

DRAFT DETERMINATION

Wholesale Broadband Markets Dominance Determination

Dominance Designation in Wholesale Broadband Markets

Draft Determination

A public consultation document issued by the Telecommunications Regulatory Authority of the Kingdom of Bahrain

26 March 2009

Request for comments:

The Telecommunications Regulatory Authority ("TRA") invites comments on this consultation document from all interested parties. Comments should be submitted by 4 pm on 7 May 2009.

Responses should be sent to TRA for the attention of the General Director preferably by e-mail (or by post) to:

The General Director
consult@tra.org.bh
Telecommunications Regulatory Authority
P.O. Box 10353, Manama, Kingdom of Bahrain
+973 1753 2125

Purpose: To define and determine whether a licensed operator or operators is/are dominant in wholesale broadband markets.



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Wholesale Broadband Markets Dominance Determination

Instructions for submitting a response

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Responses should include:

- The title printed on the envelop or subject of the sent email should be “LLU consultation”,
- the name of the company/institution/association etc.,
- the name of the principal contact person, and
- full contact details (physical address, telephone number, fax number and e-mail address),
- in the case of responses from individual consumers, name and contact details.

In the interest of transparency, TRA intends to make all submissions received available to the public, subject to the confidentiality of the information received. TRA will evaluate requests for confidentiality in line with relevant legal provisions and TRA’s published guidance on the treatment of confidential and non-confidential information.¹

Respondents are required to mark clearly any information included in their submission that is considered confidential. Where such confidential information is included, respondents are required to provide both a **confidential** and a **non-confidential** version of their submission. If a part or a whole submission is marked confidential, reasons should be provided. TRA may publish or refrain from publishing any document or submission at its sole discretion.

Once TRA has received and considered responses to this consultative document, TRA will issue a final version of this Determination, together with the report on the consultation.

¹ TRA, A Guidance Paper issued by the Telecommunications Regulatory Authority on its treatment of confidential and non-confidential information, September 2007.

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HAVING REGARD TO THE LEGISLATIVE DECREE NO. 48 OF 2002 PROMULGATING THE TELECOMMUNICATIONS LAW, THE METHODOLOGY FOR THE DEFINITION OF THE TELECOMMUNICATIONS MARKETS, APPROVED BY THE DETERMINATION OF THE TELECOMMUNICATIONS REGULATORY AUTHORITY OF THE KINGDOM OF BAHRAIN ISSUED ON 19 APRIL 2003, THE METHODOLOGY FOR DETERMINING MARKET POWER, APPROVED BY THE DETERMINATION OF THE TELECOMMUNICATIONS REGULATORY AUTHORITY OF THE KINGDOM OF BAHRAIN ISSUED ON 19 APRIL 2003, ALL RELEVANT EVIDENCE AND THE SUBMISSIONS MADE BY INTERESTED PARTIES, THE TELECOMMUNICATIONS REGULATORY AUTHORITY OF THE KINGDOM OF BAHRAIN HEREBY MAKES THE FOLLOWING DETERMINATION:

1. For the reasons set out in the Annexe to this Determination the Telecommunications Regulatory Authority of the Kingdom of Bahrain ("TRA") has identified and defined the following relevant markets:
 - the wholesale physical network infrastructure access market; and
 - the wholesale broadband access market.
2. The geographic scope of the relevant markets defined is the Kingdom of Bahrain.
3. For the reasons set out in the Annexe to this Determination, TRA has identified and determines that:
 - Batelco is dominant in the wholesale physical network infrastructure access market in the Kingdom of Bahrain;
 - Batelco is dominant in the wholesale market for broadband access in the Kingdom of Bahrain.
4. This Determination will be reviewed when conditions, as determined by TRA, warrant it.
5. This Determination is without prejudice to TRA's powers to take further actions under the Telecommunications Law, promulgated by the Legislative Decree No. 48 of 2002, and the outcome of any on-going or future investigation, consultation or other regulatory process or measure carried out pursuant to such powers, all or any of which may result in the application of different terms and/or findings than those of this Determination, including the determination and definition of new markets and the designation of dominance or significant market power.
6. This Determination shall come into effect from the date of its issuance.
7. Being declared a dominant operator, Batelco shall comply with the obligations set out in Section 57(e) of the Telecommunications Law and provisions of the Access Regulation issued by TRA on 30 April 2005.

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8. This Determination supersedes the Determination of Dominance in wholesale markets issued by TRA on 22 January 2008 as it relates to wholesale broadband services.

