TELECOMMUNICATIONS REGULATORY COMMISSION

VIRGIN ISLANDS

CONSULTATION ON THE MARKET ANALYSIS OF WHOLESALE CALL AND SMS TERMINATION ON INDIVIDUAL FIXED AND MOBILE NETWORKS

1 June 2011

Reference Number: C/02/2011

The address for responses to this document or enquires regarding this document is:
Consultation on the Market Analysis of Wholesale Call and SMS Termination on Individual Fixed and Mobile Networks
Telecommunications Regulatory Commission
P.O. Box 4401 or 27 Fish Lock Road, 3rd Floor
Road Town, Tortola, British Virgin Islands VG 1110
Fax: (284) 494 6786; E-mail: consultations@trc.vg
The deadline for responses has been extended to **15 July 2011**

Instructions for submitting a response

The Telecommunications Regulatory Commission of the Virgin Islands ("TRC") invites comments on this consultation document from all interested parties.

Comments should be submitted by **15 July 2011** in line with the guidelines for conducting consultations set out in the Telecommunications Code (Part 1) (Public consultations and Public Hearings) Guidelines, 2010[1]. The TRC reserves the right not to consider any responses submitted after this date.

Preferably responses to this document should be sent by email to consultations@trc.vg (indicating the subject): "Consultation on the Market Analysis of Wholesale Call and SMS Termination on Individual Fixed and Mobile Networks". Alternatively, the responses may be sent to the address (or the number) below:

Consultation on the Market Analysis of Wholesale Call and SMS Termination on Individual Fixed and Mobile Networks –Telecommunications Regulatory Commission P.O. Box 4401 or 27 Fish Lock Road, 3rd Floor Road Town, Tortola, British Virgin Islands VG 1110 Fax: (284) 494 6786.

Responses should include:

In the case of responses from corporate bodies (legal persons):

- the name of the company/institution/association/other organisation;
- the name of a principal contact person; and
- full contact details (physical address, postal address, telephone number, fax number and email address).

In the case of responses from individual (natural) persons, name and contact details (including email).

In the interest of transparency, the TRC will normally make all submissions received available to public, subject to confidentiality of the information received. The TRC will evaluate requests for confidentiality according to relevant legal principles.

Respondents are required to clearly mark any information included in their submission which they consider to be confidential, and provide reasons why that information should be treated as such. Where information claimed to be confidential is included in a submission, respondents are required to provide both a confidential and a non-confidential version of their submission. The TRC will determine whether information claimed to be confidential is to be treated as such and, if so, will not publish that information. In respect of information that is determined to be non-confidential, the TRC may publish or refrain from publishing such information at its sole discretion. Once the TRC

[1] http://www.trc.vg/attachments/030_G00349_SI%20No%20100%20of%202010%20-%20Telecommunications%20Code%20%28Part%201%29%20%28Public%20Consultations%20and%20Public%20Hearings%29%20Guidelines,%202010.pdf

has received and considered responses to this consultative process, it will issue a final statement on the consultation which will be published on the TRC website (including a report on the consultation), and if appropriate a Determination on Dominance, Requirements on Interconnection set out under the Telecommunications Code and amendments to the licences of public suppliers, depending upon the outcome of the consultation.

Market Analysis of Wholesale Call and SMS Termination on Individual Fixed and Mobile Networks

Consultation Part 1

1 Executive Summary

1.1 The purpose of this market analysis is to define the markets for wholesale call and SMS termination on individual fixed and mobile networks and to assess the extent of dominance in those markets and apply remedies if appropriate. The Telecommunications Regulatory Commission, (the "TRC") is consulting stakeholders and the public on these key areas:

1. The definition of the relevant market
2. Whether it is appropriate to designate any public supplier as dominant in the relevant market
3. The draft "Determination on dominance for termination services on individual fixed and mobile networks" and the required amendments to the licences of the public suppliers concerned.
4. The draft "Telecommunications Code (Interconnection and Access to Facilities and Utility Installations) Requirements, 2011 (the "Interconnection Requirements").
5. Specifically (without limiting the generality of the Interconnection Requirements), whether it is appropriate to apply a charge control remedy to a public supplier deemed dominant in the relevant market and what methodology should be used to determine that charge control.

This consultation document is structured in three parts:

Section 1: Definition of the relevant market

Section 2: Assessment of competition and evidence of significant market power

Section 3: Assessment of appropriate regulatory obligations

Section 1 of this document sets out the market analysis of wholesale call and SMS termination on individual fixed and mobile networks, defining the relevant product and geographic markets as per the methodology set out in the TRC's Market Review document[2]. Section 2 provides an assessment of competition and analyses the evidence of significant market power leading to provisional conclusions on dominance, on which the TRC is now consulting before drawing any final conclusions. The TRC propose a draft Determination on Dominance as part of this consultation process. Section 3

[2] http://www.trc.vg/attachments/014_TRC_Market%20Review_Final.pdf

assesses the range of regulatory obligations and remedies that may be appropriate, offering a draft set of the Interconnection Requirements for consultation. Principally these Requirements cover:

- An obligation to interconnect
- Non-discrimination obligation
- Confidentiality obligations
- Transparency obligations (an obligation to publish interconnection agreements)
- The application of a charge control (price regulation)
- The methodology to determine the charge control
- Access to facilities and utility installations

Section 3 presents an overview of the specific methodologies for the charge control available and looks for feedback from stakeholders on the following options:

- No regulation
- Bill and Keep
- Regulated termination rates based on a cost model
- Regulated termination rates based on benchmarking

The TRC is looking for feedback from stakeholders on the methodology for the charge control that may be most appropriate to the Virgin Islands in order to move forward to the next stage in the consultation process which would look to implement specific charge controls, if indeed, a charge control is deemed appropriate for the Virgin Islands.

2 Introduction and context to the Market Analysis

2.1 The Virgin Islands ("VI") Telecommunications Market Review[3] sets out the process for analyzing the competitive state of telecommunications markets in the VI. This document prioritized fixed and mobile voice call and SMS termination as the first cluster markets to be reviewed. The purpose of this market analysis is to define the relevant markets, assess the extent of significant market power (dominance) in those markets and apply appropriate remedies, where necessary.

2.2 The following public suppliers are licensed to provide telecommunication services in the VI:

1. Cable and Wireless (BVI) Ltd[4] ("LIME") provides both fixed and mobile voice services and SMS services.
2. Caribbean Cellular Telephone Ltd ("CCT") provides mobile voice and SMS services.
3. Digicel (BVI) Ltd ("Digicel") provides mobile voice and SMS services.

