NATIONAL INFORMATION AND COMMUNICATIONS TECHNOLOGY AUTHORITY

DRAFT DETERMINATION: SERVICE-SPECIFIC PRICING PRINCIPLES FOR MOBILE AND FIXED TERMINATING ACCESS SERVICES

Public Inquiry into the Service-Specific Pricing Principles for Domestic Mobile and Fixed Terminating Access Services – Phase II

Discussion Paper – Phase II

14 November 2025

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1. BACKGROUND

1. On 1 December 2023, following a recommendation by the National Information and Communications Technology Authority ("NICTA"), the Minister declared the domestic Mobile Terminating Access Service ("MTAS") and the domestic Fixed Terminating Access Service ("FTAS").[1] The Wholesale Service Declaration No.1 of 2023 was published in the National Gazette on 7 December 2023.

2. Section 135 of the National Information and Communications Technology Act 2009 (the "Act") empowers NICTA to make a determination on the service-specific pricing principles applicable to the supply of the MTAS and FTAS declared services. In particular, Section 135(2) empowers NICTA to make service-specific pricing principles that:

   "may contain price related terms and conditions (whether relating to a price or the method of ascertaining a price) and non-price terms and conditions relating to access to the declared service."

3. On 5 June 2024 pursuant to Section 230 of the Act, NICTA initiated a public inquiry into the service-specific pricing principles for the MTAS and FTAS declared services and issued a Discussion Paper entitled "Domestic Mobile Terminating Access Services and Domestic Fixed Terminating Access Services. Public Inquiry into the Service-Specific Pricing Principles for Domestic Mobile and Fixed Terminating Access Services – Methodology and Principles" ("First Discussion Paper").

4. In the initial phase, NICTA invited interested parties to provide comments and answers to 28 questions posed in the First Discussion Paper about the proposed methodology and principles to be used for setting price related terms and conditions for the supply of the MTAS and FTAS (the "Declared Services"), in accordance with Sections 134 and 135 of the Act.

5. Following the publication of the First Discussion Paper, NICTA received comments from Vodafone PNG, Digicel (PNG) Limited ("Digicel"), and Telikom Limited ("Telikom").

6. On 21 July 2025, NICTA published a public inquiry report entitled "Public Inquiry Report – Part I (Methodology). Response to Comments and Draft Partial Determination (Methodology) on Service-Specific Pricing Principles for Mobile and Fixed Terminating Access Services", hereinafter referred to as "Public Inquiry Report – Part I (Methodology)". The report included Annex A with the draft partial determination on the Service-Specific Pricing Principles for Mobile and Fixed Terminating Access Services ("Draft Partial Determination"). The Draft Partial Determination reflected NICTA's responses and decisions on key aspects of the methodology and principles consulted with interested parties during the initial phase of the public inquiry.

7. With the publication of the Public Inquiry Report – Part I (Methodology) and the Draft Partial Determination, NICTA concluded Phase I of the inquiry. NICTA provided

[1] Wholesale Service Declaration No. 1 of 2023.

the Draft Partial Determination to inform interested parties about the methodology that NICTA would use to calculate cost-based prices for the Declared Services during the second phase of the public inquiry which started on 25 July 2025.

8. NICTA is now issuing this discussion paper entitled "Draft Determination on Service-Specific Pricing Principles for Mobile and Fixed Terminating Access Services" ("Second Discussion Paper") which includes in Annex A, the draft Service-Specific Pricing Principles for Mobile and Fixed Terminating Access Services determination ("Draft Determination").

9. This Draft Determination includes Division 2 under Part II, which specifies price related terms and conditions, including proposed maximum allowable prices for the supply of the Declared Services. These proposed prices result from the application of the methodology presented in the Draft Partial Determination and a glide path approach to transition prices from their current level to cost-based prices in accordance with Sections 134 and 135 of the Act.

10. NICTA invites interested parties to provide comments and answers to the set of questions posed in this Second Discussion Paper and the Draft Determination included as Annex A. Written submissions should be sent by email to consultation.submission@nicta.gov.pg and must be received by 5 p.m. on 14th December 2025. For further inquiries contact Mr. Polume Lume, Director, Economic, Consumer and International Affairs on telephone 3033272 during business hours or by email to plume@nicta.gov.pg

2. OBJECTIVES

11. The purpose of this Second Discussion Paper is first, to inform interested parties about NICTA's proposed service-specific pricing principles for the MTAS and FTAS declared services.

