NATIONAL INFORMATION AND COMMUNICATIONS TECHNOLOGY AUTHORITY

DRAFT DETERMINATIONS: SERVICE-SPECIFIC PRICING PRINCIPLES FOR WHOLESALE SERVICE DECLARATION NO. 1 OF 2025, WHOLESALE SERVICE DECLARATION NO. 2 OF 2025, AND WHOLESALE SERVICE DECLARATION NO. 3 OF 2025

Public Consultation into the Service-Specific Pricing Principles for Certain Declared Services – Phase II

Public Consultation Paper – Phase II

16 April 2026

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1. BACKGROUND

1. On 19 November 2025, following a recommendation by the National Information and Communications Technology Authority ("NICTA"), the Minister approved the following three wholesale services declarations encompassing five services (the "Declared Services"):

   (a) Declaration No. 1 of 2025 declared the wholesale international dedicated submarine cable capacity service and the international submarine cable facilities access service;

   (b) Declaration No. 2 of 2025 declared the wholesale long-haul dedicated capacity service and the wholesale local dedicated capacity service; and

   (c) Declaration No. 3 of 2025 declared the wholesale Internet access service.

2. These three declarations (the "Three Declarations") were published in the National Gazette on 15 December 2025.

3. 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 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."

4. On 23 December 2025 pursuant to Section 229 of the Act, NICTA initiated a public consultation of three service-specific pricing principles covering the Three Declarations. On that date, NICTA published a public consultation paper entitled: "DRAFT SERVICE-SPECIFIC PRICING PRINCIPLES FOR: WHOLESALE SERVICE DECLARATION No. 1 OF 2025, WHOLESALE SERVICE DECLARATION No. 2 OF 2025, AND WHOLESALE SERVICE DECLARATION No. 3 OF 2025. Public Consultation into the Service-Specific Pricing Principles for Certain Declared Services" ("First Consultation Paper"). The First Consultation Paper included in Annex A, three draft (partial) service-specific pricing principles covering the Three Declarations.

5. In the initial phase, NICTA invited interested parties to provide comments and answers to 16 questions posed in the First Consultation Paper. The questions touched on important aspects of the proposed methodology and principles to be used for setting price related terms and conditions for the supply of the Declared Services.

6. Following the publication of the First Consultation Paper, NICTA received comments from Vodafone PNG ("Vodafone"), Digicel (PNG) Limited ("Digicel"), Nextgen Technology PNG Limited (" Nextgen Technology"), and U-Space Communications.

7. On 16 April 2026 NICTA published a response to the comments received in the initial phase entitled: "RESPONSE TO COMMENTS AND DRAFT PARTIAL DETERMINATION (METHODOLOGY) ON SERVICE-SPECIFIC PRICING PRINCIPLES FOR: WHOLESALE SERVICE DECLARATION No. 1 OF 2025, WHOLESALE SERVICE DECLARATION No. 2 OF

2025, AND WHOLESALE SERVICE DECLARATION No. 3 OF 2025", hereinafter referred to as "Response to Comments Report – Phase I (Methodology)". The report included Annex A with three draft partial determinations on the service-specific pricing principles for the Three Declarations ("Draft Partial Determinations"). The Draft Partial Determinations 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 consultation.

8. With the publication of the Response to Comments Report – Phase I (Methodology) and the Draft Partial Determinations, NICTA concluded Phase I of the consultation. NICTA provided the Draft Partial Determinations 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 consultation.

9. NICTA is now issuing this public consultation paper entitled: "DRAFT DETERMINATIONS: SERVICE-SPECIFIC PRICING PRINCIPLES FOR: WHOLESALE SERVICE DECLARATION No. 1 OF 2025, WHOLESALE SERVICE DECLARATION No. 2 OF 2025, AND WHOLESALE SERVICE DECLARATION No. 3 OF 2025" (Second Consultation Paper") which includes in Annex A, the draft service-specific pricing principles for the Declared Services ("Three Draft Determinations").

10. The three Draft Determinations include 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 Determinations 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.

11. NICTA invites interested parties to provide comments and answers to the set of questions posed in this Second Consultation Paper and the Three Draft Determinations 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 15th May 2026. For further inquiries contact Molynda Dongme, Acting Manager Economics on telephone 303 3200 during business hours or by email to mdongme@nicta.gov.pg

2. OBJECTIVES

12. The purpose of this Second Consultation Paper and the Three Draft Determinations in Annex A, is first, to inform interested parties about NICTA's proposed service-specific pricing principles for the Declared Services.

13. Second, it is to gather the views and comments from interested parties about the proposed Three Draft Determinations attached as Annex A and ensure that they result in well thought out determinations in accordance with Sections 134 and 135 of the Act.

3. LEGAL AND REGULATORY FRAMEWORK

14. Section 10(1) of the Act empowers NICTA to:

> *"do all things necessary or convenient to be done for, or in connection with, or otherwise incidental to, the performance of its functions or to enable it to achieve the objective of this Act."*

15. Section 229 of the Act provides for a procedure that NICTA shall follow when conducting a public consultation for making mandatory instruments.

16. Section 135 of the Act empowers NICTA to make service-specific pricing principles for a declared wholesale service. Section 135 (4) of the Act requires NICTA to undertake a public consultation before making, amending, or revoking service-specific pricing principles for a declared service.

17. 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").

18. 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.

19. It is important to identify clearly the limits imposed by the General Pricing Principles under Section 134 of the Act:

> *"(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."

20. 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

21. Having subjected the methodology and pricing principles in the Draft Partial Determinations 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.

22. NICTA used such methodologies and pricing principles to guide the development of the cost model to calculate the efficient costs of supplying the Declared Services in accordance with the GPPs.

23. As indicated in the Three Draft Determinations in Annex A, the 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 in each of the enclosed Three Draft Determinations.

24. Below, NICTA presents the cost estimates resulting from the application of the methodologies and pricing principles to calculate cost-based prices for the Declared Services. Where applicable, we projected the costs of the Declared Services until the expiration of the associated declaration. NICTA seeks comments from interested parties on the calculated costs.

25. NICTA also presents proposed glide paths intended to smooth the transition from the current price of the wholesale services, where applicable, to a lower cost-based price for these services. NICTA also seeks comments from interested parties on the proposed glide paths, where applicable.

5. PRICE RELATED TERMS AND CONDITIONS FOR SERVICES DECLARED IN WHOLESALE SERVICE DECLARATION NO. 1 OF 2025

26. The cost model results of calculating cost-based prices for the wholesale international dedicated submarine cable capacity service are presented below. NICTA also presents a proposed glide path for the maximum allowable price for the wholesale service.

5.1 Cost model results for wholesale international dedicated submarine cable capacity service

27. NICTA modelled a notional operator with a network coverage equivalent to that of PNG DataCo Limited ("DataCo"), in accordance with Section 11 of the draft determination in Annex A. In addition, the notional operator's market share of the wholesale service was assumed to be 100 percent, equivalent to that of DataCo's market share.

