Public Inquiry
into a potential
Retail Service Determination
regarding certain
mobile telephony services
supplied by Digicel

DISCUSSION PAPER

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1 EXECUTIVE SUMMARY

The *National Information and Communications Technology Act 2009* (the Act) provides for NICTA to conduct a public inquiry into whether or not particular retail services should be subject to, or continue to be subject to, a retail service determination. A retail service determination is a regulation that is made by the Minister, based on a recommendation from NICTA, which can specify the retail pricing, service standards or pricing principles in relation to the supply of a particular retail service.

In September 2012, the Minister, acting on NICTA's recommendation, made a retail service determination—*Retail Service Determination No.1 of 2012* (the 2012 Determination)—that subjected mobile originated retail national voice call services supplied by Digicel on a prepaid basis to a pricing principle that limited any difference between on-net and off-net prices to 40%. The 2012 determination expired in October 2017.

NICTA staff have undertaken a fresh assessment of the retail mobile services market to determine whether or not the circumstances of the market warrant a recommendation being made to the Minister for a new retail service determination similar to the 2012 determination. NICTA staff are of the preliminary view that, given the circumstances of the market and the dominance of Digicel, a new retail service determination should be recommended to the Minister that would:

- apply to Digicel's supply of mobile originated retail national voice calls and SMS (both prepaid and post-paid);
- establish a pricing principle preventing any differentiation in Digicel's average retail prices based on whether the call (or SMS) is to terminate on-net or off-net; and
- establish a second pricing principle preventing Digicel's average retail prices for on-net calls (or SMS) being below the applicable mobile termination rate; and
- ensure that on-net and off-net voice calls and SMS are charged and billed on a consistent basis (i.e. without discrimination in the use of per second or per minute charging).

A draft retail service determination to this effect is provided at Attachment A for comment. NICTA staff are of the preliminary view that this draft determination would satisfy all of the retail regulation criteria in section 158 of the Act.

NICTA invites interested parties to submit written comments in response to these preliminary views, as further explained and discussed herein, together with any other issues raised in this discussion paper. Submissions should be supported with evidence and data, particularly if respondents have a different interpretation or view of something from that of NICTA staff. Submissions should be submitted via email to **inquiry.submission@nicta.gov.pg** and must be received **by close of business 8th January 2018.** Copies of all submissions received will be published on NICTA's Public Register consistent with the requirements on NICTA under subsection 229(3) of the Act.

Claims for confidentiality over any written information submitted to NICTA in response to this public consultation process are governed by section 44 of the Act. Under section 44 of the Act, NICTA ultimately determines whether or not it will accept a claim for confidentiality and exclude from publication the information that is subject to that claim. The process for claiming confidentiality is set out in the *Guidelines on the submission of written comments to public consultations and public inquires* (October 2014).

2 BACKGROUND

2.1 Retail Service Determinations

2.1.1 Part VII of the *National Information and Communications Technology Act 2009* (the Act) sets out special arrangements relating to consumer protection and the regulation of retail pricing. Under section 157 of the Act, NICTA is able to hold a public inquiry under section 230 of the Act to determine whether or not it should recommend to the Minister that one or more particular retail services supplied by one or more specified operator licensees should be subject to a retail service determination.

2.1.2 A retail service determination is a regulation that is made by the Minister based on the recommendation of NICTA. NICTA's recommendation must be based on application of the retail regulation criteria that are set out in Section 158 of the Act.

2.1.3 Under subsection 161(2) of the Act a retail service determination may do one or more of the following in respect of a specific retail service:

- regulate prices for the supply of the retail service;
- specify service standards that the operator licensee supplying the retail service must meet;
- specify any pricing policies and/or principles that must be complied with by the operator licensee in pricing the retail service;
- specify conditions relating to the price of the retail service, including that any calculation is to be performed, or a matter is to be determined, by NICTA;
- require the operator licensee to provide specified information to NICTA, retail customers, or any other persons;
- require the operator licensee to supply the retail service in particular areas or to particular classes of retail customer; and/or
- require the operator licensee to comply with any terms and conditions advised by NICTA that NICTA considers are necessary or desirable to give effect to any of the matters listed in subsection 161(2) of the Act;

2.1.4 A retail service determination may not have retrospective effect.

2.2 Retail Service Determination No. 1 of 2012

2.2.1 On 24th September 2012, NICTA recommended to the Minister a retail service determination that subjected mobile originated retail national voice call services supplied by Digicel (PNG) Limited (Digicel) on a prepaid basis to a pricing principle that limited any difference between on-net and off-net prices to 40%, except to the extent that:

- any greater difference in prices was objectively justifiable based on differences in the costs of supplying the service; or
- any greater difference in prices was part of a limited period promotional offer the terms of which had been approved by NICTA.

2.2.2 NICTA's recommendation led to the Minister making *Retail Service Determination No.1 of 2012* (the 2012 Determination) on 25th September 2012,[1] which came into effect on 25th October 2012.

2.2.3 NICTA's recommendation was reviewed by the ICT Appeals Panel following separate applications by bmobile Limited (bmobile), Digicel, and Telikom PNG Limited (Telikom).

2.2.4 NICTA's recommendation to restrict Digicel's on-net/off-net price discrimination was confirmed by the ICT Appeals Panel on 18th December 2012. However, the ICT Appeals Panel rejected the proposed 40% allowance and the allowance for objectively justified differences in cost.

2.2.5 The ICT Appeals Panel thus varied NICTA's decision in part, believing that the correct recommendation to the Minister was a pricing policy or principle that prevented any on-net/off-net price discrimination in Digicel's supply of prepaid mobile originated retail national voice call services. However, the Minister had already made a decision under section 160 of the Act based on NICTA's original recommendation and the Minister did not amend that decision following the decision of the ICT Appeals Panel.

2.2.6 The 2012 Determination was specified to apply for a period of five years. It expired on 25th October 2017.

2.2.7 During the term of the 2012 Determination:

- the difference between Digicel's on-net and off-net prices for prepaid call minutes remained set at the 40% allowed maximum;
- Digicel did not seek NICTA's approval for any promotion involving on-net/off-net price discrimination (as was provided for in the 2012 Determination);
- Digicel did not propose that there was any objectively justifiable difference in the cost of supplying off-net calls relative to on-net calls;

[1] National Gazette No. G361 (25th September, 2012)

- Digicel restructured its on-net call pricing and replaced the use of different rates for the first and subsequent call minutes with a single rate per call minute;
- Digicel aligned its on-net/off-net pricing of prepaid SMS at 25 toea per message;
- the mobile termination rate (MTR) was reduced as shown in Figure 1 (and set at the same level as the fixed termination rate).