12. Second, it is to gather the views and comments from interested parties about the proposed Draft Determination attached as Annex A to this Second Discussion Paper and ensure that it results in a well thought out determination in accordance with Sections 134 and 135 of the Act.

3. LEGAL AND REGULATORY FRAMEWORK

13. The legal and regulatory framework was described in Section 3 of the First Discussion Paper. For the sake of completeness, we outline this again.

14. Section 135 of the Act gives power to NICTA to make service-specific pricing principles for a declared wholesale service. Section 134 (3) of the Act requires the service-specific pricing principles to be consistent with the general pricing principles in Section 134 of the Act (the "General Pricing Principles").

15. The General Pricing Principles constrain NICTA on what it can mandate in the service-specific pricing principles with respect to the price of the Declared Services and related terms and conditions, or with respect to the method for ascertaining the prices of the Declared Services.

16. It is important to identify clearly the limits imposed by the General Pricing Principles:

"(1) The "general pricing principles" are that the price of access to a declared service should promote the achievement of the objective of this Part as set out in Section 124 and, in particular, that the price of access to –

(a) that declared service should –

(i) be set so as to generate expected revenue from that declared service that is sufficient to meet the efficient costs of providing access to that declared service; and

(ii) include a reasonable return on investment, over the economic life of the assets employed, commensurate with the regulatory and commercial risks involved, this principle is known as the "cost recovery principle"; and

(b) a declared service that is a resale service should be set by –

(i) RMAC, where this results in pricing that is consistent with the cost recovery principle; or

(ii) cost-based pricing, if RMAC would result in pricing that is insufficient to meet the cost recovery principle; and

(c) a declared service that is not a resale service should be subject to cost- based pricing; and

(d) a declared service, where the access provider is required to extend or enhance to the capability of a facility in order to supply the declared service, should –

(i) be set so as to generate expected revenue in respect of that extension or enhancement that is sufficient to meet the reasonably anticipated costs of that extension or enhancement in the circumstances; and

(ii) include a reasonable return on investment, commensurate with the regulatory and commercial risks involved; and

to avoid doubt, this may require the access seeker to bear up to 100% of the actual cost of any such extension or enhancement.

(2) For the purposes of Subsection (1), the following words have the following meanings –

"cost-based pricing" means pricing based on the cost recovery principle in which NICTA has regard to the following factors –

(a) the application of the cost recovery principle; and

(b) the need for the pricing to make a fair and reasonable contribution to the access provider's common costs; and

(c) the need for the recovery of the reasonable costs, incurred in the provision of access and interconnection by the access provider, that would not have been otherwise incurred but for the requirement to provide such access or interconnection; and

(d) the availability and capacity of the facilities operated by the access provider and the timeframe reasonably required to provide access to additional capacity; and

(e) any other factors that NICTA considers relevant, to the extent that such factors are consistent with the cost-recovery principle and Subsections (a) to (d) of this definition.

"efficient costs" include the direct and indirectly attributable capital, operating and maintenance costs actually incurred by the access provider in providing the declared service to itself and access seekers (including a reasonable contribution to any common costs), unless NICTA determines that such costs are inefficient having regard to the efficiency objective and any evidence before it.

"RMAC" means a "retail minus avoidable cost" pricing methodology in which NICTA has regard to the following factors –

(a) where the access provider offers the benchmark retail service at more than one price point, the starting retail price should be calculated as the weighted average of the retail price points for that benchmark retail service, where the weights are based on the number of units sold by the access provider; and

(b) the avoided costs deducted from that starting retail price should reflect the costs that the access provider would reasonably avoid by not retailing that benchmark retail service; and

(c) any other factors that NICTA considers relevant, to the extent that such factors are consistent with the cost-recovery principle, the efficiency objective, and Subsections (a) and (b) of this definition.

(3) Any provision of the following instruments has no effect to the extent it is

inconsistent with the general pricing principles –

(a) any service-specific pricing principles; and

(b) any model terms; and

(c) any access exemption; and

(d) any RIO."

17. Terminology used in the Act may be subject to interpretation; depending on that interpretation, terms may have different meanings. The General Pricing Principles are intended to be applicable to a large array of possible wholesale declared services. However, international best practices often use terminology that is more precise and within the context of regulating a particular service. Therefore, it is important to recognize that the broad language used in the Act may need to be interpreted in more specific terms applicable to the Declared Services.