28. NICTA's cost model projects the growth of the wholesale leased capacity for each year until 2030. Using those projections, the cost model projects the monthly cost per unit of leased capacity for each year until 2030, when the determination expires.

29. NICTA modelled the notional operator's leased capacity for four services: (i) wholesale international dedicated submarine cable capacity service, (ii) wholesale long-haul dedicated capacity service, (iii) wholesale local dedicated capacity service, and (iv) wholesale Internet access service.

30. NICTA used the annual growth rate of leased capacity for wholesale international dedicated submarine cable capacity service according to the table below.

Annual Growth Rate of Leased Capacity (%)					
2025	**2026**	**2027**	**2028**	**2029**	**2030**
34%	55%	40%	38%	35%	35%

31. NICTA's cost model is based on a bottom-up approach that considers the data provided by the access provider along with international benchmarks to come up with reasonable cost assumptions for the notional operator's cost model, in accordance with Division 1 of the draft determination in Annex A. The network topology is based on a scorched node approach.

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

33. NICTA calculated a weighted average cost of capital of 16.63 percent. The average monthly cost of wholesale international dedicated submarine cable capacity service in PNG Kina ("PGK") per Megabits per second ("Mbps") for each year starting with 2025 is shown below.

Monthly cost of leased capacity: wholesale international dedicated submarine cable capacity service (PGK per Mbps)					
2025	**2026**	**2027**	**2028**	**2029**	**2030**
26.96	18.26	13.33	9.79	7.21	5.29

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

5.2 Proposed glide path for the maximum price of wholesale international dedicated submarine cable capacity service

34. NICTA could either set the maximum allowable monthly price for leased capacity equal to the calculated costs in the prior 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 suggests that when the discrepancy between the current price and the calculated cost-based price is large, it is common for the national regulatory authority to smooth the transition over a certain period. This is referred as a glide path.

35. 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 their wholesale service. This gradual adjustment would smooth any abrupt changes on retail pricing plans that might otherwise result from an immediate sharp reduction of the wholesale service price. On the other hand, the implementation of a glide path would delay the benefits of lower wholesale service prices and hence, any associated benefits that may accrue to access seekers and consumers.

36. NICTA's preliminary position is to implement a short glide path on three steps due to the large discrepancy between the current wholesale service price and the cost-based price calculated with NICTA's cost model. The proposed glide path is as follows:

    (a) A decline on the maximum weighted average monthly price from its current level to PGK 47.20 per Mbps effective from the Commencement Date until 31 December 2026;

    (b) A maximum weighted average monthly price of PGK 21.24 per Mbps from 1 January 2027 until 31 December 2027;

    (c) A maximum weighted average monthly price of PGK 9.79 per Mbps from 1 January 2028 until 31 December 2028;

    (d) A maximum weighted average monthly price of PGK 7.21 per Mbps from 1 January 2029 until 31 December 2029; and

    (e) A maximum weighted average monthly price of PGK 5.29 per Mbps from 1 January 2030 until the expiration of the Wholesale Service Declaration No. 1 of 2025.

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

5.3 Cost model results for international submarine cable facilities access service

37. NICTA also developed a cost model to calculate cost-based prices for international submarine cable facilities access service. NICTA used a bottom-up LRIC+ cost model approach based on a standard 20-foot shelter for telecommunications equipment. Efficient costs were calculated for a grid-connected shelter outfitted with a cooling system, uninterrupted power supply, Diesel (back-up) generator, fire protections, security system, and comprehensive monitoring capabilities. NICTA used the same weighted average cost of capital as for the other Declared Services.

38. The calculated monthly cost-based prices for leased cabinet space are presented below. NICTA used four standard rack units to calculate these prices. For each standard cabinet space, the table below lists the maximum average power of the access seeker's ICT equipment.

39. The table below shows the proposed maximum allowable prices for the 2026 calendar year. For subsequent years, the maximum prices may be adjusted using the PNG retail price index or equivalent.

Proposed maximum allowable monthly price for leased cabinet space (PGK)			
Cabinet Space	**Monthly Price (PGK)**	**Monthly Price per RU (PGK per RU)**	**Maximum Average Power of ICT Equipment (Watts)**
2 RU	689.08	344.54	690
10 RU	1,607.85	160.79	1,600
21 RU	2,871.16	136.72	2,860
42 RU	4,823.55	114.85	4,800
Note: 1 Rack Unit (RU) is equivalent to a space on a standard cabinet of 19 inched wide by 1.75 inches high. For each standardized cabinet space there is an associated maximum average power of the collocated ICT equipment that should not be exceeded. If the average power of the ICT equipment exceeds the limits in the table, a larger cabinet space may be required.			

40. The second service modelled was energy use. This cost was modelled based on the calculated average energy consumption of the access seeker's ICT equipment on the access provider's cabinet. NICTA use the approach described in Section 5.8.1 with a value of PUE of 1.6 and a 10% mark-up to arrive to the following expression for the monthly cost-based price of energy use:

$$Energy\ Fee\ (PGK) = 1{,}284.80\ x\ ICT_{KW}\ x\ Tariff$$

Where,

Energy Fee: is the monthly fee in PGK charged to access seekers for the use of the access supplier's electricity,

ICT_{KH}: Is the average power in Kilowatts of the access seeker's collocated ICT equipment,

Tariff: is the tariff in PGK per Kilowatt-hour that the power company charges the access provider for electricity consumption.

41. The expression above shall be used by and access provider to calculate the maximum allowable price to charge for energy use.

Question 3. Do you think the calculated monthly costs for cabinet space and the expression to calculate the price of energy are reasonable? If you do not think they are reasonable, please explain why.

6. PRICE RELATED TERMS AND CONDITIONS FOR SERVICES DECLARED IN WHOLESALE SERVICE DECLARATION NO. 2 OF 2025

6.1 Cost model results for wholesale long-haul dedicated capacity service

42. Again, NICTA modelled the cost of wholesale long-haul dedicated capacity service using the same methodology described earlier. NICTA's cost model assumes a notional operator with a network coverage equivalent to that of DataCo and a market share of 100 percent. NICTA projected the growth of the wholesale service leased capacity for each year until 2030 and used those projections to calculate the monthly cost per unit of leased capacity for each year until 2030.

43. NICTA used the annual growth rate of leased capacity for wholesale long-haul dedicated capacity service according to the table below.

Annual Growth Rate of Leased Capacity (%)					
2025	**2026**	**2027**	**2028**	**2029**	**2030**
26%	33%	30%	32%	34%	36%

44. NICTA calculated a weighted average cost of capital of 16.63 percent. The average monthly cost of leased capacity of wholesale long-haul dedicated capacity service in PGK per Mbps for each year starting with 2025 is shown below.

Monthly cost of leased capacity: wholesale long-haul dedicated capacity service (PGK per Mbps)					
2025	**2026**	**2027**	**2028**	**2029**	**2030**
106.35	79.56	60.86	46.05	34.22	25.03

Question 4. Do you think the calculated monthly costs of leased capacity are reasonable? If you do not think they are, please explain why.

