Moreover, the RIC is mandated by its guiding legislation to ensure that the service provider that operates under prudent and efficient management will earn sufficient revenue to finance necessary investment. As such, the RIC must endeavour to ensure that the approved capital programme is one that is undertaken at efficient costs and in an efficient manner and at the same time, provide the revenues that will allow for such. Consequently, the RIC views the non-execution of approved capital projects as a cause for serious concern, and wishes to ensure that there are adequate mechanisms in place to incentivise the utility to carry out the approved Capex programme and monitor its execution of same.

The RIC invites comments and views on all the ideas and proposals presented in this paper.