2.3 On 3 December 2010, the TRC issued a request for information ("RFI") to CCT, Digicel and LIME to which the three operators responded. This document summarizes the responses of the three operators in addition to setting out the view of the TRC on the subject. Responses from all

[3] http://www.trc.vg/attachments/014_TRC_Market%20Review_Final.pdf

[4] Cable and Wireless (BVI) Ltd trades as LIME

parties, including operators and the general public are welcomed. The interconnection consultation process will take the following form:

1. First stage public consultation on interconnection and market power with the proposed Interconnection Requirements
2. Adoption of determination by TRC on market power (dominance) and the Interconnection Requirements if appropriate
3. Second stage public consultation on the implementation of charge controls if appropriate
4. Determination on the implementation of charge controls and amendment of licences if appropriate.

2.4 In accordance with the process set out in the market review, there are three stages to this market review:

i) Definition of the relevant market
ii) Assessment of competition and evidence of significant market power
iii) Assessment of appropriate regulatory obligations

3 SECTION 1: Market Definition

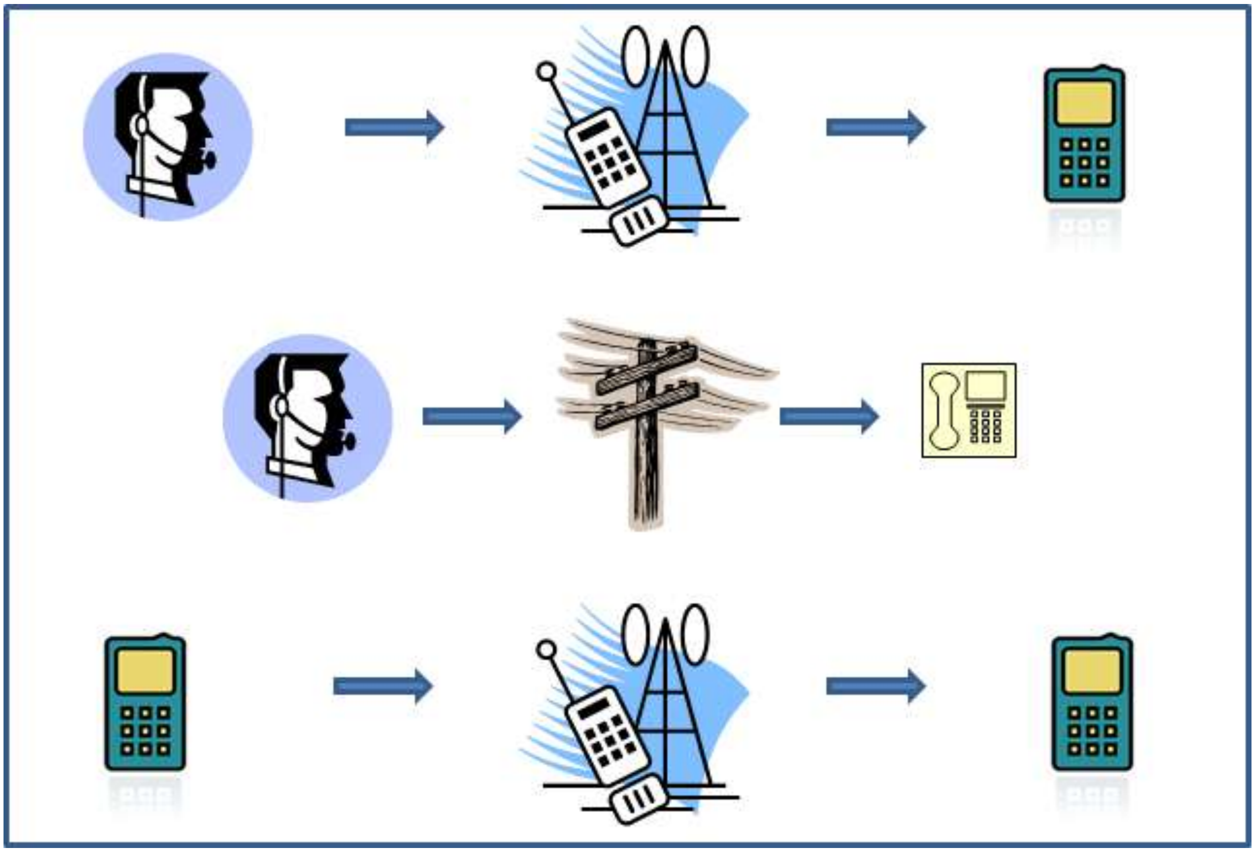
3.1 The product market

The market cluster for review identified under the TRC's Telecommunications Market Review included fixed voice call termination, mobile voice call termination and SMS termination. Relevant to this market analysis are three retail products that can be purchased by consumers in the Virgin Islands:

- Fixed line voice calls
- Mobile voice calls
- SMS (text messages)

This market analysis is focused on the wholesale element for each of these products. In order to call a mobile subscriber it is necessary to terminate or in other words to end a call on the mobile network of the subscriber. In order to call a fixed subscriber it is necessary to terminate a call on the fixed network of the subscriber. In order to send a SMS to a mobile subscriber it is necessary to terminate the SMS on the mobile network of the subscriber as set out in figure 1 below.