4. INTRODUCTION

18. Having subjected the methodology and pricing principles in the Draft Determination to a consultation process during Phase I, NICTA is satisfied that they are consistent with the General Pricing Principles ("GPPs") under Section 134 of the Act.
19. NICTA used such methodology and pricing principles to guide the development of two cost models to calculate the efficient costs of supplying the Declared Services in accordance with the GPPs.
20. As indicated in the Draft Determination enclosed in Annex A, each cost model is based on a notional or hypothetical efficient operator with certain assumptions guided by the pricing principles specified in Division 1 under Part II of the enclosed Draft Determination.
21. Interested parties should note that some sections in the Draft Determination have light editing to eliminate few typos and enhance clarity relative to the same sections in the Draft Partial Determination. The light editing does not change in any material way the methodology and pricing principles described in Division 1 compared with the earlier version in the Draft Partial Determination.
22. Below, NICTA presents the cost estimates resulting from the application of the methodology and pricing principles in the Draft Determination. We projected the costs of the MTAS and FTAS until the expiration of the associated declaration. NICTA seeks comments from interested parties on the calculated costs.
23. NICTA also presents a proposed glide path intended to smooth the transition from the current price of the MTAS and FTAS to a lower cost-based price for these

services. NICTA also seeks comments from interested parties on the proposed glide path.

24. To increase the transparency on the cost models assumptions and results, NICTA plans to invite each access provider to a presentation and overview of our cost models.

5. COST MODEL RESULTS FOR THE MTAS

25. In accordance with Section 11 in the Draft Determination, NICTA followed international best practices to calculate symmetrical MTAS cost-based prices. This means, one single price of the MTAS applicable to all access providers. To that end, NICTA modelled a notional operator with a mobile network coverage equivalent to that of Digicel, in accordance with Section 11 (4) of the Draft Determination.

26. In accordance with Section 11 (3) in the Draft Determination, the notional operator's market share could be between 1/N, or 33.33 percent and Digicel's current market share, which NICTA estimates to be 94.7 percent in mobile voice traffic, and approximately 63 percent in data traffic. NICTA's cost model uses a 60 percent market share for voice and data traffic.

27. NICTA's cost model allows us to project the growth of voice and data traffic by technology and for each year until 2028. This permits us to project the MTAS' costs for each year until 2028.

28. NICTA modelled the notional operator's voice traffic using 3G UMTS R99 technology. Data traffic is modelled using three different technologies: 3G UMTS R99, 3G HSPA, and 4G LTE, in accordance with Section 13 (1) of the Draft Determination.

29. NICTA used an annual growth rate of 1 percent for 3G UMTS R99 voice and data traffic, and the same rate for 3G HSPA data traffic growth. For 4G LTE data traffic, NICTA used a declining annual growth rate starting with 40 percent in 2024 and ending with 20 percent in 2028. See table below.

	Assumptions: Traffic Annual Growth Rate				
	2024	**2025**	**2026**	**2027**	**2028**
Voice Traffic					
3G UMTS R99	1%	1%	1%	1%	1%
Data Traffic					
3G UMTS R99	1%	1%	1%	1%	1%
3G HSPA	1%	1%	1%	1%	1%
4G LTE	40%	35%	30%	25%	25%

30. NICTA's cost model is based on a bottom-up approach that considers the data provided by the access providers along with international benchmarks to come up with reasonable cost assumptions for the notional operator's cost model, in accordance with Section 7 (1) (b) in the Draft Determination. The network topology is based on a modified scorched node approach in accordance with Section 10 of the Draft Determination.

31. The cost model uses the so-called LRIC+ (also known as TSLRIC+) cost allocation approach in accordance with Section 8 of the Draft Determination. Capital related costs are based on cost information provided by the access providers and when deemed appropriate, adjusted to reflect a reasonable economic value of the assets in accordance with Section 9 of the Draft Determination.

32. NICTA calculated a weighted average cost of capital of 16.63 percent in accordance with the pricing principles in Section 16 of the Draft Determination. The cost of the MTAS in PNG toea per minute for each year starting with 2025 is shown below.

	Cost of MTAS (PNG toea per minute)			
	2025	**2026**	**2027**	**2028**
Voice termination cost (PNG toea per minute)	1.58	1.48	1.40	1.35

Question 1. Do you think the calculated costs of the MTAS are reasonable? If you do not think they are reasonable, please explain why.

