



November 21, 2012

Re: "Response to Pre-Consultation Document PC12/03: Comments on Market Review Process"

Attention: Ms. Nakia Smith
Telecommunications Regulatory Administrator

Dear Ms. Smith,

Quantum Communications ("Quantum") hereby submits its comments in response to the Pre-Consultation Document PC12/03: Comments on Market Review Process, issued on October 10, 2012. We applaud the exhaustive efforts of the team of advisors assisting the Government of Bermuda in implementing the provisions of the Electronic Communications Act 2011 ("ECA") and welcome the opportunity to provide the views of Quantum on this critical undertaking.

Quantum looks forward to working closely with the Government and the new RA, its advisors and other industry participants to implement the ECA and its new licensing regime in a timely and successful manner. Should there be any questions regarding this submission please direct them to the undersigned.

Respectfully submitted,

A handwritten signature in black ink, appearing to read "Lin Gentemann", with a long horizontal line extending to the right.

Lin Gentemann
General Counsel

Cc: Paul Furbert, COO

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COMMENT

Quantum Comment #1

For purposes of this discussion, subject to the Company's modest commentary, we accept the findings set out in the Pre-Consultation Market Review Process Materials ("Pre-Consultation Materials") with respect to (i) identifying the relevant product and geographic markets, and (ii) analyzing the supply and demand factors for use in identifying which licensees have SMP in those markets. The Company, however, respectfully expresses grave reservations with the proposed Pre-Consultation approach to handling the significant and complex competitive forces that the Industry will encounter during the Moratorium Period. Specifically, we are very concerned that the protections needed to launch and sustain real competition and promote investment, particularly during the early stages of ICOL, are woefully lacking if not entirely absent in the *ex ante* remedies proposed. One could well view the proposed recommendations as achieving not so much a "light touch" approach but effectively a "hands off" approach. To summarize our concerns:

1. The proposed approach calls for releasing an SMP Licensee from Transitional Condition A1.1 and more importantly from the terms of its Pre-Existing Public Telecommunications Licence, upon the RA's ECA Section 25 determination that the SMP Licensee has complied with its *ex ante* remedy(ies). This gives rise to concern that:
2. Given the nature of some of the proposed *ex ante* remedies, little or no account seems given to the need to allow some period of time to elapse to determine whether actual compliance is achieved. Thus, by way of simple example:
 - (a) merely having a signed Reference Interconnection Order (RIO) should not suffice as "compliance." Actual implementation of the RIO terms followed by performance under and pursuant to such terms for some reasonable period of time should be the benchmark for compliance. It should also be noted that while there may be interconnection for one product, it does not necessarily follow that this interconnection may be for all types of service (e.g., voice interconnection is typically significantly different to broadband interconnection).
 - (b) Once the RA is satisfied that a wholesale "retail minus" price is set for a service, merely filing the wholesale tariff should not suffice as "compliance".
 - (c) Price restrictions have been proposed in some cases, but typically the restrictions have been on raising prices rather than aggressively dropping prices to reduce the financial incentive for new competitors to invest in a particular market. It is our position that incumbents with SMP should be restricted from materially changing pricing without careful consideration by the RA as to whether the price change is both warranted and promotes sustainable competition.
3. Beyond a doubt, BTC and BCV will have significant market advantages over the other ICOLs for an extended period of time due to their:
 - (a) ownership and control over essential facilities (e.g., spectrum, telephone numbers, local loops, rights of way, support structures such as ducts and poles);
 - (b) economies of both scale and scope of established networks;

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- (c) vertical economies within an affiliated group of companies or between companies from cross-ownership;
- (d) cross-subsidies within an affiliated group of companies or between companies from cross-ownership; and
- (e) “captive” customer relationships with the vast majority of end users in Bermuda.

These incumbent advantages can be easily leveraged or augmented to crush nascent competition by engaging in conduct such as bundling, price reductions, loyalty programs, and/or short term promotions, which is destructively anti-competitive in the hands of these SMP Licensees. Whilst recognizing the need to balance the goals of promoting sustainable competition and not unfairly handicapping incumbents, we contend that the SMP Licensees, either directly or indirectly through the use of one of their ICOL licenced affiliates or any ICOL licenced entity with whom they have more than a de minimus cross-ownership affiliation (e.g., less than 20 %) (hereinafter referred to in the Company’s Comments as “**SMP Associates**”), should not be determined compliant of their *ex ante* remedies and therefore not be released from ICOL Transitional Condition A1.1 for a period of at least 12 months from ICOL issuance, if not longer.

- 4. Although the Pre-Consultation Materials recognize the risks posed by cross ownership and cross-subsidy concerns, it is entirely silent with respect to any proposed remedies to regulate these predictable risks. There is no heightened regulation or monitoring of SMP Associates. This creates an open “back door” through which SMP Licensees can effectively reassert their dominance to the disadvantage of new competitors. Without such regulation, while new competitors await determinations to establish RIO and access agreement principles and terms, retail minus pricing, etc., those SMP Associates are free under their ICOLs to launch new services, bundle services, etc. without restraint. We believe appropriate mechanisms are crucial to prevent a SMP Licensee and its SMP Associates from gaining unfair competitive advantage, particularly during the Moratorium Period.
- 5. The Pre-Consultation Materials are silent with respect to how Transitional Condition A1.1 will work in terms of determining compliance with *ex ante* remedies where a Licensee has SMP designation in:
 - (a) a “Service” comprised of many different services, for example “retail mobile services,” or
 - (b) multiple “Services,” for example “Wholesale broadband access” and “Wholesale subscription TV services.”

It is unclear whether the SMP Licensee will be entitled to be released from its ICOL Transitional Conditions only when it has achieved compliance against all Services or whether relief from the terms of its Pre-Existing Public Telecommunications License will be metered out on some service by service basis. The Company believes that in order to avoid cherry picking compliance by SMP Licensees, that any release from the Transitional Conditions should only take place when all *ex ante* remedies have been complied with.

- 6. Respectfully, the proposed *ex ante* remedies don’t take into account prior SMP Licensee anti-competitive conduct under the TA86 regulatory regime. Experience has shown that the carriers in Bermuda risk little by aggressively pushing the envelope if not blatantly disregarding license terms and Industry regulation in order to advance self-serving interests done at the expense of other law abiding industry participants. For example, the alleged circumvention by DCB of the Class A licensee for delivery of DCB’s international voice traffic through the acquisition of Transact; BCV’s refusal to allow interconnection for access to its broadband delivery network; and BTC’s refusal to make available its 10 Mb DSL service to Class A licensees on the specious grounds that BTC classifies this as a “residential” service and thus not available to Class A licensees. The list of anti-competitive conduct is extensive and illustrates the destructive creativity and capabilities within our Industry. It should not only raise a red flag of caution to the RA but also expressly factor into the final list of *ex ante*

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remedies for each SMP licensee. At minimum, SMP Licensees known to have engaged in anti-competitive conduct deserve close monitoring if not heightened *ex ante* remedies during the implementation of ICOL reform.

7. A further risk to those articulated above, is the opportunity for cross ownership to be exploited in a manner that would entirely circumvent any proposed *ex ante* remedies and effectively ICOL reform itself. Through common ownership, a company group having multiple ICOL Licensees one or more of which is a SMP Licensee, can restructure operations internally such that the services provided by a SMP Licensee are migrated to one of its SMP Associates that is not regulated as a SMP Licensee, thereby eluding heightened regulation and scrutiny. If this restructuring without regulation were to be allowed it would result in the transfer of significant market power to the SMP Associate and thereby circumvent the proposed *ex ante* remedies and undermine ICOL reform.
8. Finally, the Company respectfully submits that the proposed regulations do not have sufficient “teeth” to compel a SMP Licensee to *ex ante* remedy compliance where continued operation within the constraints of its Pre-Existing Public Telecommunications License is preferred and ICOL reform is not in its best financial interest. Any such SMP Licensee may therefore require additional “encouragement” in the form of penalties to essentially force compliance. The Company urges the RA to adopt serious financial penalties for persistent non-compliance, up to and including loss of ICOL. We recommend the application of the financial penalties set out at ECA Section 56 as the appropriate consequence to recalcitrant parties.