Figure 1



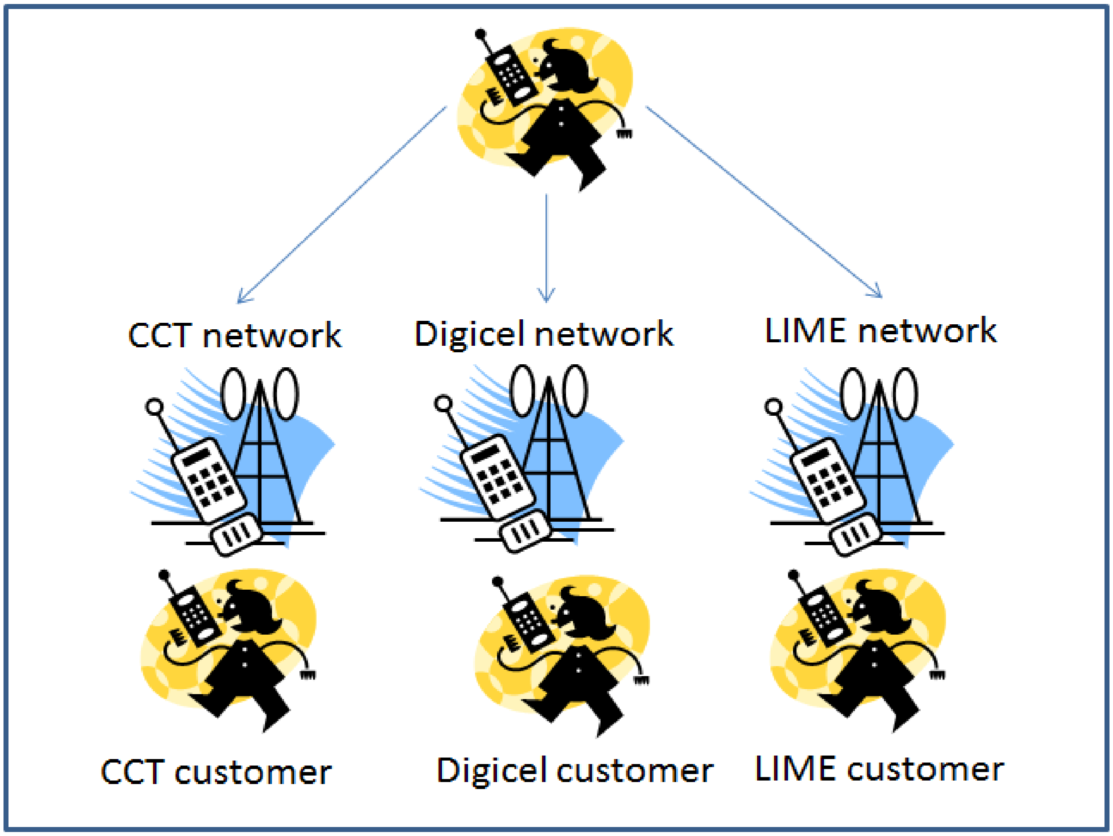
3.2 Termination is therefore defined as delivering a call from the point of interconnection to the end user. Operators make termination payments (known as termination rates) to each other for using the other operator's network to terminate the call. All operators interconnect via a switch. Each network in the VI has one switch due to the relatively small geographic size of the Territory and number of customers. Therefore there is no need to transit a call between switches on the same network. It is understood, however, that LIME transit calls from the LIME fixed switch to the LIME mobile switch (which is housed metres apart in the same building). Calls interconnecting with the LIME mobile network are first sent to the LIME fixed switch and then sent as transit to the LIME mobile switch. This is LIME's choice to route calls in this way and it is the view of the TRC that LIME could configure the network so that LIME terminated calls directly on the mobile network through the mobile switch. Such a routing mechanism is purely LIME's choice and should not be to the detriment of its counterparties (i.e. other operators interconnecting with LIME). Therefore, the TRC considers that, in the context of the Virgin Islands, termination shall encompass the routing of traffic (voice calls or SMS) from the point of interconnection up to the final destination (end-user). Hence, where two operators interconnect directly, no transit occurs.

3.3 The market cluster includes three relevant products :

1. Wholesale fixed voice call termination
2. Wholesale Mobile voice call termination
3. Wholesale SMS termination

3.4 In each case the service provided to complete the call or receive the SMS is the wholesale service of termination. Therefore in each case we are assessing the wholesale market for termination. In order to define these relevant markets, it is important to assess how call termination works. In order to call a subscriber of any network, it is necessary to terminate the call on the network of the subscriber. More crucially, to call a specific number, it is only possible to reach that specific number via the network that that number is located on. For example, in the VI, if a subscriber of the LIME mobile network wants to call a subscriber on the CCT mobile network then that call must originate (or start) on the LIME mobile network and terminate (or finish) on the CCT network. It would not be possible for the CCT customer to answer the call if the call terminated on the LIME network, or for that matter on the Digicel network. This is because the call would then never reach the CCT network or the CCT customer. In order to call a CCT customer it is necessary to terminate the call on the CCT network. Likewise, as shown in figure 2 below, to call a Digicel customer, it is necessary to terminate a call on the Digicel network and to call a LIME mobile customer, it is necessary to terminate the call on the LIME mobile network and to call a LIME fixed line customer it is necessary to terminate the call on the LIME fixed network. Simply speaking, if a customer wants to call a fixed line number with the prefix 49, then the call can only terminate on the fixed LIME’s network, it cannot terminate on any other network.

Figure2



3.5 In our initial request for information to the operators, CCT and LIME responded that they considered that each market; fixed, mobile and SMS termination constituted a separate market for termination. Digicel responded that it was not possible to draw conclusions on market definition at this stage. CCT suggested that a distinction should be drawn not between fixed and mobile termination but between wired and wireless termination with reference to their FiWi product which is a fixed wireless service using CDMA technology. The product in question is a wireless product which offers voice calls via a desk phone. The product itself uses mobile technology to originate and terminate calls and can be used to make and receive calls wherever the CCT CDMA network reaches in the VI. Therefore it offers the same level of mobility (albeit with a different type of handset) as a mobile voice product offered with GSM technology (or, for that matter, CDMA technology). As CCT's FiWi product exists as an alternative to its GSM prepaid and postpaid calling product using a mobile technology, the TRC considers that the termination of calls to FiWi should be treated as mobile call termination.

The SSNIP test

3.6 **Demand-side substitutability.** The Market review document[5] outlined the small but significant non-transitory increase in price test ("SSNIP test") to assist with market definition. If the wholesale price of terminating a call (the termination rate) increases on the fixed line network and the retail price

[5] http://www.trc.vg/attachments/014_TRC_Market%20Review_Final.pdf

(to a customer) to call a fixed line also increases then in theory a consumer could switch to make a call to a mobile or send an SMS instead. Similarly if the price of terminating a call to a mobile increases or to terminate an SMS increases then a consumer could choose an alternative mode of communication out of the fixed and mobile options if the person they are trying to reach can be accessed in such a way. In practice, there appears to be limited demand-side substitutability between the three modes of communication as consumers view the three modes differently. A person cannot be reached on their fixed line when they are out of the home and similarly a person cannot be reached by SMS if they do not own a mobile phone. The TRC considers that a call to a mobile cannot be substituted by an SMS. By definition, SMS are written short messages that do not allow a real time dialogue between the called and calling parties; SMS are sent only after messages have been composed. SMS may be delivered in real time but this is not guaranteed. Hence the TRC is of the view that SMS do not provide a competitive constraint on voice call termination rates. The TRC considers that a call to a fixed number is not substitutable to a call to a mobile number as the ability to be called, regardless of the location, is the defining feature of mobile services. Hence, the degree to which demand-side substitutability from a fixed line network puts constraints on mobile network operators ("MNOs") in pricing call termination is limited and the three products, whilst inter-related, must be viewed as separate markets. The TRC considers that there are no effective demand-side wholesale substitution services for termination on individual networks at the wholesale level. Faced with a SSNIP, the buyer of termination services (the originating operator) cannot substitute wholesale call termination services supplied by the terminating operator with an equivalent service from another operator.