6. PROPOSED GLIDE PATH FOR THE MAXIMUM PRICE OF THE MTAS

33. NICTA could either set the maximum allowable price for the MTAS equal to the calculated costs in the table or use a so-called glide path to smooth the transition from the current price level to the cost-based prices shown in the table above. International best practice dictates that when the discrepancy between the current MTAS price and the calculated cost is large, as in this case,[2] it is common for the national regulatory authority to smooth the transition over a certain period. This is referred to as a glide path.

34. One advantage of a glide path is that it allows access providers to gradually adjust their retail pricing plans to consider the new reality of a much lower (cost-based) price of the MTAS. This gradual adjustment would smooth any changes on retail pricing plans that may result from the MTAS price reduction. On the other hand, the

[2] NICTA understands that the current MTAS price is approximately PNG 7 toea per minute.

implementation of a glide path would delay the benefits of lower MTAS prices and hence, any associated benefits of lower off-net call prices.

35. NICTA's preliminary position is to implement a glide path on three steps given the existing large discrepancy between the current MTAS price and the cost calculated with our cost model. The proposed glide path is as follows:

    (a) A decline on the maximum MTAS price from its current level to PNG 3.5 toea per minute effective from the Commencement Date per the Draft Determination in Annex A until 31 December 2026;

    (b) A maximum MTAS price of PNG 1.75 toea per minute from 1 January 2027 until 31 December 2027; and

    (c) A maximum MTAS price of PNG 1.35 toea per minute from 1 January 2028 until the expiration of the Service-Specific Pricing Principles (SSPPs) for the Declared Services.

Question 2. Do you think the proposed glide path is reasonable? If you do not think it's reasonable, please explain why.

7. COST MODEL RESULTS FOR THE FTAS

36. NICTA's FTAS cost model of the notional operator assumes a fixed network coverage equivalent to that of Telikom and a 100 percent market share of voice traffic, in accordance with Section 11(5) of the Draft Determination.

37. NICTA's fixed cost model uses 10.3 percent market share for fixed (broadband) data traffic. Our cost model allows us to project the growth of voice and data traffic in accordance with Section 13 (2) of the Draft Determination.

38. Due to the observed decline on fixed voice traffic, we assumed an annual decline starting with -2.75 percent in 2024 and gradually tapering down to an annual decline of -1.75 percent by 2028. Fixed broadband data traffic was assumed to grow annually at a rate of 15.20 percent. See table below.

	Traffic Annual Growth Rate				
	2024	**2025**	**2026**	**2027**	**2028**
Fixed Voice Traffic					
VOIP	-2.75%	-2.50%	-2.25%	-2.00%	-1.75%
Fixed Broadband Data Traffic					
Fixed Broadband	15.20%	15.20%	15.20%	15.20%	15.20%

39. Our FTAS cost model is based on a bottom-up approach that uses cost data from international benchmarks to come up with reasonable cost assumptions for the notional operator's costs, in accordance with Section 7 (1) (b). Due to the very limited information received from Telikom, the FTAS cost model's network topology is based on a scorched earth approach in accordance with Section 10 (4) in the Draft Determination.

40. The cost model also uses an LRIC+ cost allocation approach in accordance with Section 8 of the Draft Determination. Capital related costs are based on international benchmarks to reflect a reasonable economic value of the assets in accordance with Section 9 of the Draft Determination.

41. NICTA calculated a weighted average cost of capital of 16.63 percent in accordance with the pricing principles in Section 16 of the Draft Determination. The cost of the FTAS in PNG toea per minute for each year starting with 2025 is shown below.

	Cost of FTAS (PNG toea per minute)			
	2025	2026	2027	2028
Voice incoming termination cost	2.57	2.56	2.55	2.53

Question 3. Do you think the calculated costs of the FTAS are reasonable? If you do not think they are reasonable, please explain why.

8. PROPOSED GLIDE PATH FOR THE MAXIMUM PRICE OF THE FTAS

42. Again, NICTA is proposing a glide path to transition from the current high price of the FTAS to cost-based prices.

43. NICTA's preliminary position is to also implement a glide path with three steps given the existing large discrepancy between the current FTAS rate[3] and the cost of the FTAS calculated with our cost model. The proposed glide path is as follows:

    (a) A decline on the maximum FTAS price from its current level to PNG 4.80 toea per minute effective from the Commencement Date per the Draft Determination in Annex A until 31 December 2026;

    (b) A maximum FTAS price of PNG 3.12 toea per minute from 1 January 2027 until 31 December 2027; and

    (c) A maximum FTAS price of PNG 2.53 toea per minute from 1 January 2028 until the expiration of the Service-Specific Pricing Principles (SSPPs) for the Declared Services.