We therefore propose that much stronger and meaningful *ex ante* remedies than currently proposed are needed to address these concerns if the long term benefits of sustainable competition and promotion of investment in the electronic communications sector are to be achieved. Many of the obvious protections we would expect to see are expressly set out in ECA Section 24. We have worked from that list and elsewhere to develop our proposed additional *ex ante* remedies. Our recommendations are set out in the pages that follow and form the minimum baseline *ex ante* remedies for SMP Licensees in each of the fifteen service market categories identified to date. We believe additional remedies could be warranted in those cases where the RA believes Industry may be especially vulnerable to anti-competitive conduct.

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<p style="text-align: center;">QUESTION AND/OR STATEMENT IN PART A - Sec 6 Market Definition – Issues Common to Multiple Markets</p>	<p style="text-align: center;">COMMENTS</p>
<p>Paragraph 49. <i>“On the supply-side of the market, network access must be supplied if local calls are to be made and received. Only Class B licensees can provide access and local calling. Current B licensees that retail these services include fixed line suppliers, BTC,⁵ QCL, fixed wireless provider, NRC; and cellular providers, BDC, DCB and M3.⁶”</i></p> <p>Table 24 at Appendix B (pg 136)</p>	<p>Quantum Comment #2</p> <p>With respect to Paragraph 49 and generally throughout the Pre-Consultation Materials the Company notes that it is characterized as a “Class B” licensee. Although we recognize this classification will become meaningless at ICOL issuance, Quantum respectfully reaffirms its position that it is not a Class B licensee and accordingly it preserves all rights in connection therewith.</p> <p>With respect to Appendix B, Table 24, the Company corrects the information presented there as follows:</p> <p>Company Name: <i>Quantum Communications Ltd. (Parent is Bragg Group) Limited (60% owned by ATG,³⁰³ and 40% owned by Cable & Wireless PLC)</i></p>

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<p style="text-align: center;">QUESTION AND/OR STATEMENT IN PART A - Sec 6 Market Definition – Issues Common to Multiple Market 6.2 Means of delivering fixed access and local calling c. Fibre</p>	<p style="text-align: center;">COMMENTS</p>
<p>Paragraph 97. <i>“Here again it is difficult to determine whether QCL, given its current price of \$56.50, would constrain competitive supply of voice service for three independent reasons: first, the price is not readily comparable with BTC’s present prices; second, even if it were clear that QCL’s price would not prevent BTC from engaging in a SSNIP (say by raising its present business monthly fee 15% from \$32 to \$36.80), this might be due to the reverse cellophane fallacy (that is, BTC’s business price may be regulated below competitive levels); and third, even if BTC’s prices were competitive, it may be that QCL has market power and so is able to impose a higher price for its business services than BTC (a form of the cellophane fallacy). For these reasons, the RA is not able to determine whether BTC’s business standard telephony price is competitive, but considers it unlikely that QCL’s price incorporates substantial economic rents.”</i></p> <p>Paragraph 99. <i>“As was the case with NRC’s standard business line offering (see Table 26), both a 5% and 10% SSNIP on BTC’s standard single line business would be profitable under all of the avoided cost and take-up scenarios depicted. While this evidence suggests that the standard single line business offerings of QCL and BTC belong in separate markets, other factors strongly support an opposite conclusion.”</i></p> <p>Paragraph 101. <i>“Two other factors suggest QCL’s FTTx VoIP services are in the same market as standard telephony: QCL’s high end commercial enterprise product rollouts in the Hamilton area met with competitive responses from BTC,⁵⁶ and QCL made significant inroads into the high end commercial enterprise market and now serves all, or almost all, of the large businesses in Bermuda.”</i></p>	<p>Quantum Comment #3</p> <p>With respect to both Paragraphs 97 and 99, the Company believes that BTC’s \$32 standard metered rate is too dissimilar to Quantum’s \$56.50 unlimited local rate for meaningful comparison.</p> <p>With respect to Paragraph 101, the Company emphasizes that its modest (low single digit) market share of Bermuda’s Voice market hardly supports the high praise extolled in the comment “QCL made significant inroads into the high end commercial enterprise market and now serves all, or almost all, of the large businesses in Bermuda.”</p>

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QUESTION AND/OR STATEMENT IN PART A - Sec 6 Market Definition – Issues Common to Multiple Market 6.3 Fixed and mobile services are not good substitutes for access and local calling	COMMENTS
Question 5: “Do you agree with the finding that fixed and mobile services are in separate markets? Explain.”	Quantum Comment #4 With respect to Question 5 , the Company agrees that the fixed and mobile services are in separate markets.

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<p style="text-align: center;">QUESTION AND/OR STATEMENT IN PART A - Sec 6 Market Definition – Issues Common to Multiple Market 6.5 Geographic markets c. Current domestic networks in Bermuda (i) Details of networks providing access lines and local calls, broadband or leased lines</p>	<p style="text-align: center;">COMMENTS</p>
<p>Question 9: “How should Central Hamilton be defined?”</p> <p>Paragraph 193. <i>“Using its optical fibre network, Quantum provides data services as well as voice services using VoIP. It provides services to both residential and business customers. For example, in respect of residential customers, Quantum states on its website that it:</i></p> <p style="padding-left: 40px;"><i>‘provides local loop access services and Voice Over IP services. Many of our customers utilize our high speed transparent Local Area Network (LAN) services in order to work remotely. If you are within the Quantum network footprint, we can service your access requirements.’¹³⁵”</i></p>	<p>Quantum Comment #5</p> <p>With respect to Question 9, the Company proposes that Central Hamilton be defined to comprise the City of Hamilton’s official legal boundaries.</p> <p>With respect to Paragraph 193, the Company comments that although it is currently authorized under its TA86 licence to provide Residential service, it currently has less than 0.1% of the Residential market and thus, for all practical purposes is not in the Residential market today. This is due primarily to the very limited geographic reach of Quantum’s network footprint, which essentially is within Downtown Hamilton save for backhaul connectivity to Devonshire and Southside with no distribution along either path. Under the strictures of the TA86 licensing regime there simply has been little or no financial incentive to invest in expanding that footprint.</p>

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<p style="text-align: center;">QUESTION AND/OR STATEMENT IN</p> <p>PART A - Sec 8 Market Definition – Broadband Access 8.3 Fixed broadband internet access and Internet service provision a. Fixed broadband (iii) Fixed broadband over FTTx networks</p>	<p style="text-align: center;">COMMENTS</p>
<p><i>Paragraph 216. See Table 9</i></p> <p><i>Paragraph 248. “From a forward looking perspective, the ICOL will give QCL regulatory permission to expand its service offerings into other markets that it is currently barred from entering. Given the extent and capacity of its fiber network, as depicted in the network maps the company provided to the RA as part of its data submission, expansion into new markets would make economic sense once regulatory barriers preventing this have been lifted. In section 5.2(c) the RA concluded that QCL’s FTTx VoIP services were in the same market as standard telephony. For reasons similar to those presented in the preceding paragraph, this suggests that any non-leased line fixed broadband access service QCL may choose to provide under the ICOL would belong in the same market as the broadband access services BTC provides over its fixed network.”</i></p>	<p>Quantum Comment #6</p> <p>With respect to Table 9, the Company respectfully proposes correcting the information to provide that Quantum is authorized under its licence to provide local fixed access to residential customers. The second to last column on the right should indicate “Yes.” However, we reiterate the point that for all practical purposes Quantum has less than 0.1% Residential market share as stated in Quantum Comment #5.</p> <p>With respect to Paragraph 248, the Company reiterates that “<i>the extent and capacity of its fiber network</i>” currently is very limited as discussed in Quantum Comment #5. We agree that any expansion of this small network footprint only makes economic sense once regulatory barriers are lifted.</p>