3.7 Supply-side substitutability. Supply-side substitutability occurs in response to a rise in the price of a product as suppliers of other products would at short notice and without incurring substantial sunk costs switch into supplying the product whose price had risen and render the price increase unprofitable for the hypothetical monopolist. For retail supply-side substitution to impose a constraint on the level of fixed and mobile voice call and SMS termination, there would have to be operators who do not currently provide calls to fixed lines or calls or SMS to mobiles that could switch into such provision and thus undermine a price set above the competitive level. In order to have such an effect, the new provider(s) would have to be able to provide a service which did not rely on the provision of termination from the fixed operator or MNO to which the called party subscribes. At present, it is not feasible to offer retail calls to a fixed line or retail calls or SMS to a mobile without being reliant on the fixed line operator or MNO to which the call party subscribes to terminate such calls. The TRC is of the view that there are no substitution possibilities over the relevant time horizon. Faced with an increase in the termination rate above the competitive level by a public supplier, no other established public supplier or new entrant could offer a termination service to subscribers of that public supplier. This is the case as presently only the terminating operator is able to locate the called party, identify the number and terminate the call to that number. The TRC is of the view that there are no substitution possibilities between the supply of fixed voice call, mobile voice call or SMS termination services. In response to price increase, a fixed line operator cannot offer mobile voice call termination on the fixed line network and cannot offer to terminate an SMS. Likewise a mobile network operator cannot offer to terminate a fixed voice call on the mobile network. Therefore, from a supply-side point of view, there are no wholesale supply-side substitutes.

3.8 For wholesale supply-side substitution to be an effective constraint on fixed line, mobile voice and SMS termination shares, it has to be possible for other firms to switch into the provision of wholesale voice call or SMS termination to a subscriber of a network of a fixed or mobile operator. Due to the fact that it is not technically possible to do this as numbers are tied to individual networks and there are no services available in the market that could offer alternative end-to-end routing to the same numbers, there can be no effective supply side substitutes to call and SMS termination on fixed and mobile networks. Therefore, in conclusion, there are no effective retail or wholesale supply side substitutes to call and SMS termination on individual fixed and mobile networks.

3.9 Without demand-side or supply-side substitutes, the appropriate market definition is that of termination to a specific network rather than to a specific number. This is because each network operator is allocated a specific number range over which it has the technical capability and right to terminate calls or SMS and therefore termination is aggregated across all numbers belonging to a network operator. Furthermore, none of the operators differentiate termination rates on the basis of individual numbers. Therefore the competitive conditions for calls and, respectively, SMS to all numbers of a specific network are equal and this justifies aggregating calls and SMS to all such numbers into a single market. However, operators do differentiate on the basis of whether a call is to a fixed or a mobile network. This further supports separation between respective markets of fixed and mobile termination.

Conclusion 1: The TRC intend to define seven separate markets for termination:

i) The wholesale market for fixed-line call termination on LIME
ii) The wholesale market for mobile call termination on CCT
iii) The wholesale market for mobile call termination on Digicel
iv) The wholesale market for mobile call termination on LIME
v) The wholesale market for SMS termination on CCT
vi) The wholesale market for SMS termination on Digicel
vii) The wholesale market for SMS termination on LIME

Question 1 a): Do you have any objections to the above definitions?

Question 1 b): Do you see calling someone on their fixed phone as an equal substitute to calling someone on their mobile phone?

Question 1 c): If the price of sending an SMS to either CCT, Digicel or LIME increased by 5-10% would you a) switch to making voice calls to CCT, Digicel and LIME mobile or b) switch to making voice calls to fixed lines?

3.10 The relevant geographic market. As per the Market Review, "A geographic market is defined with respect to the scope of service within a defined territory, within which competitive conditions are sufficiently similar. In many instances the geographic market would coincide with the territory that the licensees are licensed to operate their networks or provide their services in." The scope of the service in question is the termination of fixed voice calls, mobile voice calls and SMS within the territory of the VI where the public suppliers are licensed to provide service in. Accordingly, the TRC does not consider that the relevant geographic market is wider or narrower than the VI.

Question 2: Do you agree with our view that the geographic market for each of our proposed markets should be the Territory of the VI?

4 SECTION 2: Assessment of competition and evidence of significant market power

4.1 Market power

Section 26 (3) of the Telecommunications Act (the "Act") sets out that the TRC may determine that a public supplier is dominant with respect to a telecommunications network or a telecommunications service where, individually or jointly with others it enjoys a position of economic strength affording it the power to behave to an appreciable extent independently of competitors.

Section 26 (3) of the Act requires that the TRC shall hold a consultation before determining a public supplier dominant, and is carrying out this duty with this document.

4.2 Assessment of Market power

In an assessment of market power, the Act directs the TRC to take into account the following factors:

a) The relevant market;
b) Technology and market trends;
c) The market share of the public supplier;
d) The power of the public supplier to introduce and sustain a material price increase independently of competitors;
e) The degree of differentiation among networks and services in the market; and
f) Any other matters that the TRC deems relevant.

In assessing the degree of market power each operator has in the voice call and SMS termination markets, we refer back to section 3.4 on how the termination market works.

4.3 Each operator has full and exclusive control of the termination of calls to their own network, or in other words in the termination of calls to their own customers. There is no other way to reach that mobile or fixed line customer on that specific mobile or fixed line number other than through that network. The technical impossibility of terminating a call to a customer via another network means that each operator has 100% market share in the termination of calls to their own network. However, the question is then "is an operator in a position of economic strength affording it the power to behave to appreciable extent independently of competitors and users" in the setting of its termination rate and/or other conditions for termination?