[3] NICTA understands that the current FTAS price is approximately PNG 8 toea per minute.

Question 4. Do you think the proposed glide path is reasonable? If you do not think it's reasonable, please explain why.

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ANNEX A. DRAFT DETERMINATION

DRAFT SERVICE-SPECIFIC PRICING PRINCIPLES FOR MOBILE AND FIXED TERMINATING ACCESS SERVICES DETERMINATION 2025

[INSERT]

ANNEX A. DRAFT DETERMINATION

DRAFT SERVICE-SPECIFIC PRICING PRINCIPLES FOR MOBILE AND FIXED TERMINATING ACCESS SERVICES DETERMINATION 2025

National Information and Communications Technology Act 2009

THE NATIONAL INFORMATION AND COMMUNICATIONS TECHNOLOGY AUTHORITY makes this Determination under section 135 of the *National Information and Communications Technology Act 2009*.

Dated [xxx, 2025]

[Name]

[Signature]

Member

[Name]

[Signature]

Member

National Information and Communications Technology Authority

PART I – PRELIMINARY

1 Name of Determination

This Determination is the *Service-Specific Pricing Principles for Mobile Terminating Access Services and Fixed Terminating Access Services Determination 2025*

2 Commencement

(1) This Determination commences on [XX, Month 2025] (***the Commencement Date***).

3 Interpretation

(1) Subject to subsection (2), unless the context otherwise requires, terms used in this Determination have the same meaning as in the Act.

(2) Furthermore, in this Determination, unless the context in Part II – Pricing Principles, otherwise requires:

(a) ***"Act"*** means the *National Information and Communications Technology Act, 2009*.

(b) ***"Bottom-up Cost Models"*** are:

(i) Models that use data on demand, network coverage, geographic and technical information to dimension the required network to serve a geographic coverage area with a required capacity and technology. The underlying technical engineering model of a network is used to develop unit costs of various network components. These costs are then allocated to the various services supplied by the access provider.

(ii) These models tend to be more transparent and allow to perform scenario analysis and test the sensitivity of assumptions to a much larger degree than top-down models.

(c) ***"Declared Services"*** are – the domestic Fixed Terminating Access Service and the domestic Mobile Terminating Access Service.

(d) ***"Equity Beta"*** is the risk that a company or investment adds to a market portfolio. Intuitively, it measures the sensitivity of a company's rate of return on equity to changes on the market rate of return.

(e) ***"Fixed Terminating Access Service"*** means the wholesale service defined in Part III of the Wholesale Service Declaration No. 1 of 2023.

(f) ***"Gearing ratio"*** is – the ratio of the debt to the total capital of a company (debt plus equity).

(g) ***"Hybrid Cost Models"*** are cost models where a Bottom-up Cost Model is used as the primary model to calculate the costs, and then a partial Top-down Cost Model is used only to fine-tune some of the assumptions in the bottom- up model.

(h) ***"Mobile Terminating Access Service"*** means the wholesale service defined in Part II of the Wholesale Service Declaration No. 1 of 2023.

(i) ***"Modern Equivalent Asset"*** means the lowest cost asset providing at least equivalent functionality and output as the asset being valued.

(j) ***"Top-down Cost Models"*** are:

(i) Cost models that use data from an access provider's accounts and allocation rules, to distribute the costs across the services supplied by the access provider. This approach does not involve detailed network modelling.

(ii) To avoid incorporating the access provider's inefficiencies, the model would need to adjust the accounting costs to reflect forward-looking (efficient) costs. This may require adjustments to the network configuration and costs in the model.

4 Determination

The National Information and Communications Technology Authority ("NICTA") determines, pursuant to Section 135 of the Act, that the service-specific pricing principles specified in Part II are to apply to the following services declared by the Minister in the Wholesale Service Declaration No.1 of 2023:

- Mobile Terminating Access Service, and
- Fixed Terminating Access Service.

PART II – PRICING PRINCIPLES

Division 1 – Methodology to be used for calculating cost-based prices of Mobile Terminating Access Service and Fixed Terminating Access Service

5 Introduction

(1) NICTA outlines in this Division 1 of this service-specific pricing principles the applicable methodology to be used for calculating the efficient cost of providing the Declared Services.

(2) Division 2 of this service-specific pricing principles presents the results of applying this methodology to ascertain the cost-based prices of the Declared Services, along with related terms and conditions.