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QUESTION AND/OR STATEMENT IN	COMMENTS
<p>PART A - Sec 10 Market Definition –Leased Lines 10.1 Definition of leased lines markets (i). Analysis of which data services lie in the domestic leased line markets</p>	
<p><i>Paragraph 311. “Ethernet connections are provided by both BTC and QCL. BTC provides services at speeds 10 Mbps, 100 Mbps and 1Gbps with a range of Quality of Service (QoS) options. BTC is well positioned to provide Ethernet service in the City of Hamilton due to the construction of its new fibre rings.²⁰⁵ QCL provides Ethernet based services within the City of Hamilton, and out to CWC Teleport in Devonshire. Quantum also has a service at Southside in St. David’s.”</i></p>	<p>Quantum Comment #7</p> <p>With respect to Paragraph 311, the Company respectfully proposes correcting the last sentence as follows: “QCL provides Ethernet based services within the City of Hamilton and to CWC LBM’s Teleport in Devonshire. Quantum also has offers services at Southside in St. David’s.”</p>
QUESTION AND/OR STATEMENT IN	COMMENTS
<p>PART B – 5. SMP – Leased Line Services Sec 5.2 Suppliers and market shares (a) Low-speed retail leased line services</p>	
<p><i>Paragraph 593. “Quantum provides Ethernet based retail leased line services almost exclusively within Central Hamilton, with service out to CWC Teleport in Devonshire and another service at Southside in St. David’s. BTC and North Rock provide service throughout the country. TNL provides only a few low-speed circuits for security and monitoring purposes in the City of Hamilton. The following table depicts the number of low-speed retail leased line circuits provided by each of these firms.⁵⁷.”</i></p>	<p>Quantum Comment #8</p> <p>Similarly, in Paragraph 593 the Company requests correcting the last sentence in to provide: “Quantum provides Ethernet retail based leased line services within Central Hamilton, with service out to CWC LBM’s Teleport in Devonshire ...”</p>

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QUESTION AND/OR STATEMENT IN PART A - Sec 11 Market Definition –Infrastructure Access	COMMENTS
<p>Question 15: “Do you agree with the conclusion that there is a market for the supply of wireless network facilities that includes tower and mast access? Are there other services that you consider lie in this market?”</p>	<p>Quantum Comment #9 With respect to Question 15, the Company comments that ducts should be added to the list of wireless network facilities as they are needed for backhaul between transmitting towers/masts.</p>

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<p style="text-align: center;">QUESTION AND/OR STATEMENT IN PART A - Sec 12 Market Definition – Television Services 12.1 Retail subscription TV services 12.2 Wholesale subscription TV services to deliver broadcast content to end users</p>	<p style="text-align: center;">COMMENTS</p>
<p>Question 16: “Do you agree that the relevant retail market for the supply of subscription TV services to deliver broadcast content to end users includes subscription services provided via different means and is not disaggregated according to content?”</p> <p>Question 17: “Do you agree that the relevant wholesale market for the supply of subscription TV services to deliver broadcast content to end users includes subscription services provided via different means and is not disaggregated according to content?”</p>	<p>Quantum Comment #10 With respect to Questions 16 and 17, the Company agrees with the conclusion that both the relevant retail and wholesale markets for the supply of subscription TV services to deliver broadcast content to end users includes subscription services provided via different means and is not disaggregated according to content.</p>

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<p style="text-align: center;">QUESTION AND/OR STATEMENT IN PART B – SMP – Fixed Narrowband Access and Voice Sec 2.2 Retail access and local calls (g) Barriers to entry and expansion (i) Switching Cost</p>	<p style="text-align: center;">COMMENTS</p>
<p><i>Paragraph 437. “A further set of switching costs relates to the need to change phone number when switching access line provider. These costs include: the inconvenience and administrative expense associated with having to let contacts know of changed number; potential for missing important calls (results in lost business for business customers and inconvenience for residential customers); cost for businesses of changing signage, office stationery, websites and so on. As highlighted by QCL, some business customers also must incur the costs of specialist PBX vendors to re-engineering office switches and make configuration changes for SIP/TDM interfaces. Although number portability which allows customers to retain their number when switching access provider will be introduced, <u>it is likely still one year away</u> and even once it is in place it takes time for customers to understand that they will then be able to keep their number – that is there can be a substantial lag in take up of number portability.”</i></p>	<p>Quantum Comment #11</p> <p>With respect to Paragraph 437 and elsewhere in the Pre-Consultation Materials, the Company expresses concern regarding the proposed timeline for achieving local number portability. As previously stated in our response to Condition 5 of Pre-Consultation on ICOLS and Associated Spectrum Licences, we believe LNP should be accorded more urgency in ICOL reform initiatives calendar. Given the number of Industry consultations and workshops conducted on this issue over many years we believe the potential LNP solutions are well identified with their attendant costs. We believe the remaining hurdles to LNP implementation are straightforward, including determining which LNP solution to adopt and establishing an appropriate LNP fee, should be achievable within six months of ICOL launch.</p>

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<p style="text-align: center;">QUESTION AND/OR STATEMENT IN PART B – SMP – Fixed Narrowband Access and Voice Sec 3.1 Retail broadband SMP analysis (f) Economies of scale & scope and bundling</p>	<p style="text-align: center;">COMMENTS</p>
<p><i>Paragraph 482. “All four existing broadband access providers offer customers more than one service: BTC supplies voice access and local calling services; BCV supplies Pay TV; NRC supplies voice access and local calling services, Internet services, traditional international long distance calling services and international VOIP calls; and QCL supplies voice access and local calling services, managed interconnection services to international carriers, and point-to-point data services to its business customers.”</i></p>	<p>Quantum Comment #12</p> <p>With respect to Paragraph 482, the Company respectfully comments that the BTC and BCV service listing is far from complete and thus appears to understate their incumbent market advantage, particularly when taken in light of the more exhaustive Quantum and NRC service listing. Thus we would provide a more fulsome description of their current services. Namely, BTC currently supplies voice access and local calling service in addition to a full suite of data services including point to point data services and interconnection services to local carriers. BCV currently supplies cable TV (including Subscription TV, Pay per View and Video on Demand (VOD)) as well as broadband data services.</p>



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<p style="text-align: center;">QUESTION AND/OR STATEMENT IN PART B – 5. SMP – Leased Line Services Sec 5.2 Suppliers and market shares (j) Market conduct</p>	<p style="text-align: center;">COMMENTS</p>
<p>Paragraph 623. <i>“This section examines market conduct. In terms of pricing, BTC and QCL have similar prices. For half circuits, BTC’s rates are generally higher than QCL’s prices. The pattern is reversed for full circuits. NRC’s rates are the highest for half circuit rates and the lowest, or the middle rate, for full circuits.”</i></p>	<p>Quantum Comment #13</p> <p>With respect to Paragraph 623, the Company respectfully questions the rate conclusions made herein. Contrary to Paragraph 623, if BTC’s half circuit rates are higher than Quantum then it is necessarily the case that BTC’s full circuit rates are also higher than Quantum’s rates. This issue raises the general concern regarding the state of the Government’s tariff database in contrast to what may currently be happening in the marketplace. Clearly, given the incompleteness of information filed in tariffs by licensees in the past, the Industry needs more rigorous enforcement of the tariff filing requirements in order to ensure that all parties have access to full and up to date pricing for Electronic Communications services.</p>