4.4 Where there is an operator with 100% market share in the termination of calls to its own network, there is prima facie evidence that the operator can use its market power to set termination prices at the profit maximising level. As per section 7.3 of the Market Review, 'In line with established case law, market shares over 50% are evidence of dominance". Given that there are three mobile network operators and one fixed line operator who need to exchange traffic with each other, the actual level of the termination rate will be influenced by specific interests of the operators. In the case of symmetric mobile termination rates, mobile operators who send a large amount of traffic relative to the amount they receive will want termination rates to be low, to minimize costs and operators who receive a large amount of traffic relative to the amount they send will want termination rates to be higher, to maximize termination revenues. It is only when the traffic exchange between operators is equal that operators will have aligned incentives on the level of the termination rate.

4.5 However in practice, especially with the obligation to interconnect under section 26 of the Act, even a small operator has market power with respect to the price of terminating calls on its own network. H3G, a mobile operator in the UK market, with a small market share (around 5%) was found by Ofcom, the Competition Appeal Tribunal[6] and the English Court of Appeal to have significant market power in the termination of calls, notwithstanding the presence of countervailing buyer power ("CBP") on the part of the fixed line incumbent and former monopolist, British Telecommunications plc.

4.6 A large buyer of termination minutes may exert pressure over the termination rate and as such may be said to have such CBP. The buyer must be able to exert sufficient CBP that a seller is unable to act independently of its competitors, customers and consumers. However in the presence of an obligation to interconnect, as outlined in Section 26 of the Act, no two parties can refuse to interconnect on the basis of price. Each public supplier must "provide for the transmission and routing of the services of other public suppliers" and "shall not, with respect to its network or services, refuse, obstruct or in any way impede, another public supplier from making a direct interconnection, or an indirect interconnection through the public telecommunications network or public telecommunications services of other public suppliers, to the public telecommunications network he operates, or to the public telecommunications services he provides." Therefore no large purchaser of termination minutes can use price as a reason to refuse interconnection and there is no incidence of CBP.

4.7 The concept of dominance is used synonymously with the concept of significant market power. It is useful to refer to the European Commission's Recommendation on termination rates[7],

[6] http://www.catribunal.org.uk/files/Jdg_CAT11_1083_H3G_200508.pdf
[7] European Commission Recommendation on Termination Rates, 7 May 2009

whereby all fixed and mobile network operators are deemed dominant in the markets for fixed termination and mobile termination. As set out in the Market Review, "the European system presents a framework, which has been implemented in or adapted to a variety of countries of different sizes and market characteristics. Therefore it can be adapted to the needs and competitive nature of the VI allowing for local circumstances." In the view of the TRC, it is instructive to use the European Commission's Recommendation as a source of best practice for designing the regulatory solution for the VI.

4.8 As stated in the European Commission Recommendation on Termination Rates Explanatory notes of May 7 2009, "Call termination can only be supplied by the network provider to which the called party is connected. There are currently no demand- or supply-side substitutes for call termination on an individual network. Therefore, each network constitutes a separate relevant market and each network operator has a monopolistic position on the market for terminating calls on its own network. Moreover, under the prevailing calling party pays ("CPP") principle in the EU, the calling party pays entirely for the call, and the wholesale termination rate paid by the originating operator is normally passed on to its end customer. As the called party is not billed for incoming calls, it is generally indifferent to the termination charge set by its network provider (i.e. the terminating operator) and has little or no incentive to change its own network provider in the event that those charges are raised. Consequently, in the absence of other factors such as countervailing buyer power, the criteria necessary to merit *ex-ante* regulation are normally met, and the terminating operator is designated as having significant market power (SMP)." This describes the situation in the VI, whereby there are no demand or supply-side substitutes for call or SMS termination on an individual network and no evidence of countervailing buyer power and hence it is appropriate to designate each operator with SMP or in other words is dominant in the relevant market.

4.9 **Conclusions on SMP/Dominance**

Our proposal is to designate each operator with SMP based on the following:

a) **The relevant market** being voice call and SMS termination on fixed and mobile networks as follows;
   i. Wholesale mobile voice call termination provided by Caribbean Cellular Telephone (Ltd)
   ii. Wholesale mobile voice call termination provided by Digicel (BVI) Ltd
   iii. Wholesale mobile voice call termination provided by Cable and Wireless (BVI) Ltd
   iv. Wholesale fixed voice call termination provided by Cable and Wireless (BVI) Ltd
   v. Wholesale SMS termination provided by by Caribbean Cellular Telephone (Ltd)
   vi. Wholesale SMS termination provided by Digicel (BVI) Ltd
   vii. Wholesale SMS termination provided by Cable and Wireless (BVI) Ltd

b) **Technology and market trends** not offering any alternative form of termination

c) **The market shares of the public suppliers** being high enough (100%) to represent market power with respect to termination on each individual public supplier. As set out in section 7.3 of the Market Review, market shares over 50% are evidence of dominance.

d) **The power of the public supplier to introduce and sustain a material price increase independently of competitors**; the TRC is of the view that each public supplier of termination could increase price by 5-10% without a negative impact on termination profitability (based on the SSNIP test) because there is no other alternative of reaching numbers controlled by that provider and because consumers, who make a choice on which network to subscribe to, do not pay for termination of calls.
e) **The degree of differentiation among networks and services in the market**; the three public suppliers, CCT, Digicel and LIME operate separate networks with separate termination services, however the type of service that they offer is essentially the same and therefore the same designation shall apply to all.
f) Any other matters that the TRC deems relevant:
    - **Structural indicators** – In a defined market with high and sustained market shares, only the public supplier can terminate voice calls to the fixed or mobile numbers it has been allocated, and which are held by its subscribers. In effect, each public supplier has 100% share of the relevant termination market.
    - **Barriers to market entry**: the combination of high market shares held by public suppliers in each of their proposed markets, together with the existence of high barriers to entry (both in terms of the likelihood of actual entry and threat of entry and the fact that any new entrant could not provide termination services on another public supplier's network) leads us to a strong presumption that each public supplier holds SMP.

The TRC sees that there are no other factors prevailing in the VI which would suggest that the public suppliers do not have significant market power in the termination of voice calls and SMS.