6 Appropriate approach to determine cost-based prices: International benchmarking or cost modelling

(1) In principle NICTA accepts that both approaches: cost modelling and benchmarking, could be regarded as being in accordance with the General Pricing Principles (GPPs), and therefore, could be used to calculate the costs of supplying the domestic Mobile Terminating Access Service (MTAS) and the domestic Fixed Terminating Access Service (FTAS).

(2) However, the cost modelling approach provides greater accuracy for calculating PNG-specific efficient costs of supplying the Declared Services. Despite its greater data requirements and modelling time, NICTA has decided to use that approach to calculate PNG-specific efficient costs of providing the Declared Services. For the avoidance of doubt, NICTA intends to model the costs of an efficient notional or reference access provider to come up with cost-based prices for the MTAS and FTAS.

(3) NICTA may also use an international benchmark approach to compare the results with those from the cost modelling approach. In addition, NICTA may use benchmarking to justify some of the cost assumptions used in the cost models.

(4) Notwithstanding what is said elsewhere in this Determination, if NICTA considers that the data received for developing a cost model is inadequate, NICTA may decide to use a benchmarking approach instead, to calculate the cost-based prices of supplying the MTAS or the FTAS.

7 Modelling approach: Top-down, bottom-up, or hybrid

(1) Modelling approach

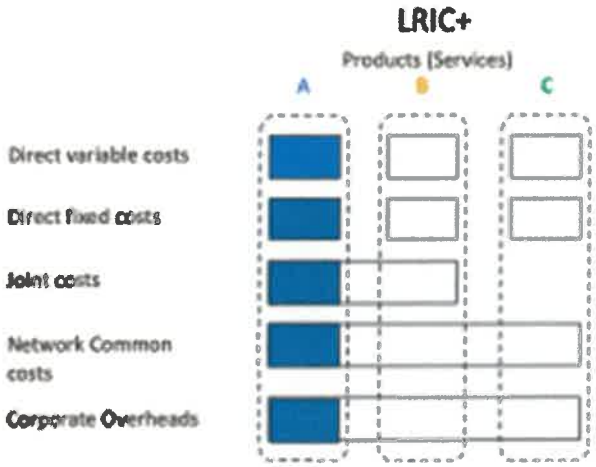
(a) In principle, NICTA could either use a bottom-up, a top-down, or a hybrid approach. However, a Hybrid Cost Model would more likely adhere to the GPPs while at the same time advance the efficiency objective in Section 124 of the Act.

(b) The cost estimates of the Declared Services would come from a Bottom-up Cost Model. However, NICTA will use parts of a Top-down Cost Model to inform the various assumptions required for the Bottom-up Cost Model. NICTA will use not only cost data from the access providers but also benchmark those costs against international operators to come up with reasonable assumptions to be used in the Bottom-up Cost Model.

8 Approach for allocating costs

(1) NICTA will use a LRIC+ (also known as a TSLRIC+) cost allocation approach that includes fair and reasonable common and joint costs.

(2) Joint costs are the costs of an input that is used in the supply of two or more services. Common costs are the costs of certain inputs that are necessary for the supply of two or more services but that cannot be directly assigned to specific services. Common costs can be subdivided into network common costs and corporate overhead costs. The figure illustrates the different categories of costs for an operator that is assumed supplies three services.



9 Treatment of capital related costs

(1) NICTA will use current cost accounting (CCA) also known as forward-looking costs to value the capital assets used for the supply of the Declared Services. Specifically, NICTA will value the capital related costs by either (i) using the cost of replacement with a Modern Equivalent Asset, or (ii) use as the cost of replacement, the economic cost of the depreciated assets in use, or (iii) a combination of the above.

10 Network topology for cost model

(1) Scorched node approach

(a) In the scorched node approach, the existing location of a reference operator's nodes are used to design the hypothetical network in the cost model. There is room for optimizing the hypothetical or notional network in the model, but it is constrained by the predetermined location of the reference network nodes. The resulting optimized network would have a similar footprint as the reference network.

(2) Scorched earth approach

(a) The scorched earth approach allows the cost model's hypothetical network to be optimized to the fullest extent by having no constrains on the location of the nodes. With this approach the cost model could place optimally the nodes to serve the required demand with an optimized network.

(3) Modified scorched node approach

(a) The modified scorched node approach is a combination of the prior two. With this method, the location of the nodes is based on the location of the reference operator's nodes but are not strictly fixed at the operator's locations. Locations may be modified or calibrated to optimize the real network.