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QUESTION AND/OR STATEMENT IN PART B – 6. SMP – Infrastructure Access	COMMENTS
<p>Paragraph 633. “Belco owns duct space and leases shares some duct space towith QCL. Belco was formally a partial owner of QCL.”</p> <p>Paragraph 636. “We tentatively conclude that owners of duct and poles have significant market power due to the difficult in replicating these facilities. The Governments, both City and National, strive to restrict the number of road disruptions associated with installing either ducts or poles. Therefore entry is impeded. Furthermore, the investment requires a substantial amount of risky, sunk costs.”</p> <p>Paragraph 637. “With regard to the market for the supply of access to facilities used to construct wireless networks, while a number of towers are owned by the government and government agencies, some towers and masts are owned by the vertically integrated mobile operators. It is the latter case where SMP is most likely held because of the lack of incentives for a vertically integrated mobile network to provide an entrant with access to a key input. The RA tentatively concludes that Northrock, BDC and Digicel have SMP due to the high legal, regulatory and economic barriers to entry.”</p>	<p>Quantum Comment #14</p> <p>With respect to Paragraph 633, the Company respectfully seeks to correct any misimpression concerning its status as a lessee of the referenced Belco ducts. As background, it has been Government’s stated policy objective for some time to establish a second, viable national carrier. In 1997, lead investor Belco together with Cable & Wireless Bermuda (CWB) and two Bermudian investors formed Quantum as a joint venture to become that alternate local carrier. By March 1999, Quantum ceased operations following extensive financial losses and the withdrawal of support from its lead investor. In part, these losses resulted from Quantum’s inability to achieve timely interconnection with the domestic incumbent, BTC.</p> <p>In time, Government addressed some of the regulatory deficiencies that contributed to Quantum’s failure and by 2002, now lead investor CWB together with two Bermudian investors reactivated Quantum from insolvent dormancy to reenter and compete in the domestic market. Quantum serves as an important cautionary tale in the context of the current ICOL reform exuberance, where energized investors must calibrate their enthusiasm in accord with the actual pace and results of regulatory change.</p> <p>With respect to the duct space issue, most of Quantum’s pre-insolvency fibre was installed in existing Belco ducting and went dark when Quantum shut down in 1999. When Quantum was reactivated in 2002 it successfully negotiated an arrangement with its former investor Belco allowing Quantum to secure the existing dark fibre assets and lease the accompanying duct space from Belco under a term agreement.</p> <p>Neither does Quantum own any duct or pole space on its backhaul connectivity to Devonshire or Southside. Quantum’s fibre was deployed using the “slot cut” method, i.e., the direct burial of cable in the trench. The decision not to deploy ducts, while the most expedient and economical at the time, prevents Quantum let alone another carrier from adding physical capacity to this portion of the network.</p> <p>With respect to Paragraph 636, BTC and BCV on the other hand, own robust, extensive network, including ducts throughout the Island. BCV’s extensive trenching and deployment of fibre in conduit throughout downtown Hamilton during</p>

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the past year only magnifies the incumbent’s powerful market position. Belco owns most if not all of the poles on the Island. Except for Belco, the owners of this critical physical infrastructure currently enjoy unlimited discretion in dictating whether and how competitors can access these important assets. As such they effectively will control new competitor investment and the delivery of new infrastructure to Bermuda.

The Company believes that timely and fair new competitor access to the existing infrastructure at reasonable cost will prove to be a fundamental break point for whether ICOL regulations and accompanying enforcement will have sufficient “muscle” to give potential investors the confidence needed to fund these expensive capital projects. Otherwise, we all risk another “Quantum” like failure and yet another lost opportunity to make real inroads on Government’s longstanding policy objectives to promote sustainable competition and new investment for the benefit of Bermuda.

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PART B APPENDIX A POSSIBLE REMEDIES 1. Retail fixed narrowband access lines and local calls	COMMENTS
<p><u>Service:</u></p> <p>1. Retail fixed narrowband access lines and local calls</p> <ul style="list-style-type: none"> <input type="checkbox"/> A national market for the supply of retail fixed narrowband access lines and local calls to residential customers <input type="checkbox"/> A market for the supply of retail fixed narrowband access lines and local calls to business customers in the City of Hamilton <input type="checkbox"/> A market for the supply of retail fixed narrowband access lines and local calls to business customers outside of the City of Hamilton <p><u>Tentative Conclusion of SMP determination:</u></p> <p>“to be imposed only on BTC”</p> <p><u>Possible Remedies:</u></p> <ul style="list-style-type: none"> <input type="checkbox"/> Residential prices could not increase more than 7% per annum (i.e., the \$26 rate could increase to $26 \times 1.07 = 27.82$ in 2013; in 2014 it could increase to $26 \times 1.07 \times 1.07 = \\29.77) absent an affirmative showing by BTC that its prices are below cost. <input type="checkbox"/> Same rule for business customers outside of Hamilton. <input type="checkbox"/> No retail remedies for business market in Hamilton. <input type="checkbox"/> §85(5) of the RAA prohibits price squeezes and predation. Remind parties of this prohibition but not proscribe specific methodologies on price squeezes/predation until these topics are explored in a consultation. <p><u>Additional Remedies Proposed:</u></p> <ul style="list-style-type: none"> <input type="checkbox"/> No bundling of any retail fixed narrowband access lines and local calls service (each a “SMP Service”) with any other service, whether provided by the SMP Licensee or any “SMP Associate.” <input type="checkbox"/> No price decrease for any SMP Service until the SMP Licensee has satisfied all <i>ex ante</i> remedies across all SMP service markets and the expiry of the Moratorium Period. <input type="checkbox"/> Accounting Separation, or some form of “imputation test”, if the SMP Licensee is engaged in the provision of multiple electronic communications services, especially through bundling of services with “SMP Associates.” <input type="checkbox"/> Provide transparency and non-discrimination in the provision of all SMP Services. 	<p>Quantum Comment #15</p> <p>The Company respectfully recommends adding the additional <i>ex ante</i> remedies proposed for the retail fixed narrowband access lines and local calls service market.</p> <p>For illustration, the proposed “no bundling” remedy would restrict BTC from bundling any retail service falling within the “retail fixed narrowband access lines and local calls” market (a “SMP Service”) with any other retail service <u>and</u> it would allow BTC to only sell a SMP Service to a SMP Associate on the condition that such SMP Associate will not bundle the SMP Service with any SMP Associate service.</p>

**QUANTUM COMMUNICATIONS LTD. PRE-CONSULTATION COMMENTS
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PART B APPENDIX A POSSIBLE REMEDIES 2. Retail broadband access	COMMENTS
<p><u>Service:</u></p> <p>2. Retail broadband access</p> <ul style="list-style-type: none"> <input type="checkbox"/> A national market for the supply of retail fixed broadband access and Internet services to residential customers <input type="checkbox"/> A market for the supply of retail fixed broadband access and Internet services to business customers in the City of Hamilton <input type="checkbox"/> A market for the supply of retail fixed broadband access and Internet to business customers outside of the City of Hamilton <p><u>Tentative Conclusion of SMP determination:</u></p> <p>“to be imposed only on BTC & BCV”</p> <p><u>Possible Remedies:</u></p> <ul style="list-style-type: none"> <input type="checkbox"/> Price per Mb/s cannot increase (unless an affirmative showing that prices are below cost). <input type="checkbox"/> No price restrictions on new products (including the bundling of access with ISP service) other than price squeeze/predation restriction. <input type="checkbox"/> Must offer retail access at the existing speeds, as well as whatever new speeds are introduced for bundled access and ISP service. <p><u>Additional Remedies Proposed:</u></p> <ul style="list-style-type: none"> <input type="checkbox"/> No bundling of any retail broadband access service (each a “SMP Service”) with any other service, whether provided by the SMP Licensee or any “SMP Associate.” <input type="checkbox"/> No price decrease for any SMP Service until the SMP Licensee has satisfied all <i>ex ante</i> remedies across all SMP service markets and the expiry of the Moratorium Period. <input type="checkbox"/> Accounting Separation, or some form of “imputation test”, if the SMP Licensee is engaged in the provision of multiple electronic communications services, especially through bundling of services with “SMP Associates.” <input type="checkbox"/> Provide transparency and non-discrimination in the provision of all SMP Services. 	<p>Quantum Comment #16</p> <p>The Company respectfully recommends adding the additional <i>ex ante</i> remedies proposed for the retail broadband access service market.</p>