For the Telecommunications Regulatory Authority
Alan Horne
General Director
XX XXXXX 2009

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Annex: Reasoning for the Determination of dominance in wholesale broadband markets

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List of Acronyms

ARCEP	Autorité de Régulation des Communications Electroniques et des Postes (French telecommunications regulatory authority)
ComReg	Commission of Communications Regulation (Irish telecommunications regulator)
DSL	Digital Subscriber Line
DSLAM	Digital Subscriber Line Access Multiplexer
EC	European Commission
ERG	European Regulators' Group
EU	European Union
EU27	The 27 countries of the European Union
FTTB	Fibre To The Building
FTTH	Fibre To The Home
FWA	Fixed Wireless Access
FTTx	Family of technologies based on fibre access networks
GSM	Global System for Mobile Communications
IP	Internet Protocol
ISP	Internet Service Provider
LLU	Local Loop Unbundling
MCA	Malta Communications Authority
MDF	Main Distribution Frame
MSAN	Multiservice Network Access Node
NFWS	National Fixed Wireless Services
NRA	National Regulatory Authority
OLO	Other Licensed Operators
Ofcom	Office of Communications (United Kingdom telecommunications regulator)
Oftel	Office of Telecommunications superseded by Ofcom
PON	Passive Optical Network
SSNIP	Small but Significant Non-transitory Increase in Price
TRA	Telecommunications Regulatory Authority of the Kingdom of Bahrain
xDSL	Family of technologies based on DSL

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Wholesale Broadband Markets Dominance Determination

1 Introduction

1. This determination sets out the underlying reasoning and reasons for the adopted market definitions and dominance findings.

Purpose of this determination

2. The purpose of this determination is to define the wholesale markets related to the retail market for broadband internet access services from a fixed location in the Kingdom of Bahrain and to assess whether any existing operator is dominant in these markets.
3. A dominance designation provides the legal basis whereby regulatory obligations deemed necessary and/or mandated by the provisions of the Telecommunications Law promulgated by the Legislative Decree No. 48 of 2002 (the “Telecommunications Law”) can be defined and implemented.

Background to this determination

4. In its Strategic and Retail Market Review Statement of 3 June 2008,² TRA defined a set of nine measures to further promote competition and the interests of consumers in the telecommunications sector in the Kingdom of Bahrain.
5. Among these nine measures was the aim to introduce local loop unbundling. In this Statement TRA stated that “LLU can be an essential enabler of further competition at the retail level, especially for the provision of broadband and connectivity services to business users” and that “LLU can be expected to put pressure on prices and to increase product differentiation for the benefit of users”.³
6. However, before making a final formal decision with regards to the introduction of Local Loop Unbundling (LLU), TRA considers that it is appropriate to conduct a review of the wholesale market(s) which includes LLU as an input and is related to the retail market for broadband internet access services market given the market developments which have occurred since the last Dominance Determination on wholesale markets of 2006⁴. This analysis then leads to a final decision on appropriate obligations, which may or may not include LLU. Since the last Dominance Determination, there has indeed been significant market developments in the broadband markets, notably the award of National Fixed Wireless Services (“NFWS”) licences to Menatelecom and Zain (then known as MTC-

² See TRA, “Statement on the strategic and retail market review”, 3 June 2008, and TRA, “Strategic and Retail Market Review Report”, 28 February 2008.

³ TRA, “Statement on the strategic and retail market review”, 3 June 2008, page 5.

⁴ TRA, Dominance in Wholesale Markets by Batelco, Determination No 1/06, 22 January 2006.

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Vodafone (Bahrain)) in December 2006 and their subsequent launch of retail broadband services. In this context, TRA considers it is appropriate to conduct a review of the wholesale markets related to the relevant retail market for broadband internet access services from a fixed location in the Kingdom of Bahrain (for which LLU is an input) in order to assess whether the previous market definition remains suitable, to analyse competition in the relevant market and to identify dominant operators, if any.

7. As a result of this Dominance Determination, TRA has conducted a Study which defines the appropriate set of regulated wholesale products for the markets identified above and which determines whether it is no more than necessary and appropriate to impose on Batelco an obligation to provide access to its LLU.⁵

⁵ TRA, Study on the Regulation of Wholesale Broadband Markets, Consultation Document, 26 March 2009.

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2 Analytical framework for the definition of relevant markets and the assessment of dominance

8. To determine whether a licensed operator or operators are dominant in a relevant market, TRA adopts a three-step process:
 - definition of a relevant market;
 - analysis of competition in the relevant market; and
 - identification of dominant operator or operators in the markets defined, if any.
9. At each step, TRA relies on well-established economic principles and tests to define markets, such as the hypothetical monopoly test,⁶ to assess demand- and supply-side substitution. It looks at relevant factors to determine the level of competition, such as barriers to entry and expansion, and market shares.
10. Throughout this three-step process, TRA applies an analytical framework consistent with the Telecommunications Law, the relevant determinations by TRA and international best practices.⁷ The tools and principles employed by TRA are similar to those employed by other regulators and competition authorities, including the European Commission (“EC”) and regulators of the European Union (“EU”).⁸
11. To arrive at its conclusions, TRA has considered relevant facts and information.