(4) Approach to network topology in cost model

(a) To the extent permitted by the information provided by the access providers, NICTA will preferably use a scorched node approach. If the information provided is incomplete or inadequate, NICTA will use a modified scorched node approach. If no or minimal information is provided, NICTA could use a scorched earth approach.

11 Reference or notional operator for the cost models

(1) NICTA will follow international best practice to set symmetrical termination rates, meaning one single rate for all access providers supplying the domestic MTAS. The same principle will apply to the provision of domestic FTAS. However, in the latter case, Telikom Limited ("Telikom") is the only access provider.

(2) To the extent that information is available, two separate cost models will be used: one for the domestic MTAS, and a separate for the FTAS. Each cost model will be based on a notional or hypothetical operator with a certain share of the total volume of voice traffic and a certain geographic coverage.

(3) Demand wise, the notional operator for the MTAS cost model will be assigned a market share to be lower than Digicel (PNG) Limited ("Digicel") current market share, but higher than an equally distributed market share, also known as 1/N, where N is the number of access providers.

(4) With respect to the network coverage, the notional operator for the MTAS cost model will be assigned a network coverage equivalent to that of Digicel.

(5) With respect to the FTAS cost model, the notional operator will be assigned a market share of 100% of the FTAS traffic, and a network coverage equivalent to that of Telikom's fixed network.

12 Service increment for the cost model

(1) For cost modelling purposes, NICTA shall use the relevant incremental services as the domestic MTAS and FTAS provided to third parties.

13 Technologies and services to model in the MTAS and FTAS cost models

(1) NICTA shall endeavour to include all the services' demands in the domestic MTAS cost model. In particular, NICTA shall model the following technologies and services:

(a) Technologies:

(i) GSM (2G): voice, data, SMS

(ii) UMTS/HSPA (3G): voice, data, SMS

(iii) LTE (4G): voice (VoLTE), data.

(b) Services to be modelled:

(i) Voice: On-Net, Incoming, Outgoing, International calls

(ii) Data.

(c) Modelled service increment units: Traffic demand

(2) NICTA shall endeavour to include all the services' demands in the domestic FTAS cost model. NICTA shall model the following technologies and services:

(a) Technology: Next Generation Network (NGN)

(i) Copper Access Network (ADSL)

(ii) Fibre Access Network (PON)

(b) Modelled services:

(i) Voice: On-Net, Incoming, Outgoing, International calls

(ii) Data: Fixed internet service

(iii) Video: Cable TV

(c) Modelled service increment units:

(i) Access Network: Subscribers

(ii) Transport/core Network: Traffic demand

14 Method to allocate joint and common costs to services

(1) For the allocation of network related joint and common costs, NICTA will use the Shapley-Shubik approach for certain incremental services in case the capacity-based allocation proves inadequate. Otherwise, capacity-based allocation shall be used.

(2) NICTA will implement the equal proportionate mark-up (EPMU) approach for the allocation of overhead common costs.

15 Depreciation

(1) NICTA will use the tilted annuity approach to calculate the depreciation of assets.

16 Approach to determine a reasonable rate of return

(1) NICTA shall use the pre-tax weighted average cost of capital ("WACC") formula below to calculate two separate costs of capital: one for the domestic MTAS and another WACC for the FTAS model.

$$Pre - tax\ WACC = \frac{After-tax\ WACC}{(1-t)},$$

Where the after-tax WACC is:

$$WACC = \left(\frac{E}{E+D}\right) x\, r_e + \left(\frac{D}{E+D}\right) x\, (1-t)\, x\, r_d\,,$$

where,

r_e: cost of equity capital or shareholder's expected return on equity,

r_d: cost of debt,

E: Equity of the operator's capital structure,

D: Debt of the operator's capital structure, and

t: corporate tax rate.

(2) For the Gearing ratio of the FTAS model, NICTA shall use a Gearing ratio that reflects a reasonably efficient capital structure and not the capital structure of Telikom, the sole access provider. To that end, NICTA shall use a Gearing ratio informed by benchmarking telecom operators from the U.S., Australia, or comparable jurisdictions, that can be regarded as having an efficient capital structure. Alternatively, NICTA could use Gearing ratios from telecom service providers from the U.S., Australia, and comparable jurisdictions, as reported by Professor Damodaran in the extensive database that he regularly updates.[1]

(3) For the Gearing ratio of the MTAS model, NICTA shall use a notional Gearing ratio to reflect the capital structure of Digicel or Vodafone PNG ("Vodafone")[2] respective parent companies, or any other comparable mobile operator. Alternatively, NICTA could use Gearing ratios from telecom service providers from the U.S., Australia, and comparable jurisdictions, as reported in Professor Damodaran's open database.