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PART B APPENDIX A POSSIBLE REMEDIES 3. Retail mobile services	COMMENTS
<p><u>Service:</u></p> <p>3. Retail mobile services</p> <p><input type="checkbox"/> A national market for the supply of retail mobile services, including voice and data</p> <p><u>Tentative Conclusion of SMP determination:</u></p> <p>“to be imposed on Digicel & BDC”</p> <p><u>Possible Remedies:</u></p> <p><input type="checkbox"/> Addressed through wholesale remedies.</p> <p><input type="checkbox"/> More active monitoring (i.e., collection of data).</p> <p><u>Additional Remedies Proposed:</u></p> <p><input type="checkbox"/> No bundling of any retail mobile service (each a “SMP Service”) with any other service, whether provided by the SMP Licensee or any “SMP Associate.”</p> <p><input type="checkbox"/> No price decrease for any SMP Service until the SMP Licensee has satisfied all <i>ex ante</i> remedies across all SMP service markets and the expiry of the Moratorium Period.</p> <p><input type="checkbox"/> Accounting Separation, or some form of “imputation test”, if the SMP Licensee is engaged in the provision of multiple electronic communications services, especially through bundling of services with “SMP Associates.”</p> <p><input type="checkbox"/> Provide transparency and non-discrimination in the provision of all SMP Services.</p>	<p>Quantum Comment #17</p> <p>The Company respectfully recommends adding the additional <i>ex ante</i> remedies proposed for the retail mobile services.</p>

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PART B APPENDIX A POSSIBLE REMEDIES 4. Retail leased lines	COMMENTS
<p><u>Service:</u></p> <p>4. Retail leased lines</p> <ul style="list-style-type: none"> • A market for the retail supply of low-speed retail leased lines <u>in</u> the City of Hamilton <input type="checkbox"/> A market for the retail supply of low-speed retail leased lines <u>outside</u> of the City of Hamilton <input type="checkbox"/> A market for the retail supply of high-speed retail leased lines <u>in</u> the City of Hamilton <input type="checkbox"/> A market for the retail supply of high-speed retail leased lines <u>outside</u> of the City of Hamilton <p><u>Tentative Conclusion of SMP determination:</u></p> <p>“to be imposed only on BTC”</p> <p><u>Possible Remedies:</u></p> <ul style="list-style-type: none"> <input type="checkbox"/> The price of low speed- retail leased lines cannot increase more than 7%, per annum, absent an affirmative showing by BTC that its price is below cost. <input type="checkbox"/> No remedies for high- speed data in Central Hamilton <input type="checkbox"/> The price of high speed- retail leased lines outside of Central Hamilton cannot increase more than 7%, per annum, absent an affirmative showing by BTC that its price is below cost. <input type="checkbox"/> In order to avoid exclusion from the international market, for any international product, domestic retail access must also be made available. <p><u>Additional Remedies Proposed:</u></p> <ul style="list-style-type: none"> <input type="checkbox"/> No bundling of any retail leased lines service (each a “SMP Service”) with any other service, whether provided by the SMP Licensee or any “SMP Associate.” <input type="checkbox"/> No price decrease for any SMP Service until the SMP Licensee has satisfied all <i>ex ante</i> remedies across all SMP service markets and the expiry of the Moratorium Period. <input type="checkbox"/> Accounting Separation, or some form of “imputation test”, if the SMP Licensee is engaged in the provision of multiple electronic communications services, especially through bundling of services with “SMP Associates.” <input type="checkbox"/> Provide transparency and non-discrimination in the provision of all SMP Services. 	<p>Quantum Comment #18</p> <p>The Company respectfully recommends adding the additional <i>ex ante</i> remedies proposed for the retail leased lines.</p>

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PART B APPENDIX A POSSIBLE REMEDIES 5. Retail subscription TV services	COMMENTS
<p><u>Service:</u></p> <p>5. Retail subscription TV services</p> <p><input type="checkbox"/> A national market for the supply of retail subscription TV services</p> <p><u>Tentative Conclusion of SMP determination:</u></p> <p>“to be imposed only on BCV”</p> <p><u>Possible Remedies:</u></p> <p><input type="checkbox"/> Addressed through wholesale remedies.</p> <p><u>Additional Remedies Proposed:</u></p> <p><input type="checkbox"/> No bundling of any retail subscription TV service (each a “SMP Service”) with any other service, whether provided by the SMP Licensee or any “SMP Associate.”</p> <p><input type="checkbox"/> No price decrease for any SMP Service until the SMP Licensee has satisfied all <i>ex ante</i> remedies across all SMP service markets and the expiry of the Moratorium Period.</p> <p><input type="checkbox"/> Accounting Separation, or some form of “imputation test”, if the SMP Licensee is engaged in the provision of multiple electronic communications services, especially through bundling of services with “SMP Associates.”</p> <p><input type="checkbox"/> Provide transparency and non-discrimination in the provision of all SMP Services.</p>	<p>Quantum Comment #19</p> <p>The Company respectfully recommends adding the additional <i>ex ante</i> remedies proposed for the retail subscription TV services.</p>

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<p align="center">PART B APPENDIX A POSSIBLE REMEDIES</p> <p>6. Call origination on fixed networks</p>	<p align="center">COMMENTS</p>
<p><u>Service:</u></p> <p>6. Call origination on fixed networks</p> <ul style="list-style-type: none"> <input type="checkbox"/> A wholesale market for the origination of calls on fixed networks in the City of Hamilton <input type="checkbox"/> A wholesale market for the origination of calls on fixed networks in areas other than the City of Hamilton <p><u>Tentative Conclusion of SMP determination:</u></p> <p>“to be imposed only on BTC”</p> <p><u>Possible Remedies:</u></p> <ul style="list-style-type: none"> <input type="checkbox"/> International calls. Price ceiling is the charge established by the LAC (local access charge) proceeding, unless subsequently revised by the TC or Board. <input type="checkbox"/> No need to address domestic calls given 	<p>Quantum Comment #20</p> <p>With respect to the proposed “Additional Remedy proposed” the Company comments that that the RA needs to address the current Local Access Charges (LAC) as a priority matter before ICOL issuance. The current fee of 3 cents per minute for every originating and terminating minute of international switched voice traffic is long overdue for an adjustment and should not be used as the price ceiling <i>ex ante</i> remedy. LinkBermuda has a pending Commission request for an order reducing LAC. In summary, the LAC represents a major cost for existing licensees that provide international switched voice services. The LAC was introduced to pay for the monopoly local telephone company’s cost of supporting Long Distance carrier pre-selection after competition was introduced in 1996. In 1998 the LAC was very high at 27¢/minute outbound, 24¢/minute inbound, due in large part to the high initial cost of equipment and systems to support equal access based LD services. However, by 2006 the LAC charge per minute had decreased to 3¢/3¢, which represented 18% of the then current 17¢/minute average LD retail rate. Today, six years later the LAC remains at 3¢, but with significantly reduced retail rates the LAC now represents 38% of the average 8¢/minute charged by the LD carriers. To make matters worse for the current Class A international carriers, settlement rates influenced significantly by the major North American voice carriers are now below the 3¢/minute LAC rate due to competitive marketplace pressures described below, creating an unsustainable situation for which corrective action is far overdue.</p> <p>Prior to 2006, the LAC was being reduced [by Commission order] on average every 24 months. An immediate LAC reduction should be imposed prior to specifying any related <i>ex ante</i> remedy to BTC related to its provision of voice call origination and termination services. Such action is necessary in order to create a consistent operating environment for all voice carriers given the existing arrangements for similar voice traffic exchanges between Bermuda carriers such as the current “sender keep all” mobile arrangement that triggers no LAC between carriers. Surely BTC incurs only minimal costs of managing its switching systems that support Bermuda originating international calls, and inbound handling of international traffic requires no special routing. The Company notes that LinkBermuda pays all of the cost for the trunks connecting its switching platform at Devonshire to the BTC exchanges. With sub-penny LAC rates commonplace in the developed world, BTC’s LAC rates are indefensible.</p> <p>Recent major reductions in LAC charges in Malta, a jurisdiction not too dissimilar to Bermuda, offers an excellent example for the ICOL reform process. In October 2012, the Malta Communications Authority (MCA) proposed new termination rates representing a significant drop vis-à-vis the current levels in that market. Coupled with the change in the charging mechanism (i.e., eliminating outdated peak/off-peak distinctions), in a representative scenario the MCA proposed the decrease in wholesale voice termination rates paid to the</p>

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bundling of local calls and access.