Figure 1: Mobile termination rates (toea per minute)

Period	Prior to 11/6/2013	12/6/2013–11/6/2014	12/6/2014–11/6/2015	12/6/2015–11/6/2016	12/6/2016–11/6/2017	12/6/2017–11/6/2018
MTR	26 (peak) 22 (off-peak)	16	16	13	10	8

2.2.8 Just prior to the expiry of the 2012 Determination, Digicel introduced promotional pricing that charged a single rate of 1 toea per second for all prepaid calls, regardless of whether they terminated on-net or off-net. That promotion has since ended.

2.2.9 Immediately following the expiry of the 2012 Determination:

- Digicel increased by 19% its standard price for off-net prepaid calls from 84 toea per call minute to one Kina per call minute;
- Digicel increased the difference between its standard on-net and off-net prices for prepaid call minutes from 40% to 67% (reinstating an off-net price premium equivalent to that which existed for the first call minute prior to the 2012 Determination); and
- Digicel has adopted per second charging for on-net prepaid calls while retaining per minute charging for off-net prepaid calls.

3 RELEVANT MARKET

3.1 Market Definition

3.1.1 Pursuant to the approach set out in NICTA's *Market Analysis Guidelines*, NICTA staff consider that mobile originated retail national voice call services (including SMS) are supplied within a national retail mobile services (cluster) market that comprises mobile access and mobile call origination (whether supplied on a prepaid or post-paid basis), and complementary text-based services such as SMS.

3.1.2 Although there is potential for substitution between mobile originated and fixed originated calls, and between mobile access and fixed access, that potential is largely in one-direction with fixed telephony being substituted in favour of mobile telephony. The geographic, service and mobility limitations of fixed telephony and the fixed network operator (relative to mobile) limit the potential for substitution of mobile telephony in favour of fixed telephony services.

3.1.3 National calls are available to fixed and mobile telephony customers and are interchangeable in terms of the characteristics of the call. Whether a customer or end-user makes a call from a mobile or from a fixed location device will depend on a range of factors that have little to do with the physical characteristics and typical quality of the call. These factors include:

- relative price;
- whether the call is part of a bundle with close to zero incremental price;
- whether the called party has a mobile or a fixed service, which may also affect price;
- whether the call is work-related or personal; and
- whether a fixed service calling option is available at the location of the calling party.

3.1.4 It is not clear whether a small but significant non-transitory increase in price (SSNIP) applied in relation to either fixed or mobile calls would result in a profit or loss for the operator in the supply of fixed calls or in the supply of mobile calls. The reason is that the availability of call bundles and other price/service options, such as over the top (OTT) service calls, would tend to obscure or confuse the price signal that results from a price increase. Although NICTA does not have data on the volume of OTT call minutes in PNG, around the world calls via OTT operators account for a growing proportion of international calls.[2] The quality may be variable but calls that are on

[2] ITU analysis suggests that worldwide over 40% of international voice minutes were VOIP based, of which a significant proportion was via OTT operators in 2014, and that OTT Messaging has displaced all growth in SMS traffic, www.itu.int/en/ITU-D/Regional-Presence/ArabStates/Documents/events/2015/EFF/Pres/Maaref%20OTT%20Presentation%20Manama%202015.pdf

OTT services (such as Skype, WhatsApp, and Viber) at both ends are free to the caller, and OTT calls to national networks are usually much cheaper than PSTN or mobile network calls.

3.1.5 In any event, analysis of the market with and without fixed telephony does not change the outcome because of the relatively small proportion of call minutes that originate on fixed services.[3]

3.1.6 Consideration was given to whether both prepaid and post-paid calls should be included in the same market. In terms of physical characteristics the calls are indistinguishable. They differ in relation to the manner in which they are charged and the prices that are sought for each type of call. If the price of one type of call (say prepaid) increases there may be some increased usage of other types of calls (fixed, mobile post-paid, etc) but subscribers to prepaid services do not always have the creditworthiness or the payment facilities to readily switch to post-paid services. There is thus limited substitutability. For the purposes of the present analysis it is proposed to include both prepaid and post-paid services in the same market but to treat them as separate sub-markets for the application of the regulatory solution proposed and therefore for compliance purposes.

3.1.7 Consideration was also given to whether mobile data services are in the same market as mobile voice calls. Mobile data is not a part substitute for voice calls in the same way or to the same extent as SMS is. Mobile data may offer a substitute transaction and displace the need for a voice transaction, but this will only apply for a small proportion of voice calls, such as where commercial transactions may be effected by either means. Although mobile data can be sold packaged with mobile voice or as a cluster, it is also supplied as a stand-alone service offering. NICTA staff consider that mobile data comprises a separate market (with or without fixed data) from mobile voice calls, given that the level of substitution of mobile data and mobile voice markets is limited, as explained above.

3.2 Market structure

3.2.1 The retail mobile services market is characterised by two significant structural barriers to entry:

(a) large sunk costs of network construction, which increase barriers to entry and exit and can give significant competitive advantages to first movers; and

(b) significant economies of scale, scope and density, which put newer or smaller entrants at a competitive disadvantage to larger incumbent(s) or first-movers who have a lower per-unit cost base.

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[3] In its review of the 2012 Determination the ICT Appeals Panel noted that "the market is unlikely to be broader than 'the retail mobile services market' and even if it is narrower, this is unlikely to alter the finding in relation to Digicel's market power." *Appeals Panel Report*, para. 33 page 10, 18 December 2012

3.2.2 These structural barriers apply notwithstanding that mobile networks are scalable to some extent. Economies of scale in mobile networks tend to decrease after around 30% of market share (depending on the absolute size of the market).[4] This means that the increase in returns to scale reduce after that level of penetration. Nevertheless, the structural barrier remains substantial for a new entrant because achieving 25–30 percentage points of market share in the face of one or more entrenched incumbent operators may be a difficult challenge.

3.2.3 These structural barriers are exacerbated by strategic barriers created by tariff mediated network externalities arising from the use of on-net/off-net price discrimination, which is producing strong network effects that effectively create a barrier to switching that in turn fosters a barrier to expansion and therefore to initial entry.