The TRC therefore propose to designate LIME, Digicel and CCT as dominant in the following markets respectively:

1) Wholesale mobile voice call termination provided by Caribbean Cellular Telephone Ltd
2) Wholesale mobile voice call termination provided by Digicel (BVI) Ltd
3) Wholesale mobile voice call termination provided by Cable and Wireless (BVI) Ltd
4) Wholesale fixed voice call termination provided by Cable and Wireless (BVI) Ltd
5) Wholesale SMS termination provided by Caribbean Cellular Telephone Ltd
6) Wholesale SMS termination provided by Digicel (BVI) Ltd
7) Wholesale SMS termination provided by Cable and Wireless (BVI) Ltd

Question 3: Do you agree that each operator is dominant in the respective termination markets

1) Wholesale mobile voice call termination provided by Caribbean Cellular Telephone Ltd
2) Wholesale mobile voice call termination provided by Digicel (BVI) Ltd
3) Wholesale mobile voice call termination provided by Cable and Wireless (BVI) Ltd
4) Wholesale fixed voice call termination provided by Cable and Wireless (BVI) Ltd
5) Wholesale SMS termination provided by by Caribbean Cellular Telephone Ltd
6) Wholesale SMS termination provided by Digicel (BVI) Ltd
7) Wholesale SMS termination provided by Cable and Wireless (BVI) Ltd

5. SECTION 5 Assessment of appropriate regulatory obligations and remedies

5.1 Under Section 26 (4) of the Act, “where the Commission determines that a public supplier is dominant in any market, the Commission shall include in the licence of the public supplier, by amending the licence, such additional terms and conditions to the licence for the purposes of regulating tariffs, protecting the interest of users and other licensees including the provision of adequate facilities and interconnection and access services, and of ensuring fair competition among licensees as it considers appropriate”. Therefore, once the TRC issues a determination designating each public supplier as dominant in the relevant call termination market, then it is empowered to amend the licence of each public supplier setting out the appropriate regulatory remedies. Furthermore, with respect to interconnection, public suppliers shall as per section 26 (2) of the Act, “comply with the Telecommunications Code”. Also, section 29 (2) (a) of the Act enables the TRC through the Telecommunications Code to establish price regulation regimes to promote efficiency and sustainable competition and maximise consumer benefits for setting, reviewing and approving prices where a licensee has a dominant position in the relevant market. The TRC considers it appropriate to set out regulatory obligations on interconnection, known as the “Requirements on Interconnection” under the Telecommunications Code. A proposed draft of the Requirements on Interconnection is attached in Annex 1 to this document and feedback is sought on this document. As a result of this consultation the TRC propose to adopt and publish:

1) A Determination on dominance on the relevant call and SMS termination markets in the VI
2) Requirements on Interconnection under the Telecommunications Code
3) Amendments to the licence of each public supplier setting out the relevant mode of interconnection charging and a determination on rates if appropriate.

5.2 Requirements on Interconnection will refer to the interconnection obligations necessary to ensure fair competition as well as to protect the interests of users. These Requirements have been developed in line with the guidelines set out by the ITU’s HIPCAR (Harmonisation of ICT Policies in the Caribbean) project. Through HIPCAR, the ITU have recommended Model Policy Guidelines for Interconnection and Access for the Caribbean which have been taken into account.[8] The Requirements on Interconnection, which are intended to be generic and technologically neutral include:

- Access obligation including the provision of interconnection service and associated facilities
- Non-discrimination obligation
- Confidentiality obligations
- Transparency obligations
- An obligation to publish interconnection agreements
- The application of a charge control
- The methodology to determine the charge control
- Access to facilities and utility installations

[8] http://www.itu.int/ITU-D/projects/ITU_EC_ACP/hipcar/reports/wg2/docs/HIPCAR_2-2-B_working%20document_Model_Policy_Guidelines_Legisla-Text_Interconnection_2010.pdf

5.3 **Access Obligation:** The TRC propose that as per Section 26 of the Act whereby a public supplier "shall not, with respect to its network or services, refuse, obstruct or in any way impede, another public supplier from making a direct interconnection, or an indirect interconnection through the public telecommunications network or public telecommunications services of other public suppliers, to the public telecommunications network he operates or to the public telecommunications services he provides, on such terms as may be specified by the Commission under the Telecommunications Code", each public supplier shall therefore meet all reasonable requests for access. The terms and conditions of access shall be set out in the interconnection agreements as according to the Requirements on Interconnection.

5.4 **Non-discrimination obligation:** In order to ensure fair competition between public suppliers so that all public suppliers can compete on the same basis with regard to inputs, the TRC is of the view that every public supplier must offer to provide and provide interconnection to other public suppliers on the basis of terms and conditions that are non-discriminatory in nature and with respect to rates and quality of service.

5.5 **Confidentiality obligations:** In the interests of fair competition and to ensure that the downstream arm of the public supplier does not unduly benefit from the commercially sensitive information submitted by competitors to the upstream arm, every public supplier must protect from disclosure any confidential, proprietary or competitive information provided by another public supplier received in the course of negotiation or implementing an interconnection agreement.

5.6 **Transparency obligations:** In the interests of enabling and facilitating implementation of access and enabling the application of non-discrimination obligations, each dominant public supplier must publish the information in respect of the provision of interconnection including technical specifications, network characteristics and terms and conditions for supply and use, including prices on its website and this information will also be published on the TRC's website. Dominant public suppliers will be required to publish interconnection agreements.

5.7 **The application of a charge control:** In the event of a finding of dominance a charge control may be applied to dominant public suppliers to protect the interests of users and to ensure fair competition. The draft Requirements set out that a cost-oriented methodology should be used to determine the appropriate level of the charge control.

5.8 **Access to facilities and utility installations:** each public supplier and public utility shall provide other public suppliers and public utilities with access to all facilities and utility installations on a reasonable basis as determined by the TRC to ensure fair competition. In line with section 27 of the Act, "access to facilities and utility installations shall be negotiated as between or among public suppliers and public utilities on a non-discriminatory and equitable basis."

5.9 The TRC does not see that it is necessary or appropriate to apply cost accounting or accounting separation obligations given the size of the operations in the Territory and the cost it would take for the operators and the TRC to implement such obligations.

5.10 As section 26 (1) of the Act mandates interconnection (as well as access to facilities and utility installations) regardless of a dominance determination (i.e., any to any interconnection), the TRC considers that the obligations set out in paragraphs 5.3-5.6 (except the obligation of transparency which applies only the dominant public supplier) and 5.8 shall apply to every public supplier (as they are necessary to implement such statutory obligations in an effective manner that would ensure fair competition and reasonable supervision of such obligations). The TRC considers however that the transparency obligations and, in particular the charge control obligation should apply only to dominant operators because of specific requirements of section 29 of the Act and, also, as they aim to address specific competition issues stemming from possible use of specific market power by dominant operators.

5.11 The TRC takes this opportunity to implement other related aspects of the Act though the Telecommunications Requirements such as the requirements on sharing of facility installations.