6.2 Proposed glide path for the maximum price of wholesale long-haul dedicated capacity service

45. In this case, due to considerably less discrepancy between the current monthly price of this wholesale service and the calculated cost-based price from NICTA's cost model, NICTA does not consider necessary to implement a glide path.

46. In consequence, NITA is proposing the maximum monthly prices as follows:

    (a) A decline on the maximum weighted average monthly price from its current level to PGK 79.56 per Mbps effective from the Commencement Date until 31 December 2026;

    (b) A maximum weighted average monthly price of PGK 60.86 per Mbps from 1 January 2027 until 31 December 2027;

    (c) A maximum weighted average monthly price of PGK 46.05 per Mbps from 1 January 2028 until 31 December 2028;

    (d) A maximum weighted average monthly price of PGK 34.22 per Mbps from 1 January 2029 until 31 December 2029; and

    (e) A maximum weighted average monthly price of PGK 25.03 per Mbps from 1 January 2030 until the expiration of the Wholesale Service Declaration No. 2 of 2025.

Question 5. Do you think the proposed prices are reasonable? If you do not think they are, please explain why.

6.3 Cost model results for wholesale local dedicated capacity service

47. Again, the cost model used by NICTA for the earlier wholesale service includes this service as one of the services modelled. NICTA used the same approach as explained earlier.

48. NICTA used the annual growth rate of leased capacity for wholesale local dedicated capacity service according to the table below.

Annual Growth Rate of Leased Capacity (%)					
2025	**2026**	**2027**	**2028**	**2029**	**2030**
29%	40%	31%	32%	33%	34%

49. NICTA used the same weighted average cost of capital as for the other Declared Services. The average monthly cost of leased capacity of wholesale local dedicated capacity service in PGK per Mbps for each year starting with 2025 is shown below.

Monthly cost of leased capacity: wholesale local dedicated capacity service (PGK per Mbps)					
2025	**2026**	**2027**	**2028**	**2029**	**2030**
4.04	3.23	2.66	2.13	1.66	1.24

Question 6. Do you think the calculated monthly costs of leased capacity are reasonable? If you do not think they are, please explain why.

6.4 Proposed glide path for the maximum price of wholesale local dedicated capacity service

50. NICTA deems appropriate to institute a short glide path on three steps to strike a balance between achieving the benefits of a lower wholesale price and the need for the access provider to make the necessary adjustments to its pricing strategy for its retail services.

51. In consequence, NICTA is proposing the maximum monthly prices as follows:

    (a) A decline on the maximum weighted average monthly price from its current level to PGK 6.00 per Mbps effective from the Commencement Date until 31 December 2026;

    (b) A maximum weighted average monthly price of PGK 3.30 per Mbps from 1 January 2027 until 31 December 2027;

    (c) A maximum weighted average monthly price of PGK 2.13 per Mbps from 1 January 2028 until 31 December 2028;

    (d) A maximum weighted average monthly price of PGK 1.66 per Mbps from 1 January 2029 until 31 December 2029; and

    (e) A maximum weighted average monthly price of PGK 1.24 per Mbps from 1 January 2030 until the expiration of the Wholesale Service Declaration No. 2 of 2025.

Question 7. Do you think the proposed prices are reasonable? If you do not think they are, please explain why.

7. PRICE RELATED TERMS AND CONDITIONS FOR SERVICE DECLARED IN WHOLESALE SERVICE DECLARATION NO. 3 OF 2025

7.1 Cost model results for wholesale Internet Access service

52. Again, the cost model used by NICTA for the earlier wholesale service includes this service as one of the services modelled. NICTA used the same approach as explained earlier. NICTA used the annual growth rate of wholesale Internet access service according to the table below.

Annual Growth Rate of Wholesale Internet Access (%)					
2025	**2026**	**2027**	**2028**	**2029**	**2030**
47%	55%	43%	41%	39%	37%

53. NICTA used the same weighted average cost of capital as for the other Declared Services. The average monthly cost of wholesale Internet access service in PGK per Mbps for each year starting with 2025 is shown below.

Monthly cost: Wholesale Internet access service (PGK per Mbps)					
2025	**2026**	**2027**	**2028**	**2029**	**2030**
72.45	52.94	40.47	30.98	23.68	18.10

Question 8. Do you think the calculated monthly costs are reasonable? If you do not think they are, please explain why.

7.2 Proposed glide path for the maximum price of wholesale Internet access service

54. Again, NICTA deems appropriate to institute a short glide path of three steps to smooth the transition from the current price level to cost-based prices. In consequence, NICTA is proposing the maximum monthly prices below:

(a) A decline on the maximum weighted average monthly price from its current level to PGK 99.50 per Mbps effective from the Commencement Date until 31 December 2026;

(b) A maximum weighted average monthly price of PGK 54.70 per Mbps from 1 January 2027 until 31 December 2027;

(c) A maximum weighted average monthly price of PGK 30.98 per Mbps from 1 January 2028 until 31 December 2028;

(d) A maximum weighted average monthly price of PGK 23.68 per Mbps from 1 January 2029 until 31 December 2029; and

(e) A maximum weighted average monthly price of PGK 18.10 per Mbps from 1 January 2030 until the expiration of the Wholesale Service Declaration No. 3 of 2025.

Question 9. Do you think the proposed prices are reasonable? If you do not think they are, please explain why.

Question 10. Is there any other matter in the Three Draft Determinations in Annex A that you wish to comment on? Please explain.

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ANNEX A. DRAFT DETERMINATIONS

DRAFT SERVICE-SPECIFIC PRICING PRINCIPLES FOR SERVICES DECLARED UNDER WHOLESALE SERVICE DECLARATION NO. 1 OF 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, 202X]

[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 Determination for Services Declared Under Wholesale Service Declaration No. 1 of 2025*

2 Commencement

(1) This Determination commences on [XX, Month 202X] (***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) 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 the geographic coverage area with the 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.

(c) ***"Declared Services"*** are – the wholesale international dedicated submarine cable capacity service and the international submarine cable facilities 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) ***"Gearing"*** is – the ratio of the debt to the total capital of a company (debt plus equity).

(f) ***"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.

(g) ***"International Submarine Cable Facilities Access Service"*** means the wholesale service defined in Part III of the Wholesale Service Declaration No. 1 of 2025.

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

(i) ***"Modified Scorched Node"*** means an approach to model the network topology where 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.

(j) ***"Scorched Earth"*** means an approach to model the network topology that 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.

(k) ***"Scorched Node"*** means an approach to model the network topology where the existing location of a reference operator's nodes are used to design the hypothetical or notional network in the cost model. There is room for optimizing the notional network in the model, but it is constrained by the predetermined location of the nodes. The resulting optimized network would have a similar footprint as the reference network

(l) ***"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.

(m) ***"Wholesale International Dedicated Submarine Cable Capacity Service"*** means the wholesale service defined in Part II of the Wholesale Service Declaration No. 1 of 2025.