⁶ The hypothetical monopoly test is also commonly referred to as the SSNIP (Small but Significant and Non-transitory Increase in Price) test.

⁷ The relevant Determinations are: TRA, “Methodology for Determining Market Power, A Determination issued on 19 April 2003”, and TRA, “Methodology for the Definition of Telecommunications Markets, A Determination issued on 19 April 2003”. See also the Draft Competition Guidelines published for consultation on 4 November 2008.

⁸ Cf., for example, European Commission, “Commission guidelines on market analysis and the assessment of significant market power under the Community regulatory framework for electronic communications networks and services”, OJ 2002/C 165/03.

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3 Identification and determination of the relevant wholesale broadband markets

3.1 General approach to market definition

12. An economic market for a product or service includes all products or services that are considered to be close substitutes. These products or services therefore compete directly with each other, and the potential demand- or supply-side substitution between them constrains their prices to the competitive level.
13. The definition of markets necessitates identifying substitutable products and competitive constraints on the price setting behaviour of firms. Typically this is done by applying the hypothetical monopoly test, i.e. the Small but Significant Non-transitory Increase in Price (“SSNIP”) test. The application of the test starts with the smallest set of services under consideration and seeks to analyse the effect of a SSNIP on consumers of the services to assess whether additional services can be considered substitutable and must therefore be included in the same market. The SSNIP test is a particularly useful analytical tool to analyse substitution.
14. There are three main dimensions of market definition to be considered:
 - the product dimension of the products or services supplied, which refers to the characteristics of the product from a supply-side and demand-side perspective;
 - the functional dimension, which refers to the level in the production, distribution or value chain at which the products or services are supplied; and
 - the geographic dimension, which refers to the geographic scope in which the products or services are supplied.
15. In this Determination, TRA performs a forward-looking analysis in its definition of the wholesale broadband markets relevant to *ex-ante* regulation.

3.2 Retail market analysis

16. Before analysing these three main dimensions of market definition it is useful to refer to the retail market related to wholesale broadband markets since the demand at the wholesale level is a derived demand from demand at the retail. Consideration of the relevant retail market is a common regulatory and competition law practice; it helps inform the range of substitutes at the wholesale level.
17. In the Determination of Significant Market Power (“SMP”) in certain retail markets of 3 June 2008 “2008 SMP Determination”,⁹ TRA has defined the

⁹ TRA, “Determination of Significant Market Power in Certain Relevant Retail Markets”, 3 June 2008.

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retail market for broadband internet access services from a fixed location in the Kingdom of Bahrain (Market 5b) as a relevant retail market. In the 2008 SMP Determination TRA has also identified and determined that Bahrain Telecommunications Company B.S.C (“Batelco”) is an operator with Significant Market Power in this retail market.

18. For the purpose of this Determination, TRA considers that it is not necessary to revisit this market definition, only nine months after defining the relevant market in the 2008 SMP Determination. No major change which could impact the boundaries of the market has occurred in the retail market between the date of the SMP Determination and today, despite the commercial entry of the second NFWS operator in December 2008. In its 2008 SMP Determination TRA undertook a forward-looking analysis.
19. However, in order to put the analysis of wholesale broadband markets into context, TRA briefly describes the salient features of the retail broadband internet services market.
20. In the Kingdom of Bahrain, broadband internet access services from a fixed location can currently be delivered on the basis of different technologies: xDSL (a family of technologies based on “Digital Subscriber Line”), NFWS, FTTx (a family of technologies based on fibre access networks, “Fibre-to-the-x, i.e. Home or Business”), Wi-Fi and satellite.
21. Today, xDSL technology is the main technology used to provide broadband internet access services to retail users. Batelco is the main DSL retail provider and holds a market share in excess of 80% of total broadband lines. Some operators are also providing xDSL broadband internet access services based on Batelco’s wholesale offers. They are purchasing either Batelco’s Bitstream product or Batelco’s Wholesale DSL product and/or both. Such operators hold in total a market share lower than 10%.
22. The second main technology used to provide broadband internet access services in Bahrain is Wimax. TRA auctioned two NFWS licences in December 2006. The NFWS and associated frequency licences were issued in January 2007. Zain and Mena Telecom are the two NFWS licensees and have launched their services in late 2007 and late 2008 respectively. Their market share in the retail market for broadband internet access services from a fixed location has been increasing and is currently estimated at between 10 and 20%.
23. Nuetel Communications has launched its services in Amwaj Islands based on FTTH/FTTB technology in February 2007.
24. Other technologies like Wi-Fi and satellite are not widely used; their market share is lower than 1%.
25. Mobile broadband services (using either mobile handset or data cards or modem) are also provided in the Kingdom of Bahrain but these services are not part of the retail market for broadband internet access services from a fixed location.