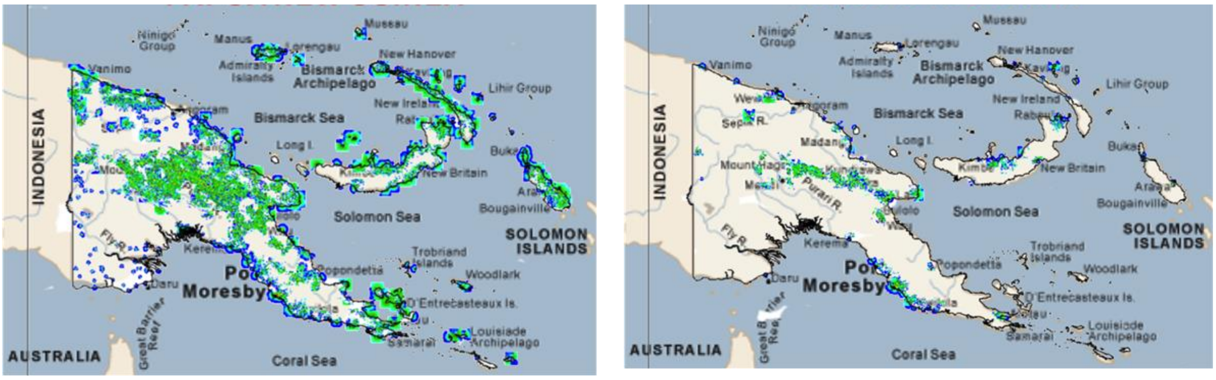
3.2.4 Digicel, bmobile and Telikom are the only licensees active in the retail mobile services market. Given the Government's Kumul consolidation agenda, NICTA staff have taken into account the potential consequences of the amalgamation of the mobile operations of bmobile and Telikom.

3.2.5 Digicel has significantly greater mobile network footprint than the other competing mobile networks, as shown in Figure 2, equivalent to approximately 89% of the population in terms of 2G (3G is equivalent to about 35%).[5] Digicel's coverage superiority means that in many areas in PNG it is effectively the only service provider. bmobile and Telikom have expanded their respective networks in recent years and are continuing to do so (potentially under some form of consolidation). However, both companies continue to face significant capital constraints that are not likely to disappear in the near and medium term. Even if/when their network operations and capital programs are consolidated under the Government's Kumul Consolidation Agenda, it is highly unlikely that Digicel's network coverage with be substantially matched by its competitors within the next five years.

[4] European Regulators Group, *Common Position on symmetry of fixed call termination rates and symmetry of mobile call termination rates* (Feb, 2008, Brussels), 92. Fig. 18
[5] As of December 2016.

Figure 2: Mobile network coverage maps (2016)

Digicel | Bmobile



3.2.6 In 2016 prepaid subscribers made up 97% of total subscribers and 98% of total market revenues (excluding international outbound service revenues) in the retail mobile services market (or 96% if mobile data is included in the definition of the market). Further detail is shown in Figure 3.

Figure 3: Prepaid services as a proportion of total

	Subscriptions*		National call minutes **		National call revenues ***		National SMS messages		National SMS revenues	
	2015	2016	2015	2016	2015	2016	2015	2016	2015	2016
Prepaid	97.4%	97.0%	96.5%	92.1%	98.68%	98.71%	97.88%	97.87%	97.08%	97.16%
Post-paid	2.6%	3.0%	3.5%	7.9%	1.32%	1.29%	3.12%	3.13%	2.92%	2.84%

n/a = not available due to incomplete data
* As of December
** Excludes Telikom due to incomplete data
*** Excludes mobile to fixed calls due to incomplete data

3.2.7 This market is very highly concentrated, with Digicel having by far the highest share of subscribers, revenues and call minutes, as shown in Figure 4. In 2016 the Herfindahl-Hirschman index (HHI) was 8,077 based on subscribers (as at December 2016) and greater than 8,500 based on (national mobile-to-mobile call) revenues. This compares to 5,888 and 7,844 respectively in 2011. Digicel's market shares have remained very high over the last five years despite renewed efforts by bmobile and Telikom to improve their competitiveness.

Figure 4: Market shares

Licensee	Total subscribers *			Total national mobile-to-mobile call revenues **		Total national mobile-to-mobile call minutes	
	2014	2015	2016	2015	2016	2015	2016
Digicel	97%	93%	89%	>95%	>95%	>95 %	>95%
Bmobile	3%	5%	8%	~2%	~3%	~1%	~3%
Telikom	0.2%	2%	3%	~1%	~1%	~0.5%	~1%

n/a = not available due to incomplete data
* As of December
** Revenue from mobile to fixed national calls excluded due to incomplete data

3.2.8 It is likely that a proportion of prepaid subscribers have a subscription with more than one network to take advantage of the cheaper pricing of on-net calls. That proportion is difficult to determine; in a separate exercise NICTA previously estimated it to be around 10%. Whatever it is it introduces potential for double counting of subscribers and thus risks distorting movements in subscriber market shares. Accordingly NICTA staff believe that the revenue and traffic data shown in Figure 4 provide a more accurate picture of market shares.

3.2.9 Digicel's market share is such that it might suggest that it has fully benefited from most available scale economies, giving it a cost advantage over bmobile and Telikom.[6]

3.2.10 Digicel's own pricing in this market appears to be at a level that helps keep its profits persistently and significantly above the competitive level:

(a) Digicel's operations in PNG account for approximately 29% of the total forecast free cash flow of the entire Digicel Group (as of March 2015);[7]

(b) Digicel assumes a forward looking EBITDA margin (measured by EBITDA to revenues) of 56% (as of March 2015),[8] which is high relative to most of the 30 other national operations within the Digicel Group (including Digicel Samoa Ltd at 42% and Digicel Vanuatu Ltd at 27% where its reported market share is 79% and 69% respectively)[9] and high relative to mobile operators in more developed markets around the world (which averaged between 30–40% between 2014–2016).[10]

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[6] The European Commission considers that minimum efficient scale will tend to be achieved with a market share in the order of 15–20%. See *Commission Recommendation of 7 May 2009 on the Regulatory Treatment of Fixed and Mobile Termination Rates in the EU* (2009/396/EC), paragraph 17.

[7] Digicel Group Limited, Form F-1 Registration Statement under the Securities Act of 1933, as filed with the Securities and Exchange Commission on 26th June 2015, p. F-39

[8] Digicel Group Limited, *Form F-1 Registration Statement under the Securities Act of 1933*, as filed with the Securities and Exchange Commission on 26th June 2015, p. F. 39

[9] Digicel Group Limited, *Form F-1 Registration Statement under the Securities Act of 1933*, as filed with the Securities and Exchange Commission on 26th June 2015, p. 97

[10] Applied Value Group, *Financial Performance and Trends in the Telecom Industry*, 2016 Q3 Edition

3.2.11 No new entry into this market is expected within the next five years and certainly none that is likely to pose a significant competitive constraint on Digicel within that period.[11] The process of amalgamation of Government owned telecommunications operations and assets that the PNG Government has set in train under the Government's Kumul Consolidation Agenda is intended to strengthen the capacity and resourcing of its mobile arm, and will probably do so. However, the head-start that Digicel has means that the potential increased competitive constraint will not lead to material changes to the market in the short to medium term.