- Pre-selection of international carriers. Section 73(8)(a) of the ECA requires carrier pre-selection for international calls for all ICOL holders (that participate in the numbering plan) until the advent of number portability.**
- “A Reference Interconnection Order is also needed where a carrier is required to provide wholesale services.”**

Additional Remedies Proposed:

- Reduction of the LAC as of ICOL issuance (if not sooner)**

dominant local voice carrier from a then current average of 0.7163 Eurocent/minute to 0.3812 on Jan. 1, 2013 to 0.046 on July 1, 2013; and proposed the decrease in wholesale voice origination rates paid to the dominant local voice carrier from a current average of .7163 Eurocent/minute to 0.4958 on Jan. 1, 2013 to 0.2753 on July 1, 2013. (See, “The MCA’s New Bottom-up Cost Model for Fixed Networks and Proposed Interconnection Prices”). Given the magnitude of the recommended price reductions, the MCA expressly recognized that any abrupt introduction of such considerable reductions would likely result in significant disruptions in the market and therefore indicated it would consider applying a “glidepath” between the current rates and the proposed rates that would spread the implementation over a six month period.

A similar approach may be warranted for Bermuda depending on how significant the LAC reductions are. LinkBermuda proposed in its Commission complaint a two-step LAC reduction achieving an overall effective LAC rate of 1.5¢/min. The first step would result in a LAC rate of 2¢/min for outbound traffic and 1¢/min for inbound traffic, starting immediately for approximately three to six months pending a Commission review of BTC actual costs. Based on that finding, a further adjustment would be made as the second step, if/as the findings warranted. If the Commission were not able to complete its analysis of BTC’s true cost attributable to LAC in three to six months due to e.g., lack of data, we further proposed that the Commission should then impose a second rate reduction setting the inbound LAC to .5¢/min and the outbound LAC to 1¢/min. This approach would achieve similar results to the “glidepath” approach recommended in Malta.

The Company further points out that the Bermuda international voice licensees that are operating lawfully pursuant to the current LAC regime are finding themselves at a serious disadvantage to alternative service providers operating outside of Bermuda that are using “gray market” tactics to terminate international originated traffic in Bermuda without paying the LAC. Reliable sources (including traditional carrier partners that exchange traffic with the licensed Bermuda international carriers) confirm that various voice aggregators are selling wholesale minutes to Bermuda for between 1.5¢-2.5¢/minute. This pricing demonstrates the ability and financial incentive to circumvent the traditional LAC mechanism, very likely by manipulating traffic over IP routes such that it “leaks” into Bermuda disguised through ISP networks to appear as local originating traffic, attracting no LAC termination fee.

In summary, Bermuda’s 3¢/minute LAC rate bears little relationship to BTC’s cost of originating or terminating international voice traffic to/from international carriers, most obviously and especially for inbound traffic to Bermuda. If corrective action is not taken now as part of the new ECA implementation, there is a great likelihood of increased bypass and an accelerated decline of chargeable LAC minutes which will further erode an important revenue source of the local telephone company and the law abiding licensees. Without a level playing field, all international long distance providers will be unfairly handicapped in their efforts to operate efficiently based on two way provision of services and reflect those efficiencies in price reductions that benefit Bermuda customers.

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PART B APPENDIX A POSSIBLE REMEDIES 7. Call termination on fixed networks	COMMENTS
<p><u>Service:</u></p> <p>7. Call termination on fixed networks</p> <p><input type="checkbox"/> Markets for the supply of call termination on each individual fixed network</p> <p><u>Tentative Conclusion of SMP determination:</u></p> <p>“to be imposed on each fixed network operator”</p> <p><u>Possible Remedies:</u></p> <p>Maintenance of current policy. Bill and keep domestic calls; \$0.03 termination rate for international calls (until revised by the TC or Board).</p> <p><u>Additional Remedies Proposed:</u></p> <p><input type="checkbox"/> Reduction of the LAC as of ICOL issuance (if not sooner)</p>	<p>Quantum Comment #21</p> <p>The Company respectfully comments that maintenance of an existing policy that is in need of urgent revision is not an effective remedy. The Company would like to alert the RA that Quantum is already receiving a \$0.02 termination rate for international minutes and thus, the proposed <i>ex ante</i> remedy as proposed won't work. We reiterate in full the position set out in our preceding comment that it is imperative that LAC be fixed through an appropriate reduction(s).</p> <p>The Company further believes that LAC must be applied to all Licensees offering voice services, including service from a fixed network operator or VOIP service provider. In the alternative, we propose that all Licensees be monitored to ensure they are not circumventing the regulations for handling inbound and outbound international distance voice traffic in order to avoid paying LAC fees.</p>

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PART B APPENDIX A POSSIBLE REMEDIES	COMMENTS
8. Wholesale fixed narrowband access and local calls	
<p><u>Service:</u></p> <p>8. Wholesale fixed narrowband access and local calls</p> <ul style="list-style-type: none"> <input type="checkbox"/> A wholesale market for the supply of fixed narrowband access and local calls in the City of Hamilton <input type="checkbox"/> A wholesale market for the supply of fixed narrowband access and local calls in areas other than the City of Hamilton <p><u>Tentative Conclusion of SMP determination:</u></p> <p>“to be imposed only on BTC”</p> <p><u>Possible Remedies:</u></p> <ul style="list-style-type: none"> <input type="checkbox"/> None Retail minus subject to an RA approved imputation test. <input type="checkbox"/> “A Reference Interconnection Order is also needed where a carrier is required to provide wholesale services.” <p><u>Additional Remedies Proposed:</u></p> <ul style="list-style-type: none"> <input type="checkbox"/> To provide access and interconnection to network elements and services subject to terms and conditions that are transparent and non-discriminatory, with operational features as least as favorable as it would provide to itself. <input type="checkbox"/> To meet requests in a timely manner, with reasonable pricing, for facilities and services, including: <ul style="list-style-type: none"> o co-location with third parties or other forms of facility sharing, including the sharing of ducts, conduit, buildings, cabinets or masts. o information about technical interfaces, protocols or key technologies that is required for the interoperability of services. <input type="checkbox"/> No bundling of any retail fixed narrowband access lines and local calls service (each a “SMP Service”) with any other service, whether provided by the SMP Licensee or any “SMP Associate.” <input type="checkbox"/> Accounting Separation, or some form of “imputation test”, if the SMP Licensee is engaged in the provision of numerous electronic communications services, especially through bundling of services with “SMP Associates.” 	<p>Quantum Comment #22</p> <p>The Company respectfully recommends adding the additional <i>ex ante</i> remedies proposed for the wholesale fixed narrowband access and local calls. For clarity, we would inquire whether the proposal for no ex ante remedy inadvertently left out the RIO remedy, which commentary indicated would apply to any wholesale service.</p>

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PART B APPENDIX A POSSIBLE REMEDIES 9. Wholesale broadband access	COMMENTS
<p><u>Service:</u></p> <p>9. Wholesale broadband access</p> <ul style="list-style-type: none"> <input type="checkbox"/> A wholesale market for the supply of fixed broadband access in the City of Hamilton <input type="checkbox"/> A wholesale market for the supply of fixed broadband access in areas other than the City of Hamilton <p><u>Tentative Conclusion of SMP determination:</u></p> <p>“to be imposed only on BTC & BCV”</p> <p><u>Possible Remedies:</u></p> <ul style="list-style-type: none"> <input type="checkbox"/> retail minus for both access, and access + ISP subject to an RA approved imputation test. <input type="checkbox"/> “A Reference Interconnection Order is also needed where a carrier is required to provide wholesale services.” <p><u>Additional Remedies Proposed:</u></p> <ul style="list-style-type: none"> <input type="checkbox"/> To provide access and interconnection to network elements and services subject to terms and conditions that are transparent and non-discriminatory, with operational features as least as favorable as it would provide to itself. <input type="checkbox"/> To meet requests in a timely manner, with reasonable pricing, for facilities and services, including: <ul style="list-style-type: none"> <input type="checkbox"/> co-location with third parties or other forms of facility sharing, including the sharing of ducts, conduit, buildings, cabinets or masts. <input type="checkbox"/> information about technical interfaces, protocols or key technologies that is required for the interoperability of services. <input type="checkbox"/> No bundling of any retail fixed narrowband access lines and local calls service (each a “SMP Service”) with any other service, whether provided by the SMP Licensee or any “SMP Associate.” <input type="checkbox"/> Accounting Separation, or some form of “imputation test”, if the SMP Licensee is engaged in the provision of numerous electronic communications services, especially through bundling of services with “SMP Associates.” 	<p>Quantum Comment #23</p> <p>The Company respectfully recommends adding the additional <i>ex ante</i> remedies proposed for the wholesale broadband access.</p>