5.12 The TRC sees it fit to apply price regulation to address the proposed dominance in the relevant termination markets, in the form of a termination rate price control. In order to determine the relevant termination rates, there are four options:

1) No regulation
2) Bill and Keep
3) Regulated termination rates based on a cost model
4) Regulated termination rates based on benchmarking

5.13 The TRC must also consider if it is appropriate to regulate all forms of termination, namely fixed voice call termination, mobile voice call termination and SMS termination. It is currently the view of the TRC that whilst each mobile operator is dominant in the termination of SMS to their own network, it is not necessary at this stage to apply any form of wholesale SMS price regulation as a bill and keep regime is currently in place with respect to SMS. With the prevalence of SMS retail offers on the marketplace, the TRC does not see any reason to intervene in this commercial solution at this point. If this situation should change, then the TRC retains the right to intervene and impose remedies on this market. The TRC, however, considers that all other aspects of obligations as set out in "Requirements on Interconnection" shall apply to SMS termination to the full extent.

Question 4: Do you agree that SMS termination rates should remain unregulated?

However, the TRC is of the view that it is essential, to protect the interests of both wholesale and retail customers, to address the issue of fixed and mobile call termination rates.

Question 5: Do you agree that the TRC should address the issue of fixed and mobile termination rates?

5.14 The methodology to determine Termination Rates

As set out above, there are four ways to set termination rates:

1. **No regulation.** Rates are set through commercial negotiation. In the presence of significant market power in the termination of mobile voice calls, fixed voice calls and in the presence of unequal market shares, the negotiated outcome will be sub-optimal from a consumer welfare

point of view as operators have an incentive to set termination rates above cost. Regulatory intervention is required to set termination rates at the efficient level for the benefit of consumers.

2. Bill and Keep

Bill and Keep (BAK) means that operators bill their customers for the calls they make and keep the revenue. They do not charge each other fees for termination, so in other words, the termination rate is set at zero. Where traffic is balanced between operators a zero termination rate eradicates the need for measuring and billing for traffic and ultimately for making identical payments between operators However where one operator terminates more traffic than another operator it may be argued that one operator may be disadvantaged by bearing a proportionately greater network cost. This may, in turn, create the incentive for operators not to terminate traffic, but under an obligation to interconnect this is not an option. Therefore operators may look to develop commercial solutions such as retail offers which encourage customers to make rather than receive calls so that any extra cost of termination is not borne. This might also encourage the development of spam calls. Therefore this may then result in an inefficient calling pattern. The real cost of termination is not zero if operators have to maintain network availability for third party termination services.

The issue of to whom a bill and keep system would apply needs to be considered – whether it could be just between the mobile operators or whether it would also apply to the fixed line.

However, there may be reasons to implement a bill and keep system in the Virgin Islands. A bill and keep system, first of all, provides regulatory simplicity and relatively easy administration of such price regulation. This may be important in the context of limited resources that both the TRC and operators have and the necessity to use such resources in a manner than maximises benefit to the market (and is not a regulation for regulation sake). The benefits of such simplicity, of course, need to be compared against the loss of economic efficiency.

In the specific context of the Virgin Islands, the arguments in favour of the BAK are as follows:

1) There are only three mobile networks and one fixed network rather than a large number of networks that could complicate decision making in relation to who is eligible to interconnect under a BAK system.
2) The networks are relatively similar in size, unlike in other countries where very large and very small operators exist making the exchange of traffic more unequal.
3) Each operator has only one point of interconnection. Therefore, there is no “hot-potato” problem as in other countries where the originating operator looks to offload the routing of the call as quickly as possible to minimise the burden of own-network cost.
4) A bill and keep system can reduce the need for inter-network accounting, settlement and dispute resolution and could therefore benefit a small country environment where resources are limited.

5) The increasing variety of technologies makes it more difficult to accurately reflect the cost of access technologies in a termination rate calculation. Therefore bill and keep is more simple to implement and can incentivise operators to use the lowest cost technology.
6) BAK can also be replicated to new technologies and new applications and is therefore forward-looking without requiring significant regulatory intervention on an ongoing basis.
7) The costs of implementing bill and keep would be low in the VI given the size of the territory, the similarity of the networks and the localisation of the points of interconnection.
8) BAK is currently applied to SMS in the VI and as a system appears to function to the satisfaction of the operators with SMS retail offers prevalent in the market.

The TRC welcomes the views of all stakeholders on the use of bill and keep to address the fixed and mobile termination issue.

Question 6: Please give your view on Bill and Keep. Do you think it is an appropriate to apply a bill and keep model to fixed /or mobile voice call termination in the VI?

3. **Application of a long run incremental cost (“LRIC”) model to determine the rate.**

In many regulated environments[9], a cost model is developed to calculate the additional costs incurred through offering termination services to other public suppliers. Cost models have evolved from LRIC plus models which also allow for some fixed and common costs to be allocated to termination services to pure LRIC models which only account for the extra cost of offering termination services to other public suppliers. [10] The development of a LRIC model can be a time consuming and costly process and normally involves the engagement of consultants to collect data from the operators and to construct and populate a LRIC model. The purpose of a LRIC model is to model the network costs of a hypothetical efficient network operator in a given country. LRIC models are normally composed of a number of linked spreadsheets covering:

1. Traffic: produces network demand forecasts based on forecasts of how number of subscribers, market share and traffic per subscriber will evolve over time
2. Network: produces the network costs that must be incurred to support the input level of demand, based on asset costs and a projected network deployment
3. Economic: outputs a service cost based on the economic depreciation of the forecast network costs

[9] UK (Ofcom) and France (Arcep) have typically led the field in developing cost models.
[10] See European Commission Recommendation on Termination Rates, 7 May 2009 and Ofcom Final Statement on Mobile Call Termination 15 March 2011.

4. Cost accounting: outputs a gross book value and service cost based on the accounting depreciation of the network assets.

LRIC models forecast the future cost of terminating traffic. Operators provide data to input to the model. The key parameters in the model centre on the choice of technology, traffic assumptions and the value of spectrum. In certain jurisdictions, such as the UK, the value of the spectrum used by the operators has a significant impact on the final level of the termination rate. The accuracy of a LRIC model will depend upon the inputs and one of the key drivers of the final rate is the traffic forecast. Typically regulators will use a range of traffic forecasts and input scenarios into the model to arrive at the final rate, given the difficulty in forecasting the evolution and the relative balance of voice and data traffic.