[11] This assessment is based on the assumption that a decision to licence a new entrant would take around 2 years and a further period of at least one year would elapse before the new entrant licensee was able to offer mobile services of any significance within PNG.

4 Potential Effects of Discriminatory Pricing on Competition

4.1.1 The economic welfare of mobile phone users is maximised by enabling them to call and receive calls from as many other mobile phone users as possible. In addition, mobile phone users typically prefer to be able to call and be called by particular persons (such as family, close friends, or work colleagues). This is referred to as a "club effect." This means that once one member of a tight calling group (or "calling club") is attracted to a particular network because of the on-net pricing, other members of that group may have a strong incentive to join that network as well. One by one, new and existing mobile phone users may conclude that enough of their contacts are on a particular network so as to make switching to another network impractical, as that would mean more of their 'club' calls would be off-net and therefore more expensive.

4.1.2 The club effect has two aspects. On the call origination side, subscribers tend to prefer the larger network because they can expect, on average, to make cheaper calls (on-net). On the incoming calls side, insofar as they give attention to the matter, subscribers tend to prefer the larger network because they can expect, on average, to receive more calls (because there are more people on-net who can make cheaper on-net calls). This latter aspect reflects a call externality; that is, the benefit that is enjoyed by the receiver of a call that is made by another mobile subscriber.

4.1.3 Any technical or commercial constraint that limits or impedes the making or receiving of calls to other mobile phone users, including users or "club" members on other networks (off-net calls), reduces long run consumer welfare (unless that effect is offset by other benefits).

4.1.4 These elements of consumer welfare and preference give rise to network effects. A network effect involves a competitive advantage, (which may be large or modest depending on the circumstances), in favour of a larger network operator, and a corresponding competitive constraint on a smaller network operator, that arises from the differences in the size (subscriber numbers) on the networks. For example, if there were two unconnected mobile networks, each with identical costs and quality, a new subscriber would generally prefer the one with the largest number of customers because he can call and be called by a larger number of people. If the new subscriber was primarily interested in mobile data services then this preference might change. However, in most countries, including PNG, most subscribers are interested in the cluster of mobile services, with voice as a very important part of the cluster for them. This competitive advantage in favour of the larger operator, and competitive constraint against the smaller operator, will be greater where the difference in the subscriber numbers of the two networks is larger, and vice versa.

4.1.5 Accordingly regulatory regimes world-wide generally have an obligation for all mobile network operators to provide physical interconnection between competing mobile network operators so that calls can be made to customers of other network operators and network effects are enjoyed at sector level, not just at individual network level. A mandatory requirement for mobile network interconnection exists, for example, in PNG under section 137 of the Act.

4.1.6 Physical network interconnection however, only makes it technically possible for customers of one mobile network to call customers of another network. The ability or ease of making calls to persons on other networks will be influenced by price differences between on-net and off-net calls. If off-net prices are substantially higher than on-net prices, this will constrain or burden the making of off-net calls, and introduce a network effect in favour of the larger network operator. This is known as a "tariff mediated network externality," as it effectively reintroduces the type of direct network externality that would exist if the networks were not interconnected.   This tariff-mediated network externality involves a loss of consumer benefit and can impose a barrier to competition by smaller networks, both of which reduce long run consumer welfare (unless accompanied by some equal or larger, off-setting, benefit to consumers and competition[12]).

4.1.7 Where on-net prices are materially lower than off-net prices, then every subscriber that joins the larger network further increases the attractiveness of that network as it means there are more people to call at lower on-net rates, and an individual subscriber may receive more calls because the cost of those calls (to the on-net calling party) is cheaper. Where on-net prices are materially lower than off-net prices, the club effect also can enable a large network to attract more subscribers more quickly than a smaller network. As additional subscribers increase scale advantages, these effects also enable the larger network operator to offer greater discounts for on-net calls, enabling it to reinforce or intensify these effects. In situations where these effects are able to play out in this way without regulatory constraint, an increasing competitive advantage arises over time for the larger network or networks, and an increasing competitive constraint arises for the network or networks with smaller subscriber numbers.

4.1.8 The tariff-mediated network externality and its detrimental effects will be magnified if the MTR paid by operators for off-net calls made by their customers is above cost. The larger network operator incurs costs to terminate a call that originates on its network. A cost is incurred when the call is terminated on its own network, and also incurred (and paid out) when the call terminates on another operator's network. The costs need not be the same. However, if the larger network operator chooses not to pass on the costs of self-termination either fully or at all, then there is a conscious act of discrimination involved and a conscious decision to cross-subsidise the cost of on-net calls from other service revenues, including revenue from off-net calls.

4.1.9 This is illustrated by the situation in which one operator has significantly more subscribers. In pricing (on-net) calls to its (larger) group of customers, the larger operator incurs a lower cost of termination than the other operator, who must pay the

[12] See for example the discussion in paragraphs 4.1.17 and 4.1.20 below.

above-cost MTR to terminate calls to that larger subscriber base. If the actual costs of termination are significantly lower than the prevailing MTR, then the larger network operator also may be able to price on-net calls so that it is impossible for the other operator to make any margin on those calls, and therefore to compete for those calls, other than on a loss-making basis. This will occur, for example, where the price of an on-net call is below, or similar to, the MTR, because in providing an off-net call, the smaller provider will have to pay the MTR, plus its costs of originating the call and its non-network costs. Because of the costs in addition to paying the MTR, even if the larger operator's on-net prices are somewhat above the MTR, the smaller operator may not be able to price off-net calls so as to make any margin on them. As a greater proportion of the smaller network's traffic is likely to be off-net (because there are more people to call on the larger network), the smaller network also may have to pay the mobile termination charge for a larger proportion of traffic than the larger network. The combination of an above-cost MTR, and on-net prices by a larger operator that are significantly lower than off-net price, can thereby create substantial obstacles to competition by smaller operators, or to entry by new operators.

4.1.10 The circumstances that will support such harm existing include whether the operator engaging in such price discrimination has substantial market power, the extent of that market power, the difference in subscriber numbers between that operator and other operators, the magnitude of the difference between the off-net and on-net prices, and the extent to which the MTR is, or may be, above cost.

4.1.11 There is a considerable amount of academic literature and studies on these matters.

4.1.12 Jeon, Laffont and Tirole (2004) shows that the call externality creates strong incentives for an mobile network operator to 'strategically manipulate' its off-net prices in order to reduce the number of calls made to the rival network, thereby reducing the attractiveness of the rival network to subscribers.[13] They also show that a large network will tend to charge a higher off-net price, and have a greater on-net/off-net differential, than a small network.