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PART B APPENDIX A POSSIBLE REMEDIES	COMMENTS
10. Wholesale MVNO access on mobile networks	
<p><u>Service:</u></p> <p>10. Wholesale MVNO access on mobile networks</p> <p><input type="checkbox"/> A national market for the supply of wholesale access and local call origination on mobile networks</p> <p><u>Tentative Conclusion of SMP determination:</u></p> <p>“to be imposed only on Digicel & BDC”</p> <p><u>Possible Remedies: :</u></p> <p><input type="checkbox"/> MVNO access agreements, on just and reasonable cost based terms; must be made easily available to those who seek them.</p> <p><input type="checkbox"/> Or retail minus</p> <p><input type="checkbox"/> “A Reference Interconnection Order is also needed where a carrier is required to provide wholesale services.”</p> <p><u>Additional Remedies Proposed:</u></p> <p><input type="checkbox"/> To provide access and interconnection to network elements and services subject to terms and conditions that are transparent and non-discriminatory, with operational features as least as favorable as it would provide to itself.</p> <p><input type="checkbox"/> To meet requests in a timely manner, with reasonable pricing, for facilities and services, including:</p> <ul style="list-style-type: none"> o co-location with third parties or other forms of facility sharing, including the sharing of ducts, conduit, buildings, cabinets or masts. o information about technical interfaces, protocols or key technologies that is required for the interoperability of services. <p><input type="checkbox"/> No bundling of any wholesale MVNO access on mobile networks service (each a “SMP Service”) with any other service, whether provided by the SMP Licensee or any “SMP Associate.”</p> <p><input type="checkbox"/> Accounting Separation, or some form of “imputation test”, if the SMP Licensee is engaged in the provision of numerous electronic communications services, especially through bundling of services with “SMP Associates.”</p>	<p>Quantum Comment #24</p> <p>We emphasize that the 18-month timeframe allocated for the Spectrum audit serves as a complete regulatory bar for new competitors to enter this market on any basis other than wholesale. Thus, this Spectrum moratorium period creates a presumably unintended but unavoidable opportunity for existing spectrum holders that also discourages them from facilitating a timely, final conclusion of the Spectrum audit. We reference our comments to Question 28 in Pre-Consultation ICOLs & Associated Spectrum advocating for an accelerated time frame to complete the spectrum audit. To help encourage timely submission and finalization of this process, we propose that no SMP Licensee in this Service market be released from Transitional Condition A1.1 until the Spectrum analysis is complete.</p> <p>The Company respectfully recommends adding the additional <i>ex ante</i> remedies proposed for the wholesale MVNO access on mobile networks.</p>

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PART B APPENDIX A POSSIBLE REMEDIES	COMMENTS
<p>11. Origination of international calls on mobile networks</p> <p><u>Service:</u></p> <p>11. Origination of international calls on mobile networks</p> <p><input type="checkbox"/> A national market for the supply of wholesale origination of international calls on mobile networks</p> <p><u>Tentative Conclusion of SMP determination:</u></p> <p>“to be imposed only on Digicel & BDC”</p> <p><u>Possible Remedies:</u></p> <p><input type="checkbox"/> Maintenance of the Current policy zero rate on the grounds that the cost is recovered in the per minute bucket fee. Maintain policy of zero rate unless carriers make an affirmative showing that the rate is below cost.</p> <p><input type="checkbox"/> Continued Pre-selection of international carriers. Section 73(8)(a) of the ECA requires carrier pre-selection for international calls for all ICOL holders (that participate in the numbering plan) until the advent of number portability.</p> <p><input type="checkbox"/> “A Reference Interconnection Order is also needed where a carrier is required to provide wholesale services.”</p> <p><u>Additional Remedies Proposed:</u></p> <p><input type="checkbox"/> No bundling of any wholesale origination of international calls on mobile networks service (each a “SMP Service”) with any other service, whether provided by the SMP Licensee or any “SMP Associate.”</p> <p><input type="checkbox"/> No price decrease for any service in the market segment subject to <i>ex ante</i> regulation until the SMP Licensee has satisfied all <i>ex ante</i> remedies across all SMP service markets and the Moratorium Period is no longer in effect.</p>	<p>Quantum Comment #25</p> <p>The Company respectfully recommends adding the additional <i>ex ante</i> remedies proposed for the origination of international calls on mobile networks.</p>

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PART B APPENDIX A POSSIBLE REMEDIES	COMMENTS
<p>12. Call termination on individual mobile networks</p> <p><u>Service:</u></p> <p>12. Call termination on individual mobile networks</p> <p><input type="checkbox"/> Markets for the supply of call termination on each individual mobile network</p> <p><u>Tentative Conclusion of SMP determination:</u></p> <p>“to be imposed only on Digicel & BDC”</p> <p><u>Possible Remedies: :</u></p> <ul style="list-style-type: none"> • Same policy as mobile call origination 	<p>Quantum Comment #26</p> <p>The Company respectfully recommends adding the additional <i>ex ante</i> remedies proposed for the call termination on individual mobile networks.</p>

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& (PART B) – SIGNIFICANT MARKET POWER:**

PART B APPENDIX A POSSIBLE REMEDIES	COMMENTS
<p>13. Wholesale provision of terminating segments of leased lines</p> <p><u>Service & Definition of Candidate Markets:</u></p> <p>13. Wholesale provision of terminating segments of leased lines</p> <ul style="list-style-type: none"> <input type="checkbox"/> A market for the wholesale supply of low speed data tails in the City of Hamilton <input type="checkbox"/> A market for the wholesale supply of low speed data tails outside of the City of Hamilton <input type="checkbox"/> A market for the wholesale supply of high speed data tails in the City of Hamilton <input type="checkbox"/> A market for the wholesale supply of low speed data tails outside of the City of Hamilton <p><u>Tentative Conclusion of SMP determination:</u> to be imposed only on BTC</p> <p><u>Possible Remedies:</u></p> <ul style="list-style-type: none"> <input type="checkbox"/> Retail minus for low speed data tails. <input type="checkbox"/> Retail minus for high speed data tails outside Central Hamilton <input type="checkbox"/> “A Reference Interconnection Order is also needed where a carrier is required to provide wholesale services.” <p><u>Additional Remedies Proposed:</u></p> <ul style="list-style-type: none"> <input type="checkbox"/> To provide access and interconnection to network elements and services subject to terms and conditions that are transparent and non-discriminatory, with operational features as least as favorable as it would provide to itself. <input type="checkbox"/> To meet requests in a timely manner, with reasonable pricing, for facilities and services, including: <ul style="list-style-type: none"> o co-location with third parties or other forms of facility sharing, including the sharing of ducts, conduit, buildings, cabinets or masts. o information about technical interfaces, protocols or key technologies that is required for the interoperability of services. <input type="checkbox"/> No bundling of any wholesale provision of terminating segments of leased lines service (each a “SMP Service”) with any other service, whether provided by the SMP Licensee or any “SMP Associate.” <input type="checkbox"/> Accounting Separation, or some form of “imputation test”, if the SMP Licensee is engaged in the provision of numerous electronic communications services, especially through bundling of services with “SMP Associates.” 	<p>Quantum Comment #27</p> <p>The Company respectfully recommends adding the additional <i>ex ante</i> remedies proposed for the wholesale provision of terminating segments of leased lines.</p>