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 2025:

- Wholesale International Dedicated Submarine Cable Capacity Service, and
- International Submarine Cable Facilities Access Service.

PART II – PRICING PRINCIPLES

Division 1 – Methodology to be used for calculating cost-based prices of Wholesale International Dedicated Submarine Cable Capacity Service and International Submarine Cable Facilities Access Service

5 Introduction

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

(2) Division 2 of this service-specific pricing principles presents the results of applying this methodology to ascertain the price of the Declared Services.

(3) Division 3 provides the method NICTA would follow to assess the access provider's compliance with the maximum allowable prices set in Division 2.

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 Declared Services.

(2) However, NICTA's view is that the cost modelling approach provides greater accuracy for calculating PNG-specific efficient costs of supplying those services.

(3) Despite its greater data requirements and modelling time, NICTA will use primarily a cost modelling approach to calculate PNG-specific efficient costs of providing the Declared Services. For the avoidance of doubt, when applying the cost modelling approach, NICTA would model the efficient costs of supplying the Declared Services in accordance with the GPPs in Section 124 of the Act.

(4) When using the cost modelling approach, NICTA may also use a benchmarking approach to justify some of the cost assumptions that would be used as inputs in the cost model.

(5) 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 Declared Services.

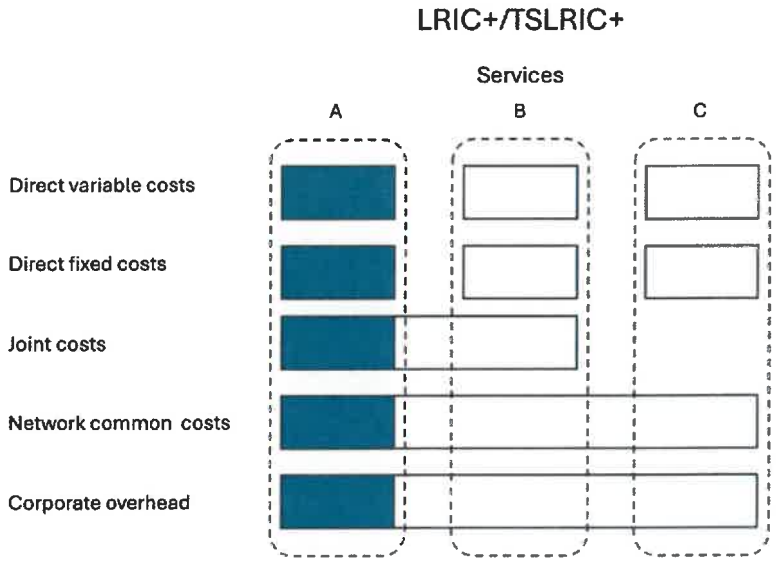
7 Modelling approach: Top-down, bottom-up, or hybrid

(1) In principle, NICTA could either use a Bottom-up, a Top-down, or a Hybrid cost model.

8 Approach for allocating costs

(1) NICTA will either use (i) a long-run incremental cost ("LRIC+") cost allocation approach that includes fair and reasonable common and joint costs (also known as TSLRIC+), or (ii) a fully allocated cost ("FAC") 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 the Modern Equivalent Asset, or (ii) use as the cost of replacement, the economic cost of the depreciated assets in use.

10 Network topology for cost model

(1) In principle, NICTA could either use a Scorched Node approach, a Scorched Earth approach, or a Modified Scorched Node approach. However, given that the Declared Services are supplied at fixed locations within the access provider network, NICTA will favour either, a Scorched Node approach or a Modified Scorched Node approach, provided that there is sufficient information about the location of the reference operator's nodes. PNG DataCo Limited ("DataCo") shall be the reference operator.

11 Hypothetical or notional operator's network coverage and demand

(1) The cost model to calculate cost-based prices for the Wholesale International Dedicated Submarine Cable Capacity Service, will be based on a notional or hypothetical operator with a market share, and network coverage, similar or equivalent to that of DataCo, with reasonable adjustments, as needed, to reflect efficient costs. A similar assumption would be applicable to calculate cost-based prices for the International Submarine Cable Facilities Access Service.

12 Modelled services and service increments

(1) NICTA's cost model for the Wholesale International Dedicated Submarine Cable Capacity Service will include, but not be limited to, the following components of the access provider's network:

(a) Wet plant: Consisting of a submarine cable, in-line repeaters, and branch units.

(b) Fronthaul: Beach manhole and associated facilities.

(c) Dry plant: Power feeder equipment, line terminal equipment, and optical add-drop multiplexers, and related facilities.

(d) Connection gateway.

(2) NICTA's cost model should include all the services' demands specified below.

(a) Services to be modelled:

(i) Wholesale international dedicated submarine cable capacity service

(ii) Wholesale long-haul dedicated capacity service

(iii) Wholesale local dedicated capacity service

(iv) Wholesale Internet access service.

(b) Modelled service increment units:

(i) Capacity services: Bandwidth connection

(3) NICTA's cost model for the International Submarine Cable Facilities Access Service will include but not be limited to the following components of a grid-connected shelter for telecommunications equipment:

(a) 20-foot telecommunications shelter and associated land and civil works.

(b) Standard racks and power distribution units.

(c) Redundant (N+1) uninterrupted power supply and Diesel back-up generator.

(d) Redundant (N+1) cooling system.

(e) Fire protection, monitoring and security systems.

(4) NICTA's cost model should include the following facilities access services:

(a) Space.

(b) Energy (i.e., electricity).

(5) Modelled service increment units:

(a) Space: Rack units ("RU"). Each RU is a standard space of 1.75 inches high and 19 inches wide on a standard cabinet for telecommunications equipment.

(b) Energy: Kilowatt-hour

(6) To calculate the monthly cost-based price of energy service, NICTA will use the following formula:

$$Energy\ Fee = \frac{E_{ICT}\ x\ Tariff}{12}\ x\ (1 + Mark - up)$$

Where,

E_{ICT}: Energy consumption increment due to the access seeker's collocated ICT equipment for one year, measured in Kilowatt-hour,

Tariff: Is the ongoing electricity tariff charge to the access provider in PNG Kina ("PGK") per Kilowatt-hour,

Mark-up: Is the mark-up to cover the access provider's corporate overhead common costs (%).

(7) To calculate the energy consumption of the access seeker's collocated ICT equipment for one year, NICTA should use the following formula:

$$E_{ICT} = PUE\ x\ ICT_{KW}\ x\ 8{,}760$$

Where,

PUE: Is the power use effectiveness factor which generally is between 1.5 and 1.8,

ICT_{KW}: Is the average power (KW) of the access seeker's collocated ICT equipment.

13 Method to allocate joint and common costs to services

(1) For the allocation of network related joint and common costs, NICTA will use the capacity-based allocation approach.

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

14 Depreciation

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

15 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 the costs of capital.