4.1.13 Jeon, Laffont and Tirole (2004) concluded that, at its extreme, this can lead to a situation where off-net call charges are so high that all off-net calling is completely eliminated—a scenario they called a 'connectivity breakdown'.[14]

4.1.14 Armstrong and Wright (2007) note that 'the chief anti-competitive motive [of a mobile network operator] to set high off-net call charges' is to harm its rivals' abilities to compete by encouraging fewer calls to be made to the subscribers of rival networks.[15]

4.1.15 Hoernig (2007) considered on-net/off-net price discrimination in the context of price predation. He considered the scenario of both 'full predation', in which the large network seeks to induce a smaller network to exit the market by driving down its

[13] Jeon, D., Laffont, J-J., and Tirole, J. (2004) 'On the receiver pays principle', *RAND Journal of Economics*, 35, 85-110,

[14] Jeon, D., et.al (2004) op.cit.

[15] Armstrong N. And Wright, J. (2007) 'Mobile call termination un the UK', UCL, September, p. 18,

market share and profits by setting arbitrarily low on-net prices and high off-net prices, and 'limited predation', in which the larger network seeks to restrict the small network's profits and cash flows (rather than its complete exit from the market) to make it more difficult to invest in either network improvement or customer retention. Hoernig found that, given call externalities, the difference between the larger network's on-net and off-net prices is driven by 'the difference in market shares [between the large and small network operators] and strategic considerations'.[16]

4.1.16 Cabral (2011) suggests that the skewed market share distributions induced by on-net/off-net price discrimination tend to endure for a long time, helping to reinforce the dominance of the larger network operator.[17]

4.1.17 Hoernig, Inderst and Valletti (2014) find that total welfare is maximised when there is no price discrimination between on-net and off-net calls (and the MTR is set at cost) but when calling patterns are highly concentrated (and the MTR is set at cost) the restriction of on-net/off-net price discrimination may not maximise consumer surplus because there will be less reduction in the fixed fee component of two part (i.e post-paid) tariffs.[18]

4.1.18 Hoernig (2014) shows that regulatory intervention to prevent on-net/off-net price discrimination involves a trade-off between a more efficient pricing structure and more viability of small networks on one side, and short run consumer surplus on the other, but that trade-off disappears in the medium run if network effects are so strong that without regulatory intervention the smaller networks would not survive.[19]

4.1.19 The predicted negative effects of on-net/off-net price discrimination are evident in the retail mobile services market. On-net calls represent an extremely high proportion of all mobile calls, as shown in Figure 5. When taken together with the market share data, approximately 95% of all prepaid national call minutes that originated in PNG (in 2016) were on-net Digicel calls. Only 3.5% of all prepaid mobile originated national call minutes in PNG (in 2016) terminated off-net, of which 90% terminated on another mobile network and the remaining 10% terminated on Telikom's fixed network. This is a very high proportion of on-net traffic that has remained fixed around these levels since at least 2010. This is effectively the type of connectivity breakdown identified in Jeon, Laffont and Tirole (2004).

[16] Hoernig, Steffen, 2007 'On-net and off-net pricing on asymmetric telecommunications networks', *Information Economics and Policy*, Elsevier, vol. 19(2), pages 171-188,

[17] Cabral, L. (2011), 'Dynamic price competition with network effects', *Review of Economic Studies*, 78, 83–111

[18] Hoernig, S., Inderst, R. and Valletti, T. (2014), 'Calling circles: network competition with nonuniform calling patterns', *RAND Journal of Economics*, Vol. 45, No.1, Spring, pp.155–175

[19] Hoernig, S. 'Competition between multiple asymmetric networks: theory and applications', *International Journal of Industrial Organization*, 32 (2014) 57–69

Figure 5: Proportion of total national call and SMS traffic that is on-net

Licensee	Service	National mobile originated call minutes		National SMS	
		2015	2016	2015	2016
Digicel	Prepaid	99.7%	98.7%	98.2%	98.2%
	Post-paid	95.0%	95.8%	97.0%	97.0%
Bmobile	Prepaid	26.4%	31.7%	46.5%	46.2%
	Post-paid	29.7%	26.2%	60.0%	60.0%
Telikom	Prepaid	11.8%	11.8%	–	–
	Post-paid	n/a	n/a	–	–
Market as a whole	Prepaid	98.9%	96.5%	96.71%	96.75%
	Post-paid	n/a	n/a	96.74%	96.74%

4.1.20 Hoernig (2008)[20] and Sauer (2011)[21] (using the same basic model and some results), and also Hoernig, Inderst and Valletti (HIV) (2014) and Hoernig (2014), show that, in the absence of full market penetration, on-net/off-net price discrimination can lead to increased consumer welfare through increased competitive intensity, although total welfare may not necessarily improve. However, in all cases the increase in consumer welfare is in the short run (not the long run) and derives from reductions in the fixed fee component of two part (i.e. post-paid) tariffs in response to the increases in the average call prices under discriminatory on-net/off-net pricing. In PNG more than 95% of the market is prepaid and thus are not charged two part tariffs.[22] Further, there are key assumptions in those models that are inconsistent with the actual market conditions in PNG, including:

(a) that interconnection prices are set by a regulator at cost (Sauer, HIV);

(b) that networks charge two-part (i.e. non-linear) tariffs, that is, network operators are assumed to charge customers a fixed monthly subscription fee in addition to usage prices per minute (Sauer, HIV);

(c) that there are only two competing firms and that they are symmetrical (Hoernig (2008), Sauer, HIV);

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[20] Hoernig, S. (2008)) *Tariff-mediated network externalities: Is regulatory intervention any good?* CEPR Discussion Papers 6866

[21] Sauer, D. (2011) *Welfare implications of on-net/off-net price discrimination*, Toulouse School of Economics

[22] This is consistent with the observation in Laffont and Tirole (2001) that the use of two part tariffs enable network operators to separate the building of market share from the generation of call volume by, on the one hand, using the fixed fee component to build market share without inflating termination out-payments while, on the other hand, using decreases in per minute calling rates to increase call volumes. See Laffont, J-J. and Tirole, J. (2001) *Competition in Telecommunications*, MIT Press, p. 199

(d) that calling patterns are balanced (Sauer);

(e) that the two networks have the same cost structure (Sauer);

(f) subscription demand (as distinct from demand for particular types of calls) is inelastic (Sauer); and

(g) that the market expansion potential is limited (Sauer).