**QUANTUM COMMUNICATIONS LTD. PRE-CONSULTATION COMMENTS
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PART B APPENDIX A POSSIBLE REMEDIES	COMMENTS
<p>14. Supply of access to infrastructure facilities</p> <p><u>Service & Definition of Candidate Markets:</u></p> <p>14. Supply of access to infrastructure facilities</p> <p><input type="checkbox"/> A market for the wholesale supply of access to facilities used to construct fixed local access networks</p> <p><input type="checkbox"/> A market for the supply of access to facilities used to construct wireless radio access networks</p> <p><u>Tentative Conclusion of SMP determination:</u></p> <p>“With respect to fixed networks, to be imposed on all owners of ducts & poles;</p> <p>With respect to wireless networks, to be imposed on NorthRock, Digicel & BDC”</p> <p><u>Possible Remedies:</u></p> <p><input type="checkbox"/> Non-discriminatory access (including a price squeeze test) to include without limitation:</p> <p><input type="checkbox"/> Unbundled Non-discriminatory access to Conduit located on Private Property;</p> <p><input type="checkbox"/> Unbundled Non-discriminatory access to Inside Wiring; and</p> <p><input type="checkbox"/> Timely accommodation of pole access request by new competitors at reasonable cost.</p> <p><input type="checkbox"/> “A Reference Interconnection Order is also needed where a carrier is required to provide wholesale services.”</p> <p><u>Additional Remedies Proposed:</u></p> <p><input type="checkbox"/> To provide access and interconnection to network elements and services subject to terms and conditions that are transparent and</p>	<p>Quantum Comment #28</p> <p><u>General Discussion</u></p> <p>The Pre-Consultation Materials recognize the regulatory imperative for new competitor demands for access to necessary existing infrastructure facilities, such as ducts, poles, towers and masts. As discussed in Comment #14, the potential for infrastructure owners to engage in anti-competitive behavior is very real, particularly BCV, BTC and other SMP designated owners. The Company respectfully expresses its deep concern that the proposed <i>ex ante</i> remedies in this area fail to adequately address the challenges that new competitors will face in obtaining access to this critical infrastructure. We believe that the RA will need to considerably enhance the <i>ex ante</i> remedies, starting with the establishment of clear regulations for obtaining timely, non-discriminatory access to these valuable corporate assets at reasonable rates.</p> <p>Experience from other jurisdictions shows this can best be accomplished by through specific guidelines including a reference access agreement, together with assurance of timely intervention when negotiations stall. Ultimately, we firmly believe that compliance with such <i>ex ante</i> remedies is only evidenced through demonstrated, successful access to the infrastructure by new competitors. Then and only then, should the RA determine under ICOL Transitional Condition A1.1 that an SMP Licensee has complied with its <i>ex ante</i> remedies and be liberated from the constraints of its TA86 license terms.</p> <p><u>FTTH Discussion</u></p> <p>In order for new competitors to invest in new infrastructure such as FTTH, they will need access to infrastructure located on private property, namely from the curb to the home. In particular, if and to the extent BTC or BCV claim ownership of conduit located on private property and inside wiring in the home, new competitors will need access in order to complete their buildout. It is unclear at this point what position BCV or BTC will officially take in respect of this last stretch of network. We understand that this issue became controversial between BCV and WoW a few years ago, but are not aware of any formal decision issuing from the Ministry or the DOT. Our own recent experience indicates this matter could become an area of dispute.</p> <p>Specifically, as the Company’s contractors were installing fibre in a local neighborhood, they were advised by BCV that we could not install fiber in a property owner’s duct because BCV owns the duct. The Company disagrees. In the absence of proof that a private property</p>

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non-discriminatory, with operational features as least as favorable as it would provide to itself.

- To meet requests in a timely manner, with reasonable pricing, for facilities and services, including:**
 - **co-location with third parties or other forms of facility sharing, including the sharing of ducts, conduit, buildings, cabinets or masts.**
 - **information about technical interfaces, protocols or key technologies that is required for the interoperability of services.**
- Accounting Separation, or some form of “imputation test”, if the SMP Licensee is engaged in the provision of numerous electronic communications services, especially through bundling of services with “SMP Associates.”**

owner does not own the duct or wiring on his or her property we fully intend to continue to take our instruction from the property owner in all matters concerning the installation of fiber and service on their property.

To short circuit any unnecessary delays or misinformation being received or given to customers, and encourage timely action by any Licensee that believes it owns the duct and/or inside wiring, the Company advocates for imposition of an *ex ante* remedy to prevent a Licensee from engaging in anti-competitive activity in this area absent proof that such Licensee and not the homeowner is the owner of the duct and/or inside wiring.

Pole Access Discussion

Our primary concern in the area of pole access relates not to Belco, the owner of the poles, but rather to current Belco licensees who may attempt to prevent or deter a new competitor’s access to Belco’s poles by refusing or delaying its response to reasonable requests to undertake some reasonable, reimbursable action that will accommodate the new competitor’s equipment on a pole currently occupied by such licensee.

Summary

We recognize that the regulation of infrastructure access will require the RA’s careful and considered balancing of many disparate interests. We fully expect this balance will reflect the interests of BTC, BCV and other infrastructure owners in accounting for their costly infrastructure investment to date as well as the interests of new competitors for timely and reasonably priced access all while taking into account the need to minimize public disruption and environmental impacts attendant with this type of construction activity. Ultimately, however, these disparate interests will need to be reconciled if the Government’s policy objectives of providing Bermuda with state of the art electronic communications infrastructure and services at sustained competitive rates are to be achieved.

The Company respectfully recommends adding the additional *ex ante* remedies proposed for the supply of access to infrastructure facilities.

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PART B APPENDIX A POSSIBLE REMEDIES	COMMENTS
<p>15. Wholesale subscription TV services to deliver broadcast content to end users</p> <p><u>Service:</u></p> <p>15. Wholesale subscription TV services to deliver broadcast content to end users</p> <p><input type="checkbox"/> A wholesale market for the supply of subscription TV to deliver broadcast content to end users</p> <p><u>Tentative Conclusion of SMP determination:</u></p> <p>“to be imposed only on BVC”</p> <p><u>Possible Remedies: :</u></p> <p><input type="checkbox"/> Retail minus avoided costs ISP subject to an RA approved imputation test.</p> <p><input type="checkbox"/> “A Reference Interconnection Order is also needed where a carrier is required to provide wholesale services.”</p> <p><u>Additional Remedies Proposed:</u></p> <p><input type="checkbox"/> To provide access and interconnection to network elements and services subject to terms and conditions that are transparent and non-discriminatory, with operational features as least as favorable as it would provide to itself.</p> <p><input type="checkbox"/> To meet requests in a timely manner, with reasonable pricing, for facilities and services, including:</p> <ul style="list-style-type: none"> <input type="checkbox"/> co-location with third parties or other forms of facility sharing, including the sharing of ducts, conduit, buildings, cabinets or masts. <input type="checkbox"/> information about technical interfaces, protocols or key technologies that is required for the interoperability of services. <p><input type="checkbox"/> No bundling of any wholesale subscription TV service (“SMP Service”) with any other service, whether provided by the SMP Licensee or any “SMP Associate.”</p> <p><input type="checkbox"/> Accounting Separation, or some form of “imputation test”, if the SMP Licensee is engaged in the provision of numerous electronic communications services, especially through bundling of services with “SMP Associates.”</p>	<p>Quantum Comment #29</p> <p>This Service illustrates well the inadequacies of the proposed limited ex ante remedies of requiring an RIO and retail minus avoided cost test. Complying with these remedies alone would appear to be a pretty simple exercise – once the RIO and pricing are approved, BCV will be released from its pre-existing Public Telecommunications Licence and able to take full advantage of its ICOL, barring the imposition of new <i>ex ante</i> remedies as part of the RA’s ECA Section 23 determination. If this release happens too quickly without giving new competitors sufficient opportunity to secure a sustainable market position they will not survive an unleashed BCV, whose already strong market position will only be enhanced with full ICOL privileges. That is the very result that would spell defeat for Government’s stated policy objectives. To help counter that possibility, the Company proposes several additional remedies.</p> <p>The Company respectfully recommends adding the additional <i>ex ante</i> remedies proposed for the wholesale subscription TV services to deliver broadcast content to end users.</p>