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

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, NICTA shall use a value that reflects a reasonably efficient capital structure and not the capital structure of the sole access provider, DataCo. 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) NICTA will use the following formula to calculate the cost of debt of the modelled notional access provider:

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

Where,

r_d: Cost of debt,

[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 accompanies. He is a professor of finance at the Stern School of Business at New York University (NYU).

r_f: Risk-free rate of return

CRP: Country risk premium, and

D_p: Debt-risk premium.

(4) 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.

(5) 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.

(6) 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.

(7) NICTA will use the following formula to calculate the cost of equity capital for the modelled notional access provider:

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

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.

(8) 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"). To implement this approach, NICTA could use Prof. Damodaran's calculation of the MRP.

(9) 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. To implement this, NICTA could 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

16 General terms and conditions for the supply of the Declared Services

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

17 Maximum monthly weighted average price for leased Wholesale International Dedicated Submarine Cable Capacity Service

(1) An access provider may not charge a monthly weighted average price for leased Wholesale International Dedicated Submarine Cable Capacity Service that exceeds:

(a) PGK 47.20 per megabit per second ("Mbps") as of the Commencement Date of this Determination until 31 December 2026.

(b) PGK 21.24 per Mbps from 1 January 2027 until 31 December 2027.

(c) PGK 9.79 per Mbps from 1 January 2028 until 31 December 2028.

(d) PGK 7.21 per Mbps from 1 January 2029 until 31 December 2029.

(e) PGK 5.29 per Mbps from 1 January 2030 until expiration of this Determination.

18 Maximum monthly prices for International Submarine Cable Facilities Access Service

(1) An access provider may not charge a monthly price for cabinet space that exceeds the values below. The prices in the table below shall become effective on the Commencement Date of this Determination until 31 December 2026. For the period starting on 1 January 2027 until 31 December 2027, the prices may be adjusted using the PNG Retail Price Index or equivalent, of the prior year. Similar adjustments to prices may be applied for the 2028, 2029, and 2030 calendar years.

Maximum allowable monthly price for leased cabinet space (PGK)			
Cabinet Space	**Monthly Price (PGK)**	**Monthly Price per RU (PGK per RU)**	**Maximum Average Power of ICT Equipment (Watts)**
2 RU	689.08	344.54	690
10 RU	1,607.85	160.79	1,600

21 RU	2,871.16	136.72	2,860
42 RU	4,823.55	114.85	4,800
Note: 1 Rack Unit (RU) is equivalent to a space on a standard cabinet of 19 inched wide by 1.75 inches high. For each standardized cabinet space there is an associated maximum average power of the collocated ICT equipment that should not be exceeded. If the power of the ICT equipment exceeds the limits in the table, a larger cabinet space may be required.			

(2) An access provider may not charge a monthly recuring change that exceeds a value calculated with the following formula:

$$Energy\ Fee\ (PGK) = 1{,}284.80\ x\ ICT_{KW}\ x\ Tariff$$

Where,

Energy Fee: is the monthly fee in PGK charged to access seekers for the use of the access supplier's electricity,

ICT_{KH}: Is the average power in Kilowatts of the access seeker's collocated ICT equipment,

Tariff: is the tariff in PGK per Kilowatt-hour that the power company charges the access provider for electricity consumption.

19 One-time fees in connection to Declared Services

(1) An access provider may charge a one-time fee to access seekers when it requires to condition or alter its facilities or network, or to incur costs in connection with the provision of a Declared Service.

(2) These one-time fees shall be cost-based in accordance with Section 134 (2) of the Act.

20 Amendment to price schedules in interconnection agreements

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

(2) NICTA understands that an access provider may leases point-to-point links of various capacity sizes (i.e., Mbps), and that higher capacity links command a lower price per unit of capacity (PGK per Mbps) than lower capacity links. Therefore, it is possible for links of lower capacity than average to exhibit a price per unit of capacity that is higher than the values in Section 17 (1). Conversely, links of higher capacity than average may exhibit a price per unit of capacity that is lower than the values in Section 17 (1).

Division 3 – Compliance with maximum allowable prices

21 Test of compliance for the monthly weighted average price per unit of capacity

(1) To be in compliance with the maximum monthly weighted average price per unit of capacity, an access provider would need to adjust the price of their point-to-point links (of various capacities) so that the monthly weighted average price per unit of capacity (of all leased links) is not higher than the maximum values in Section 17 (1).

(2) NICTA may assess the access provider's compliance with the maximum weighted average price of leased Wholesale International Dedicated Submarine Cable Capacity Service on a quarterly basis and based on monthly data provided by the access provider.

(3) To compute the monthly weighted average price charged by the access provider for Wholesale International Dedicated Submarine Cable Capacity Service, NICTA may follow these steps for each relevant period in Section 17 (1):

(a) For each leased point-to-point link ("P2P") in a given month, add the monthly recurring charges due to leased capacity across all P2P links in the month;

(b) For each leased P2P link in a given month, add the monthly leased capacity (in Mbps) across all P2P links in the month;

(c) The month's weighted average price per unit of capacity (PGK per Mbps) shall be calculated by dividing the amount in paragraph (a) by the amount in paragraph (b). In a formulaic way, this can be represented by the following expression,

$$Weighted\ Average\ Price_i = \frac{\sum_{j=1}^{j=n} Rev_{ij}}{\sum_{j=1}^{j=n} C_{ij}}$$

where,

Weighted Average Price$_i$: Is the weighted average price in month "*i*",

Rev$_{ij}$: Is the recurring charge for leased capacity of P2P link "*j*" in month "*i*",

C_{ij}: Is the leased capacity of P2P link "*j*" in month "*i*", and

n: Is the number of leased P2P links in month "*i*".

(d) If the amount in paragraph (c) is higher than the maximum allowable price in Section 17 (1) for the period under analysis, then the access provider would not be in compliance.

22 Test of compliance with the maximum monthly prices for International Submarine Cable Facilities Access Service

(1) NICTA may assess the access provider's compliance with the maximum monthly charges for cabinet space and energy in Section 18 on a quarterly basis and based on monthly data supplied by the access provider.

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DRAFT SERVICE-SPECIFIC PRICING PRINCIPLES FOR SERVICES DECLARED UNDER WHOLESALE SERVICE DECLARATION NO. 2 OF 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, 202X]

[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 Determination for Services Declared Under Wholesale Service Declaration No. 2 of 2025*

2 Commencement

(1) This Determination commences on [XX, Month 202X] (***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) 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 the geographic coverage area with the 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.

(c) ***"Declared Services"*** are – the wholesale long-haul dedicated capacity service and the wholesale local dedicated capacity 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) ***"Gearing"*** is – the ratio of the debt to the total capital of a company (debt plus equity).

(f) ***"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.

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

(h) ***"Modified Scorched Node"*** means an approach to model the network topology where 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.

(i) ***"Scorched Earth"*** means an approach to model the network topology that 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.

(j) ***"Scorched Node"*** means an approach to model the network topology where the existing location of a reference operator's nodes are used to design the hypothetical or notional network in the cost model. There is room for optimizing the notional network in the model, but it is constrained by the predetermined location of the network nodes. The resulting optimized network would have a similar footprint as the reference network.