4.1.21 Although on-net/off-net price discrimination may, in certain circumstances, have pro-competitive effects, those circumstances do not generally exist in PNG. There is also no evidence of such effects occurring in PNG to any significant extent. Even if they did, given that two-part tariffs makes up a very small proportion of the PNG market, those effects would not outweigh the negative effects.

4.1.22 NICTA staff are of the view that it would not be appropriate to leave these issues to be addressed solely through ex post regulation. This is because:

(a) the harm done to competition would be difficult to reverse through ex post regulatory intervention, which is geared towards identifying and penalising anti-competitive behaviour following various investigatory and analytical processes that can only commence after the fact;

(b) ex post regulation can be insufficient in the assessment of excessive pricing scenarios because of the difficulties in the detection and proof of such conduct. Hence preventative regulation in the form of ex ante intervention is preferable where such scenarios may exist;[23]

(c) the harm to competition may be prevented or mitigated though ex ante intervention and thereby promote the development of effective competition;

(d) ex ante intervention would provide a more timely and effective response; and

(e) ex ante intervention would provide a more flexible and responsible intervention that can better accommodate any need for adjustment or removal as circumstances change over time.

4.1.23 The MTRs in PNG reflect agreements that have been reached between Digicel and other operators. It is not necessarily cost-based and a rigorous cost approach, transparent to NICTA, has not been employed in the negotiations that have led to it. The level of the MTR has been reduced over the years at a faster rate than the reduction of costs in the economy and in the sector, and therefore it would appear that, over that same period, the MTR has more closely approximated costs, whether or not it reflects costs in an absolute sense. Nevertheless there are costs associated with the

[23] This is the common view of European Regulators Group (2008), op.cit. p. 14, and has not been modified by its successor organisation, BEREC

termination of calls and SMS whether they originate on-net or off-net. In addition, for any single network, the costs associated with call and message termination are the same, whether or not the calls and messages concerned are on-net or off-net. It is not relevant to the economic costing that is appropriate in the present context, whether off-net termination results in a cash payment and on-net termination does not. That is a matter for appropriate cost transfers within a firm. From an economic point of view the cost is the same.[24] It is inappropriate for on-net calls to be subsidised to the extent of the MTR if it is included in pricing of off-net calls but not of on-net calls.

4.1.24 Mobile cost models show clearly that the economic cost of originating calls and messages is very similar to the cost of terminating calls and messages. The costs of termination is around half of the cost of a call. Where a call originating off-net is terminated on a network the MTR is the payment that is charged to the originating network for call termination. If the MTR is cost-based, it might be expected that the average cost of a call is around twice the level of the MTR. In practice, as noted already, it is not known how closely the MTR reflects costs. There would therefore be considerable disadvantage for existing users if operators were required to charge for on-net calls at twice the MTR, when the relationship of MTR and cost is not known. However, to require on-net call prices, on average, to be no lower than the prevailing MTR has a range of advantages, and reinforces competition in the market. The advantages are:

(a) it limits the extent of any cross-subsidy from off-net to on-net and therefore the related price discrimination;

(b) it leaves some room for flexibility in pricing, especially because compliance is based on average prices and their relationship to the MTR during each period of compliance measurement; and

(c) it provides sensible incentives to keep the MTR itself low and reflective of costs.

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[24] If there are additional costs associated with conveyance of an off-net call (such as for the interconnection link and through a Point of Interconnection that is required to be established and maintained) then these costs can be separately identified and taken into account. The onus for providing this information and pursuing this argument lies with the party who asserts it. In any case these incremental additional costs, if they apply, are only small parts of the overall termination cost of an off-net call. They do not undermine the rationale for the proposal, later in this paper, that average on-net prices should not be set below the MTR.

5 PROPOSAL FOR A RETAIL SERVICE DETERMINATION

5.1 Draft Determination

5.1.1 NICTA staff have prepared the draft retail service determination as Attachment A (the draft determination). In summary the draft determination would:

(a) apply to Digicel's supply of mobile originated national call minutes and SMS (both prepaid and post-paid);

(b) remain in effect for a period of five years;

(c) establish a pricing principle preventing any differentiation in retail pricing based on whether a call is to terminate on-net or off-net;

(d) establish a second pricing principle preventing retail prices on average being below the MTR prevailing at any given time during the five year period;

(e) apply to effective prices (calculated by dividing call revenue by call minutes) instead of advertised prices; and

(f) ensure that on-net and off-net voice calls and SMS are charged and billed on a consistent basis (i.e. without discrimination in the use of per second or per minute charging).

5.1.2 The draft determination applies to both prepaid and post-paid mobile calls, separately, because these calls are not substitutable by an individual subscriber or user and constitute separate pricing options. In PNG customers who have post-paid service agreements with Digicel would generally be unlikely also to have prepaid service agreements, and vice versa. The different groups of customers involved are seeking different benefits from each other. Prepaid customers are typically seeking bill certainty and reduced spending commitments and are prepared to pay a higher per minute or per call fee than if they took a post-paid service. Post-paid services are typically used by businesses and government agencies who value lower unit prices and are prepared to have a two part tariff scheme that enables this to occur.

5.1.3 The 2012 Determination applied only to prepaid mobile calls because at that time NICTA believed that that would be sufficient to address the negative effects of on-net/off-net price discrimination in the market given prepaid accounted for the vast majority of the market. The emphasis in 2012 was to address the major aspect of the problem, which was for prepaid calling charges given the overwhelming proportion of mobile originated calls that were (and still are) from prepaid services. However the problem of discriminatory on-net /off net charging has also been identified in tariffs for post-paid services.

5.1.4 The principles set out above in relation to network effects and the club effects apply equally to post-paid services, and the principles associated with anti-competitive effects and discrimination apply equally to post-paid services. Even if the value of those services is less than prepaid, the value is a significant amount in absolute terms.

5.1.5 Digicel's standard post-paid pricing also includes free on-net calls all day Saturday and Sunday (compared to an off-net charge of 61 toea per minute to bmobile and 71 toea per minute to Telikom). This will still be allowed under the rules now being proposed in the draft determination provided that the average (effective) on-net price per call minute is the same or more than the average off-net price per call minute for any measurement period.

5.1.6 The draft determination applies to voice calls and also to SMS because discrimination in the pricing of SMS calls can have the same anti-competitive effects as in the case of voice calls. The impact is likely to be less pronounced because of the deteriorating position of SMS in the messaging market, given the growth of alternatives such as free messaging associated with social media and OTT services. Nevertheless SMS is part of the overall retail mobile services cluster and similar regulation as for voice is appropriate.