LRIC modelling is a resource intensive process. Given the early indications provided by the operators that they do not have the level of the cost information required to carry out LRIC modeling exercise for the VI, the TRC does not propose to embark upon an expensive and lengthy cost modeling exercise for the VI. Instead, the TRC recognize that as a small market, it could be possible for the VI to benefit from the LRIC modeling carried out elsewhere, if LRIC based termination rates are selected as the appropriate way to charge for interconnection, and therefore benchmark the VI termination rates against LRIC based termination rates elsewhere.

Question 7: Do any stakeholders feel that a LRIC modelling exercise should be undertaken for the VI and have the resources to provide inputs to a LRIC model?

4. Benchmarking

The fact that many jurisdictions have already undertaken a cost modeling exercise means that there is a wealth of benchmark cost-based termination rates that the TRC can draw upon in setting the rate. In addition, the European Commission's Recommendation on Termination Rates sets out that where countries do not have the resources to develop a LRIC cost model, benchmarking based on countries using a LRIC cost model may be used. The choice of benchmark is crucial in determining the appropriate level of the termination rate for the VI. Termination rates continue to vary widely across countries and depending upon responses to question 6 on bill and keep and any arguments made in favour of bill and keep, the TRC may include countries operating bill and keep systems in the selected set of benchmarks. Therefore it is not appropriate to pick a random sample of countries to base an average termination rate on. Instead, the TRC believe that a proportionate approach would involve benchmarks from not only similar jurisdictions to the VI but also from countries adopting the leading methodologies for calculating termination rates. It may be possible to find benchmarks from countries that are topographically similar to the VI but if those termination rates are set on the basis of outdated methodologies then the VI will find itself playing continual catch-up with other jurisdictions.

For example, back in 2005, Jamaica had one of the lowest termination rates in the world. However, the operators appealed the decision of the regulator to designate each operator with SMP and to regulate the rates and this appeal process lasted until 2010 when the Jamaican Telecommunications Appeal Tribunal handed down the judgment that the regulator was right to impose the SMP condition and related regulation[11]. In the meantime, Jamaica now has one of the higher termination rates. Therefore it is important to benchmark against countries which are leading the regulatory trend and are employing the most up to date LRIC models.

One option is to benchmark against the European countries following the European Commission's Recommendation on Termination Rates which sets termination rates on a pure LRIC basis. The TRC would also consider information provided by the operators which demonstrates why any adjustment should be made to such benchmarks to account for the specific features of the VI, including size of the Territory, topography and cost of inputs.

Question 8: Do you think it is appropriate for the TRC to follow a benchmarking exercise as the chosen regulatory approach to determining the termination rates for the VI. If not, why not?

Question 9: Do you think it is appropriate for the TRC to benchmark against countries following the European Commission methodology taking account of an appropriate adjustment for VI operators ? If not, why not?

5.15 The benefits of lower termination rates

The European Commission's Recommendation on termination rates which looks to set termination rates at the pure LRIC level or the incremental cost of third party termination across the European Union also aimed to ensure that retail prices could be set at the lowest level. Taking into account the wealth of literature[12] debating the impact of the termination rate on the retail price, it is the view of the TRC that if a termination rate is set at the lowest possible level then the retail price could also be set at the lowest possible level, or in other words does not present an artificial barrier to lowering the retail price. Low termination rates facilitate the development of cross-net pricing offers and all-inclusive bundles such as

---

11 http://www.our.org.jm/images/stories/content/PressRelease/Telecommunications%20Appeals%20Tribunal%20dismisses%20Digicel's%20appeal%20against%20OUR%20decision.pdf

12 Littlechild, S. (2006) "Mobile Termination Charges: Calling Party Pays versus Receiving Party Pays," *Telecommunications Policy*, 30(5-6), 242-277.
Harbord, David and Marco Pagnozzi (2008) "On-Net/Off-Net Price Discrimination and'Bill-and-Keep' vs. 'Cost-Based' Regulation of Mobile Termination Rates"
Calzada, J. and T. Valletti (2008) "Network Competition and Entry Deterrence," *Economic Journal*, forthcoming.
Valletti, T. and C. Cambini (2005) "Investments and Network Competition," *RAND Journal of Economics*, 36, 446-467.
Jeon, Doh-Shin, Jean-Jacques Laffont and Jean Tirole (2004): "On the 'Receiver-Pays' Principle", *RAND Journal of Economics*, 35(1), 85-110.
Armstrong, Mark and Julian Wright (2008): "Mobile Call Termination", *Economic Journal*
Pagnozzi Hoernig, Steffen (2007) "On-Net and Off-Net Pricing on Asymmetric Telecommunications Networks," *Information Economics & Policy*, 19(2), 171-188,
Genakos, Christos and Tommaso Valletti (2008): "Testing the 'waterbed' effect in mobile telecommunications"

the “Unlimited Plans” on offer from the MNOs in the VI which allow customers to make unlimited number of national calls to any network. Low termination rates should also mean competitive pricing of off-net calls out of bundle or in prepaid packages. Prepaid subscriptions are typically taken up by lower income consumers. The differential between the off-net and on-net price may have a detrimental effect on consumer welfare. Therefore a low termination rate can be seen to promote both unlimited offers and lower off-net out of bundle prices. Therefore, lower termination rates are in the public interest. It is also important to note that regulated termination rates should be set without prejudice to the other requirements applicable to public suppliers, such as requirement of non-discrimination and the requirement not to abuse market power (including margin-squeeze practices).

5.16 Conclusion

The TRC intend to determine CCT, Digicel and LIME as dominant with respect to the termination of calls and SMS to their own network. The TRC therefore intends to define seven separate markets for termination and determine the following public suppliers dominant in the respective markets:

1) Wholesale mobile voice call termination provided by Caribbean Cellular Telephone (Ltd)
2) Wholesale mobile voice call termination provided by Digicel (BVI) Ltd
3) Wholesale mobile voice call termination provided by Cable and Wireless (BVI) Ltd
4) Wholesale fixed voice call termination provided by Cable and Wireless (BVI) Ltd
5) Wholesale SMS termination provided by Caribbean Cellular Telephone (Ltd)
6) Wholesale SMS termination provided by Digicel (BVI) Ltd
7) Wholesale SMS termination provided by Cable and Wireless (BVI) Ltd

The TRC propose Interconnection Requirements annexed to this consultation which set the basis for interconnection in the VI.

The TRC do not propose to regulate rates for SMS termination at this point in time. The TRC propose to regulate both fixed and mobile voice call termination rates as an outcome to this consultation.

The TRC is also consulting on methods of charge control for fixed and mobile call termination rates.