(k) ***"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.

(l) ***"Wholesale Local Dedicated Capacity Service"*** means the wholesale service defined in Part III of the Wholesale Service Declaration No. 2 of 2025.

(m) ***"Wholesale Long-Haul Dedicated Capacity Service"*** means the wholesale service defined in Part II of the Wholesale Service Declaration No. 2 of 2025.

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.2 of 2025:

- Wholesale Long-Haul Dedicated Capacity Service, and
- Wholesale Local Dedicated Capacity Service.

PART II – PRICING PRINCIPLES

Division 1 – Methodology to be used for calculating cost-based prices of Wholesale Long-Haul Dedicated Capacity Service and Wholesale Local Dedicated Capacity Service

5 Introduction

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

(2) Division 2 of this service-specific pricing principles presents the results of applying this methodology to ascertain the price of the Declared Services.

(3) Division 3 provides the method NICTA would follow to assess the access provider's compliance with the maximum allowable prices set in Division 2.

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 Declared Services.

(2) However, NICTA's view is that the cost modelling approach provides greater accuracy for calculating PNG-specific efficient costs of supplying those services.

(3) Despite its greater data requirements and modelling time, NICTA will use primarily a cost modelling approach to calculate PNG-specific efficient costs of providing the Declared Services. For the avoidance of doubt, when applying the cost modelling approach, NICTA would model the efficient costs of supplying the Declared Services in accordance with the GPPs in Section 124 of the Act.

(4) When using the cost modelling approach, NICTA may also use a benchmarking approach to justify some of the cost assumptions that would be used as inputs in the cost model.

(5) 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 Declared Services.

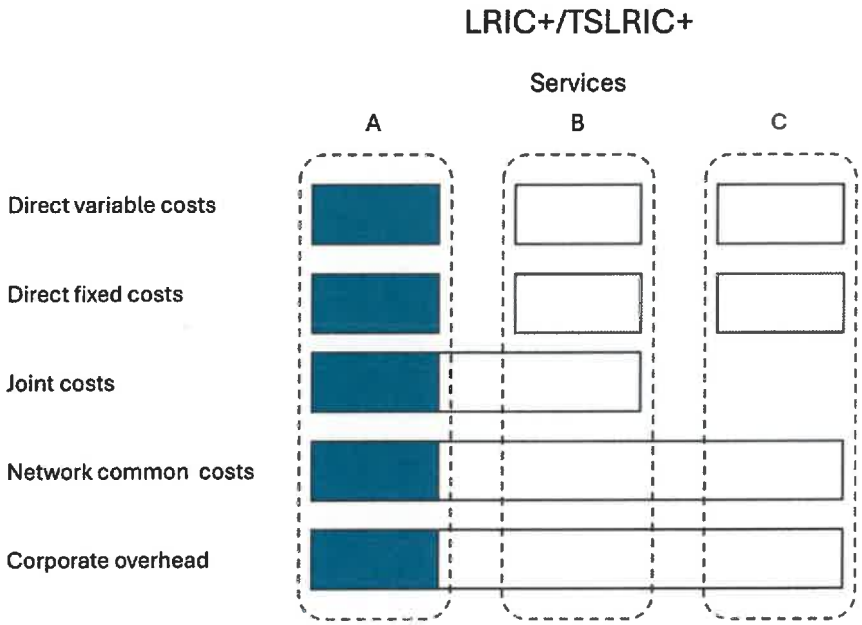
7 Modelling approach: Top-down, bottom-up, or hybrid

(1) In principle, NICTA could either use a Bottom-up, a Top-down, or a Hybrid Cost Model.

8 Approach for allocating costs

(1) NICTA will either use (i) a long-run incremental cost ("LRIC+") cost allocation approach that includes fair and reasonable common and joint costs (also known as TSLRIC+), or (ii) a fully allocated cost ("FAC") 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 the Modern Equivalent Asset, or (ii) use as the cost of replacement, the economic cost of the depreciated assets in use.

10 Network topology for cost model

(1) In principle, NICTA could either use a Scorched Node approach, a Scorched Earth approach, or a Modified Scorched Node approach. However, given that the Declared Services are supplied at fixed locations within the access provider's network, NICTA will favour either, a Scorched Node approach or a Modified Scorched Node approach, provided that there is sufficient information about the location of the reference operator's nodes. PNG DataCo Limited ("DataCo") shall be the reference operator.

11 Hypothetical or notional operator's network coverage and demand

(1) The cost model to calculate cost-based prices for the Declared Services, will be based on a notional or hypothetical operator with a market share, and network coverage,

similar or equivalent to that of DataCo, with reasonable adjustments, as needed, to reflect efficient costs.

12 Modelled services and service increments

(1) NICTA's cost model will include, but not be limited to, the following components of the access provider's network:

(a) Access nodes (points of presence)

(b) Aggregation and repeaters nodes

(c) Terrestrial and submarine fibre optic cables

(d) Cable landing stations

(e) Core network

(f) Dark fibre

(2) NICTA's cost model should include all the services' demands specified below.

(a) Services to be modelled:

(i) Wholesale international dedicated submarine cable capacity service

(ii) Wholesale long-haul dedicated capacity service

(iii) Wholesale local dedicated capacity service

(iv) Wholesale Internet access service

(b) Modelled service increment units:

(i) Capacity services: Bandwidth connection

13 Method to allocate joint and common costs to services

(1) For the allocation of network related joint and common costs, NICTA will use the capacity-based allocation approach.

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

14 Depreciation

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

15 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 the costs of capital.

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

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, NICTA shall use a value that reflects a reasonably efficient capital structure and not the capital structure of the sole access provider, DataCo. 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) NICTA will use the following formula to calculate the cost of debt of the modelled notional access provider:

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

Where,

r_d: Cost of debt,

r_f: Risk-free rate of return

[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 accompanies. He is a professor of finance at the Stern School of Business at New York University (NYU).

CRP: Country risk premium, and

D_p: Debt-risk premium.

(4) 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.

(5) 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.

(6) 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.

(7) NICTA will use the following formula to calculate the cost of equity capital for the modelled notional access provider:

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

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.

(8) 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"). To implement this approach, NICTA could use Prof. Damodaran's calculation of the MRP.

(9) 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. To implement this, NICTA could 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

16 General terms and conditions for the supply of the Declared Services

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

17 Maximum monthly weighted average price for leased Wholesale Long-Haul Dedicated Capacity Service

(1) An access provider may not charge a monthly weighted average price for leased Wholesale Long-Haul Dedicated Capacity Service that exceeds:

(a) PNG Kina ("PGK") 79.56 per megabit per second ("Mbps") as of the Commencement Date of this Determination until 31 December 2026.

(b) PGK 60.86 per Mbps from 1 January 2027 until 31 December 2027.

(c) PGK 46.05 per Mbps from 1 January 2028 until 31 December 2028.

(d) PGK 34.22 per Mbps from 1 January 2029 until 31 December 2029.

(e) PGK 25.03 per Mbps from 1 January 2030 until expiration of this Determination.