(4) NICTA will use the following formula to calculate the cost of debt of the modelled notional access providers of FTAS and MTAS:

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[1] Prof. Damodaran's database can be found following this link. https://pages.stern.nyu.edu/~adamodar/. Prof. Damodaran is a world-renowned authority on the valuation of financial assets and companies. He is a professor of finance at the Stern School of Business at New York University (NYU).

[2] Digitec Communications Limited trading as Vodafone PNG.

$$r_d = r_f + CRP + D_p,$$

where,

r_d: cost of debt,

r_f: risk-free rate of return

CRP: country risk premium, and

D_p: Debt-risk premium.

(5) NICTA will use the interest rate on a 10-year U.S. bond or comparable sovereign bond interest rate, as the risk-free rate of return.

(6) NICTA will either use Prof. Damodaran's estimate of the country risk premium ("CRP") for PNG or compute the CRP using the difference (spread) between the interest rate of the PNG government bond and the risk-free interest rate for a bond of comparable maturity.

(7) To calculate the debt-risk premium (D_p) in the above formula, NICTA will either use the difference between the cost of debt and the risk-free rate of return from telecom companies in the U.S., Australia, or comparable jurisdictions, as reported by Professor Damodaran, or benchmark debt-risk premiums on a sample of appropriate telecom companies.

(8) NICTA will use the following formula to calculate the cost of equity capital for the modelled notional access providers of FTAS and MTAS:

$$r_e = r_f + \beta \times (MRP + CRP),$$

Where,

r_e: is the cost of equity capital,

r_f: risk-free rate of return,

β: equity beta,

MRP: Market risk premium, and

CRP: Country risk premium.

(9) NICTA will use the difference between the rate of return on the U.S. Standard & Poor's 500 Index and the risk-free rate of return as the general approach to calculate the market-risk premium ("MRP"). However, to implement this approach, NICTA could use Prof. Damodaran's calculation of the MRP.

(10) NICTA will benchmark the Equity Betas of publicly traded telecom companies in other jurisdictions as the general approach to calculate the Equity Beta of the modelled notional access provider. However, to implement this, NICTA will use Prof. Damodaran estimated Equity Betas from publicly traded telecom companies from the U.S., Australia, or comparable countries.

Division 2 – Price related terms and conditions

17 General terms and conditions for the supply of Mobile Terminating Access Service and Fixed Terminating Access Service

(1) Access providers shall supply the MTAS and FTAS in accordance with the non-discriminatory obligations under Section 136 of the Act.

(2) Access providers and access seekers of the MTAS and FTAS shall comply with the any-to-any connectivity obligations under Section 137 of the Act. For the avoidance of doubt, the Declared Services shall be regarded as designated interconnection services for the any-to-any connectivity obligations under Section 137 of the Act.

(3) An access provider that supplies a Declared Service to an access seeker, shall charge the access seeker for the Declared Service on a per-second basis.

18 Maximum price for Mobile Terminating Access Service

(1) An access provider may not charge a price for Mobile Terminating Access Service that exceeds:

(a) PNG 3.50 toea per minute (prorated for units of less than a minute) as of the commencement date of this Determination until 31 December 2026.

(b) PNG 1.75 toea per minute (prorated for units of less than a minute) from 1 January 2027 until 31 December 2027.

(c) PNG 1.35 toea per minute (prorated for units of less than a minute) from 1 January 2028 until expiration of this Determination.

19 Maximum price for Fixed Terminating Access Service

(1) An access provider may not charge a price for Fixed Terminating Access Service that exceeds:

(a) PNG 4.80 toea per minute (prorated for units of less than a minute) as of the commencement date of this Determination until 31 December 2026.

(b) PNG 3.12 toea per minute (prorated for units of less than a minute) from 1 January 2027 until 31 December 2027.

(c) PNG 2.53 toea per minute (prorated for units of less than a minute) from 1 January 2028 until expiration of this Determination.

20 Amendment to price schedules in interconnection agreements

(1) NICTA instructs access providers and access seekers to amend the price schedule in their interconnection agreements to be in accordance with Division 2 of this Determination.

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