5.1.7 The draft determination applies to effective prices instead of the advertised price to account for the giveaway and use of free call credits, which are typically applied to on-net calls only. Further, regulating the effective price gives Digicel some flexibility to continue to price discriminate between on-net and off-net calls provided that the price effect is netted out on average across its prepaid and, separately, post-paid customer bases. The focus on effective prices also obviates the need for an exemption arrangement for promotional pricing as exists in the 2012 Determination.

5.1.8 The 2012 Determination permitted Digicel to charge an off-net price premium of up to 40%. A similar cap approach has not been adopted in the draft determination because both the rationale and basis for it were rejected by the ICT Appeals Panel, which determined that any degree of price discrimination was not justifiable in the circumstances of the market and the dominance of Digicel.

5.2 Retail regulation criterion

5.2.1 The retail regulation criteria are specified in section 158 of the Act as follows:

> (*a*) that making a retail service determination for the retail service in respect of an operator licensee for a particular period will further the achievement of the objective set out in section 124 but disregarding section 124(2)[25]; and

[25] Section 124 sets out effective competition and efficiency objectives. Section 124(2) lists a number of considerations that, for the purposes of Part VI (Interconnection and Wholesale Access) need to be taken into account including technical feasibility, legitimate commercial interests

(*b*) specifically, in relation to the competition objective, that –

(i) that operator licensee has a substantial degree of power in the market within which the retail service is supplied; and

(ii) in the absence of the retail service determination for that period, that substantial degree of power is likely to –

(A) persist in the market over that period; and

(B) expose retail customers to a material risk of higher prices and/or reduced service where they acquire the retail service from that operator licensee during that period; and

(*c*) specifically, in relation to the efficiency objective, that the operator licensee will not be prevented from achieving a return on assets during that period sufficient to sustain investment necessary to supply the retail service; and

(*d*) the aggregate likely benefits of making that retail service determination outweigh any aggregate likely detriments.

5.2.2 NICTA staff are of the preliminary view that draft determination satisfies all of the retail regulation criteria.

5.2.3 Digicel has a substantial degree of power in the retail mobile services market. This is particularly evident from:

(a) its high and prevailing market shares;

(b) its substantial network footprint and the resultant advantage of being first in in many areas;

(c) the absence of likely market entry;

(d) the strong network effects created by it on-net/off-net price discrimination, which create a significant barrier to entry; and

(e) high switching costs resulting from its on-net/off-price discrimination.

5.2.4 Given its sources Digicel's substantial market power is likely to endure for the foreseeable future in the absence of the draft determination.

5.2.5 Without the draft determination, Digicel will have the incentive and ability to price discriminate between on-net and off-net calls in a manner that results in Digicel's subscribers paying higher prices for off-net calls than they would under the draft determination. Indeed the changes that Digicel made to its standard prepaid call prices immediately following the expiry of the 2012 Determination show this.[26]

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[26] Refer paragraph 2.2.9 above.

5.2.6 Without the draft determination, Digicel's on-net/off-net price discrimination will result in a deadweight loss, preventing pricing from being efficient as an allocator of resources to their most valued use (i.e. allocatively efficient).[27]

5.2.7 Without the draft determination there will be no regulatory constraint on Digicel's on-net/off-net price discrimination. There will be no market constraint either, given Digicel's market share is in the order of 90–97% (depending how measured). Digicel will be able to resurrect the substantial differentials between the prices for on-net and off-net services. This exercise of Digicel's substantial market power would likely encourage existing mobile phone users who have not done so to switch to Digicel. In addition new customers will be inclined towards taking Digicel's service because of the favourable on-net pricing. The 'club effect' will thus operate to reinforce the benefits seen by existing and new customers from receiving service from Digicel under these circumstances. If the market share of other operators, such as bmobile, consequentially declines further this will likely exacerbate the original problem. If the problem continues bmobile and Telikom will become seriously weakened and less able to compete, or else they might be forced from the market entirely.

5.2.8 In summary, given Digicel's market shares and the barriers to market entry, there is likely to be little competitive pressure within the market in the absence of the draft determination. Undue on-net/off-net price discrimination is likely to continue to weaken competition. Competition is already weak and it will become weaker still.

5.2.9 Digicel will not be prevented from achieving a return on its assets that is sufficient to sustain investment necessary to supply the mobile telecommunications because:

(a) the proposed determination does not set or impose any price but instead regulates only the relationship between on-net and off-net prices, retaining for Digicel the flexibility to set its prices at the level necessary to achieve a reasonable return;

(b) preventing price discrimination does not in itself reduce profitability.

5.2.10 The aggregated likely benefits of the draft determination are significant and outweigh any detriments. Those benefits include:

(a) Competition in the retail mobile services market would be put on a more level playing field, with mobile operators attracting subscribers based on the innovativeness, quality and value of their services instead of disproportionate weight being given to the relative size of their subscriber base;

(b) Increased flexibility in retail pricing generally by Digicel (compared to the pricing principle established by the 2012 Determination), given the form of the regulatory constraint being proposed in the draft determination;

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[27] See also ICT *Appeals Panel Report*, 18 December 2012, paragraph 48.

(c) Leaving Digicel as able as it is now to achieve a sustainable return on its investments through appropriate pricing. There is nothing in the draft determination that limits prices per se, or that limits return on investment. The constraint is in terms of price relationships—on-net compared to off net;

(d) A reduction in customers' switching costs;[28]

(e) A reduction in customer lock-in that makes it unduly difficult for Digicel's competitors to induce existing subscribers to switch networks;

(f) Potential for a Digicel review of its pricing structure to stimulate increased competition in the retail mobile services market and/or lead to increased value being offered to all mobile phone users;

(g) In the absence of on-net/off-net price discrimination by the dominant operator a more competitive market should develop over time, leading to lower prices for consumers than exists at present. In contrast, if price discrimination continued to be permitted it would likely further reduce the existing limited level of competition in the market, which would likely lead to higher prices and poorer service generally.

5.2.11 The possible detriments include:

(a) The risk that Digicel may significantly increase its on-net prices to comply with the draft determination. However, given any such increase would not be justified on cost grounds any such increase is unlikely as it would risk investigation as a potential anti-competitive exercise of market power. This risk is also partly constrained by the likely response of consumers who may limit their usage and offset the potential benefit that Digicel would have sought through price increases.

(b) It is possible that the proposed determination may limit innovation in and development of certain types of price packaging, although this is doubtful given that the constraint is expressed in terms of effective average prices.

(c) Although the means of determining average or effective prices are straight-forward, compliance with the determination will require careful monitoring by Digicel to ensure that it has time and scope to make changes that may be required to ensure compliance. Increased self-monitoring is the quid pro quo for greater overall flexibility that the draft determination allows for retail pricing.