18 Maximum monthly weighted average price for leased Wholesale Local Dedicated Capacity Service

(1) An access provider may not charge a monthly weighted average price for leased Wholesale Local Dedicated Capacity Service that exceeds:

(a) PGK 6.00 per Mbps as of the Commencement Date of this Determination until 31 December 2026.

(b) PGK 3.30 per Mbps from 1 January 2027 until 31 December 2027.

(c) PGK 2.13 per Mbps from 1 January 2028 until 31 December 2028.

(d) PGK 1.66 per Mbps from 1 January 2029 until 31 December 2029.

(e) PGK 1.24 per Mbps from 1 January 2030 until expiration of this Determination.

19 One-time fees in connection to Declared Services

(1) An access provider may charge a one-time fee to access seekers when it requires to condition or alter its facilities or network, or to incur costs in connection with the provision of a Declared Service.

(2) These one-time fees shall be cost-based in accordance with Section 134 (2) of the Act.

20 Amendment to price schedules in interconnection agreements

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

(2) NICTA understands that an access provider may leases point-to-point links of various capacity sizes (i.e., Mbps), and that higher capacity links command a lower price per unit of capacity (PGK per Mbps) than lower capacity links. Therefore, it is possible for links of lower capacity than average to exhibit a price per unit of capacity that is higher than the values in Sections 17 (1) and 18 (1). Conversely, links of higher capacity than average may exhibit a price per unit of capacity that is lower than the values in Sections 17 (1) and 18 (1).

Division 3 – Compliance with maximum allowable prices

21 Test of compliance for the monthly weighted average price per unit of capacity

(1) To be in compliance with the maximum monthly weighted average price per unit of capacity, an access provider would need to adjust the price of their point-to-point links (of various capacities) so that the monthly weighted average price per unit of capacity (of all leased links) is not higher than the maximum values in Sections 17 (1) and 18 (1).

(2) NICTA may assess the access provider's compliance with the maximum weighted average price of leased Wholesale Long-haul Dedicated Capacity Service and of Wholesale Local Dedicated Capacity Service on a quarterly basis and based on monthly data provided by the access provider.

(3) To compute the monthly weighted average price charged by the access provider for the Declared Services, NICTA may follow these steps for each relevant period in Sections 17 (1) and 18 (1) separately:

(a) For each leased point-to-point link ("P2P") in a given month, add the monthly recurring charges due to leased capacity across all P2P links in the month.

(b) For each leased P2P link in a given month, add the monthly leased capacity (in Mbps) across all P2P links in the month.

(c) The month's weighted average price per unit of capacity (PGK per Mbps) shall be calculated by dividing the amount in paragraph (a) by the amount in paragraph (b). In a formulaic way, this can be represented by the following expression,

$$Weighted\ Average\ Price_i = \frac{\sum_{j=1}^{j=n} Rev_{ij}}{\sum_{j=1}^{j=n} C_{ij}}$$

where,

Weighted Average Price$_i$: Is the weighted average price in month "*i*",

Rev$_{ij}$: Is the recurring charge for leased capacity of P2P link "*j*" in month "*i*",

C$_{ij}$: Is the leased capacity of P2P link "*j*" in month "*i*", and

n: Is the number of leased P2P links in month "*i*".

(d) If the amount in paragraph (c) is higher than the maximum allowable price in Section 17 (1), or Section 18 (1), for the period under analysis, then the access provider would not be in compliance.

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DRAFT SERVICE-SPECIFIC PRICING PRINCIPLES FOR SERVICE DECLARED UNDER WHOLESALE DECLARATION NO. 3 OF 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, 202X]

[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 Determination for Service Declared Under Wholesale Service Declaration No. 3 of 2025*

2 Commencement

(1) This Determination commences on [XX, Month 202X] (***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) 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 the geographic coverage area with the 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.

(c) ***"Declared Service"*** is – the wholesale Internet 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) ***"Gearing"*** is – the ratio of the debt to the total capital of a company (debt plus equity).

(f) ***"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.

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

(h) ***"Modified Scorched Node"*** means an approach to model the network topology where 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.

(i) ***"Scorched Earth"*** means an approach to model the network topology that 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.

(j) ***"Scorched Node"*** means an approach to model the network topology where the existing location of a reference operator's nodes are used to design the hypothetical or notional network in the cost model. There is room for optimizing the notional network in the model, but it is constrained by the predetermined location of the network nodes. The resulting optimized network would have a similar footprint as the reference network.

(k) ***"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.

(l) ***"Wholesale Internet Access Service"*** means the wholesale service defined in Part II of the Wholesale Service Declaration No. 3 of 2025.

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 service declared by the Minister in the Wholesale Service Declaration No. 3 of 2025:

- Wholesale Internet Access Service.

PART II – PRICING PRINCIPLES

Division 1 – Methodology to be used for calculating cost-based prices of Wholesale Internet Access Service

5 Introduction

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

(2) Division 2 of this service-specific pricing principles presents the results of applying this methodology to ascertain the price of the Declared Service.

(3) Division 3 provides the method NICTA would follow to assess the access provider's compliance with the maximum allowable prices set in Division 2.

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 Declared Service.

(2) However, NICTA's view is that the cost modelling approach provides greater accuracy for calculating PNG-specific efficient costs of supplying that service.

(3) Despite its greater data requirements and modelling time, NICTA will use primarily a cost modelling approach to calculate PNG-specific efficient costs of providing the Declared Service. For the avoidance of doubt, when applying the cost modelling approach, NICTA would model an efficient notional or reference access provider to calculate the efficient costs of supplying the Declared Service in accordance with the GPPs in Section 124 of the Act.

(4) When using the cost modelling approach, NICTA may also use a benchmarking approach to justify some of the cost assumptions that would be used as inputs in the cost model.

(5) 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 Declared Service.

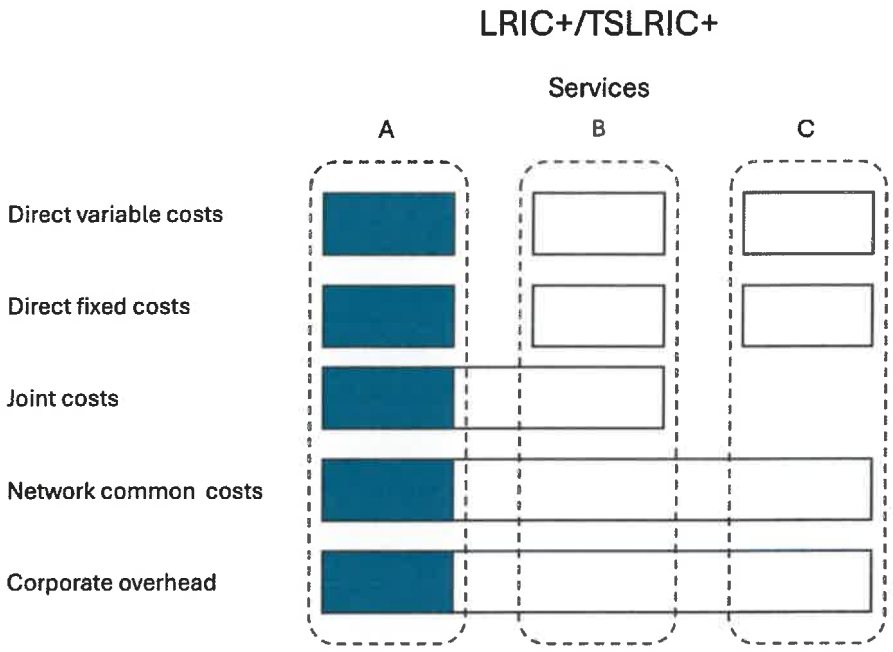
7 Modelling approach: Top-down, bottom-up, or hybrid

(1) In principle, NICTA could either use a Bottom-up, a Top-down, or a Hybrid Cost Model.