5.2.12 Overall the likely benefits of the draft determination will, in the view of NICTA staff, outweigh to a significant degree the possible detriments, particularly as the identified detriments are subject to their own constraints.

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[28] The Body of European Regulators for Electronic Communications has identified on-net/off-net price discrimination as 'a major obstacle in respect of switching mobile telephone services'.

ANNEX A: DRAFT RETAIL SERVICE DETERMINATION

RETAIL SERVICE DETERMINATION No. 1 of 2018

National Information and Communications Technology Act 2009

I, SAM BASIL, Minister for Communication and Information Technology, acting on the recommendation of the National Information and Communications Technology Authority and having had regard to the Retail Regulation Criteria, make the following Retail Service Determination under section 160 of the *National Information and Communications Technology Act 2009.*

PART I – PRELIMINARY

1 Name of the Determination

This Determination may be cited as *Retail Service Determination No.1 of 2018*.

2 Commencement and expiry

(1) This Determination shall come into force on [DATE] 2018 (***the Commencement Date***).

(2) This Determination shall expire on the day before the fifth anniversary of the Commencement Date.

3 Definitions

(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 otherwise requires:

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

(b) ***"Digicel"*** means Digicel (PNG) Limited with company registration number 1-55909;

(c) ***"interconnection charge"*** means the wholesale price per Unit that Digicel may charge another licensee for the supply of a domestic mobile terminating access service under the terms of an interconnect agreement to which Digicel is a party;

(d) ***"on-net"*** means a national voice call or SMS that originates and terminates on Digicel's mobile network;

(e) ***"off-net"*** means a national voice call or SMS that originates on Digicel's mobile network and terminates on the mobile network of another licensee;

(f) ***"prepaid"*** means payment of an amount before a service is used;

(g) ***"price"*** includes an effective or average price calculated for any Measurement Period that begins after the Commencement Date;

(h) ***"measurement period"*** means either a calendar month or a calendar year;

(i) ***"regulated mobile service"*** means:

    (i) a prepaid mobile originated retail national voice call service;

    (ii) a post-paid mobile originated retail national voice call service;

    (iii) a prepaid mobile originated retail national SMS messaging service;

    (iv) a post-paid mobile originated retail national SMS message service.

(j) ***"SMS"*** means short message service;

(k) ***"unit"*** means:

    (i) in relation to a prepaid mobile originated retail national voice call service, a prepaid call minute;

    (ii) in relation to a post-paid mobile originated retail national voice call service, a post-paid call minute;

    (iii) in relation to a prepaid mobile originated retail national SMS messaging service, a prepaid SMS message; and

    (iv) in relation to a post-paid mobile originated retail national SMS message service, a post-paid SMS message.

NOTE: The following terms are defined in the Act:

- retail regulation criteria;
- network
- NICTA
- retail service

4 Application

(1) This Determination applies to Digicel's supply of Regulated Mobile Services.

PART II – PRICING PRINCIPLES

5 No price discrimination between on-net and off-net calls and SMS

(1) Digicel shall not offer or charge prices for a Regulated Mobile Service that differ on the basis of the mobile network that will terminate the call.

(2) NICTA shall determine Digicel's compliance with the pricing principle in subsection (1) by using the following formula:

$$A \geq B$$

where:

(a) ***A*** is the effective price per On-Net Unit, calculated by dividing the revenue that is earned from the retail supply of all On-Net Units over a Measurement Period (excluding any fixed fee revenue from two part tariffs) by the number of On-Net Units supplied during the same Measurement Period;

(b) ***B*** is the effective price per Off-Net Unit, calculated by dividing the revenue that is earned from the retail supply of all Off-Net Units over a Measurement Period (excluding any fixed fee revenue from two part tariffs) by the number Off-Net Units supplied during the same Measurement Period; and

(c) each Regulated Mobile Service is considered separately.

6 Prohibition on pricing below the interconnection charge

(1) In pricing a Regulated Mobile Service, Digicel shall not offer or charge an On-Net Unit price that is, or would be, less than the relevant Interconnection Charge.

(2) NICTA shall determine Digicel's compliance with the pricing principle in subsection (1) by using the following formula:

$$C \geq D$$

where:

(a) ***C*** is the effective price per On-Net Unit, calculated by dividing the revenue that is earned from the retail supply of all On-Net Units over a Measurement Period (excluding any fixed fee revenue from two part tariffs) by the number of On-Net Units supplied during the same Measurement Period;

(b) ***D*** is the relevant Interconnection Charge per Unit that applied during the Measurement Period; and

(c) each Regulated Mobile Service is considered seperately.

(3) For the avoidance of doubt, nothing in this section:

(a) means or implies that all pricing that is above the applicable Interconnection Charge is necessarily compliant with the Act or any other law; or

(b) prevents NICTA or any other person from making any finding or exercising any power provided for under law in relation to a price that is above or below the applicable Interconnection Charge.

7 Consistent basis for charging and billing

(1) Whether a Regulated Mobile Service is charged or billed per second or per minute shall not differ on the basis of the mobile network that will terminate the call.

PART III – IMPLEMENTATION

8 Compliance data reporting

(1) Within 30 calendar days of the end of each calendar quarter, Digicel shall provide NICTA with the following information:

(a) the number of On-Net calls and SMS for which a charge could have been imposed on a retail customer, whether or not such a charge was actually imposed;

(b) the number of Off-Net calls and SMS for which a charge could have been imposed on a retail customer, whether or not such a charge was actually imposed;

(c) the amount of retail revenue earned from the supply of On-Net calls and SMS, separately; and

(d) the amount of retail revenue earned from the supply of Off-Net calls and SMS, separately

(2) Digicel shall provide the information specified in subsection (1):

(a) in a manner that disaggregates the data by calendar month;

(b) in a manner that disaggregates Prepaid services and revenues from post-paid services and revenues; and

(c) in the format specified in Schedule 1.

Made at Port Moresby this [DATE] day of [MONTH] 2018.

[DRAFT – NOT FOR SIGNATURE]

SAM BASIL

Minister for Communication and Information Technology

SCHEDULE 1: FORMAT FOR COMPLIANCE DATA REPORTS

(Section 8)

Service		Month 1		Month 2		Month 3	
		Number of Units	Total service revenue	Number of Units	Total service revenue	Number of Units	Total service revenue
On-net calls	Prepaid						
	Post-paid						
Off-net calls	Prepaid						
	Post-paid						
SMS	Prepaid						
	Post-paid						
SMS	Prepaid						
	Post-paid						