8 Approach for allocating costs

(1) NICTA will either use (i) a long-run incremental cost ("LRIC+") cost allocation approach that includes fair and reasonable common and joint costs (also known as TSLRIC+), or (ii) a fully allocated cost ("FAC") 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 Service. Specifically, NICTA will value the capital related costs by either (i) using the cost of replacement with the Modern Equivalent Asset, or (ii) use as the cost of replacement, the economic cost of the depreciated assets in use.

10 Network topology for cost model

(1) In principle, NICTA could either use a Scorched Node approach, a Scorched Earth approach, or a Modified Scorched Node approach. However, given that the Declared Service is supplied at fixed locations within the access provider's network, NICTA will favour either a Scorched Node approach or a Modified Scorched Node approach, provided that there is sufficient information about the location of the reference operator's nodes. PNG DataCo Limited ("DataCo") shall be the reference operator.

11 Hypothetical or notional operator's network coverage and demand

(1) The cost model to calculate cost-based prices for the Wholesale Internet Access Service, will be based on a notional or hypothetical operator with a market share, and network coverage, similar or equivalent to that of DataCo, with reasonable adjustments, as needed, to reflect efficient costs.

12 Modelled services and service increment

(1) NICTA's cost model for Wholesale Internet Access Service will include, but not be limited to, the following components of the access provider's network:

(a) National terrestrial fibre optic backbone

(b) Kumul submarine cable network

(c) Metropolitan fibre optic networks

(d) International submarine cable network

(2) NICTA's cost model should include all the services demands specified below.

(a) Services to be modelled:

(i) Wholesale international dedicated submarine cable capacity service

(ii) Wholesale long-haul dedicated capacity service

(iii) Wholesale local dedicated capacity service

(iv) Wholesale Internet access service

(b) Modelled service increment units:

(i) Capacity: Bandwidth connection

13 Method to allocate joint and common costs to services

(1) For the allocation of network related joint and common costs, NICTA will use the capacity-based allocation approach.

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

14 Depreciation

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

15 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 the costs of capital.

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

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, NICTA shall use a value that reflects a reasonably efficient capital structure and not the capital structure of the sole access provider, DataCo. 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) NICTA will use the following formula to calculate the cost of debt of the modelled notional access provider:

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

Where,

r_d: Cost of debt,

r_f: Risk-free rate of return

CRP: Country risk premium, and

D_p: Debt-risk premium.

(4) 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.

(5) 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

[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 accompanies. He is a professor of finance at the Stern School of Business at New York University (NYU).

interest rate of the PNG government bond and the risk-free interest rate for a bond of comparable maturity.

(6) 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.

(7) NICTA will use the following formula to calculate the cost of equity capital for the modelled notional access provider:

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

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.

(8) 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"). To implement this approach, NICTA could use Prof. Damodaran's calculation of the MRP.

(9) 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. To implement this, NICTA could 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

16 General terms and conditions for the supply of Wholesale Internet Access Service

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

17 Maximum monthly weighted average price for Wholesale Internet Access Service

(1) An access provider may not charge a monthly weighted average price for Wholesale Internet Access Service that exceeds:

(a) PNG Kina ("PGK") 99.50 per megabit per second ("Mbps") as of the Commencement Date of this Determination until 31 December 2026.

(b) PGK 54.70 per Mbps from 1 January 2027 until 31 December 2027.

(c) PGK 30.98 per Mbps from 1 January 2028 until 31 December 2028.

(d) PGK 23.68 per Mbps from 1 January 2029 until 31 December 2029.

(e) PGK 18.10 per Mbps from 1 January 2030 until expiration of this Determination.

18 One-time fees in connection to Declared Services

(1) An access provider may charge a one-time fee to access seekers when it requires to condition or alter its facilities or network, or to incur costs in connection with the provision of a Declared Service.

(2) These one-time fees shall be cost-based in accordance with Section 134 (2) of the Act.

19 Amendment to price schedules in interconnection agreements

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

(2) NICTA understands that an access provider may sell Wholesale Internet Access Service with various port capacity sizes (i.e., Mbps), and that higher capacity ports command a lower price per unit of capacity (PGK per Mbps) than lower capacity ports. Therefore, it is possible for ports of lower capacity than average to exhibit a price per unit of capacity that is higher than the values in Section 17 (1). Conversely, ports of higher capacity than average may exhibit a price per unit of capacity that is lower than the values in Section 17 (1).

Division 3 – Compliance with maximum allowable prices

20 Test of compliance for the monthly weighted average price per unit of capacity

(1) To be in compliance with the maximum monthly weighted average price per unit of capacity, an access provider would need to adjust the price of Wholesale Internet

Access Service for various port capacities, so that the monthly weighted average price per unit of capacity for all sales is not higher than the maximum values in Section 17 (1).

(2) NICTA may assess the access provider's compliance with the maximum weighted average price of Wholesale Internet Access Service on a quarterly basis and based on monthly data provided by the access provider.

(3) To compute the monthly weighted average price charged by the access provider, NICTA may follow these steps for each relevant period in Section 17 (1):

(a) For each leased Internet access port in a given month, add the monthly recurring charges due to leased capacity across all ports in the month.

(b) For each leased Internet access port in a given month, add the monthly leased Internet capacity (in Mbps) across all ports in the month.

(c) The month's weighted average price per unit of capacity (PGK per Mbps) shall be calculated by dividing the amount in paragraph (a) by the amount in paragraph (b). In a formulaic way, this can be represented by the following expression,

$$Weighted\ Average\ Price_i = \frac{\sum_{j=1}^{j=n} Rev_{ij}}{\sum_{j=1}^{j=n} C_{ij}}$$

where,

Weighted Average Price$_i$: Is the weighted average price in month "*i*",

Rev$_{ij}$: Is the recurring charge for leased Internet capacity of port "*j*" in month "*i*",

C_{ij}: Is the leased Internet capacity of port "*j*" in month "*i*", and

n: Is the number of leased Internet ports in month "*i*".

(d) If the amount in paragraph (c) is higher than the maximum allowable price in Section 17 (1) for the period under analysis, then the access provider would not be in compliance.

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