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Table 1 - List of technologies used to provide broadband services from a fixed location in the Kingdom of Bahrain

TECHNOLOGY	MARKET SHARE (in % of total broadband lines)
DSL – Incumbent	[80–90%]
DSL – Bitstream	[0–10%]
DSL – Wholesale DSL	[0–10%]
NFWS	[10–20%]
FTTx	[0–10%]
Satellite	<1%
Others	<1%

3.3 Starting point for the definition of relevant wholesale markets

26. In the Determination of dominance in wholesale markets of 22 January 2006 (No. 1/06),¹⁰ TRA defined the “wholesale market for fixed access to customer premises (including high-bandwidth, broadband and narrowband access)” as a relevant market. Unbundled local loops, Wholesale DSLs and main distribution frames or concentrators for Bitstream or DSL collocation were considered as “relevant access inputs”.
27. In the telecommunications sector, there are typically two main types of relevant markets to consider: retail markets, i.e. the markets for services or products provided to end-users; and wholesale markets, i.e. the markets for the input which are necessary for operators to provide services and products to end-users.¹¹
28. Having regards to the broadband value chain and the different functional levels and wholesale inputs (See Figure 1 below) that can be used to offer services at the retail level, the general approach for the definition of relevant wholesale markets for broadband is to take as a starting point two separate markets: the wholesale physical network infrastructure access market and the wholesale broadband access market.

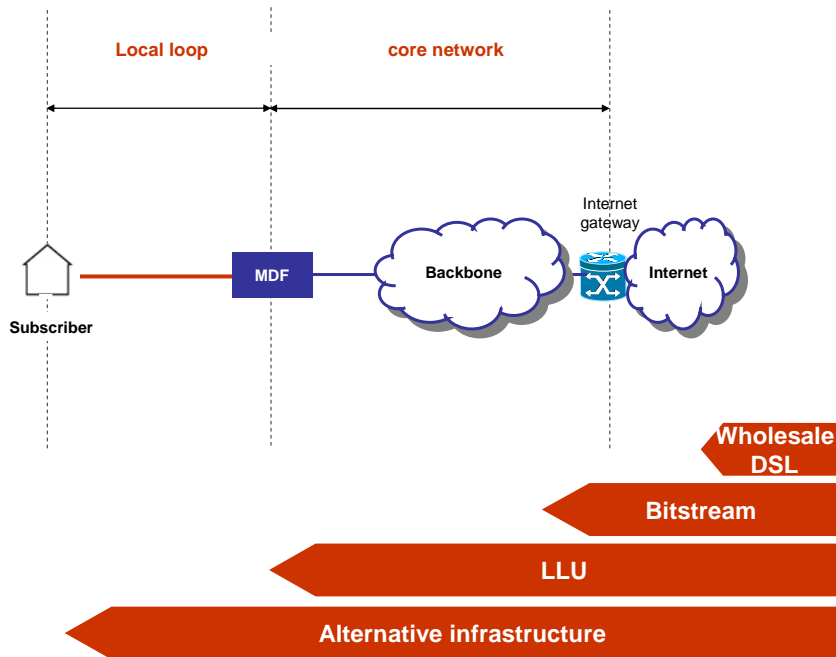
¹⁰ TRA, “Determination of dominance in wholesale markets”, 22 January 2006.

¹¹ European Commission, “Commission Recommendation on Relevant Product and Service Markets within the electronic communications sector susceptible to ex ante regulation in accordance with Directive 2002/21/EC of the European Parliament and of the Council on a common regulatory framework for electronic communications networks and services”.

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Figure 1 - Positioning of the different “broadband inputs” in the xDSL value chain



29. This approach is consistent with the EU approach. In its initial Recommendation on relevant markets of February 2003, the EC proposed to consider two relevant wholesale broadband markets. This market delineation has been confirmed in 2007 by the EC in its new Recommendation on relevant markets, after five years of regulatory practice by European regulators.¹²
30. TRA agrees with the EC that the separation of these two wholesale markets is justified by the very different features of access to the local loop and Bitstream, as illustrated in the following quote from the EC:

“During the application of the initial Recommendation it has also been relatively straightforward to separate these two wholesale markets, on the basis of their product characteristics and by virtue of demand and supply substitution. For example, the two services, access to unbundled loops and wholesale broadband access, can frequently be distinguished on the basis of the flexibility they give in supplying the retail service, or by means of the location at which access is obtained. Hence, unbundled loops typically give greater flexibility and control over the retail broadband service offered to the end-user and have typically been supplied at the main distribution frame (MDF). In contrast, wholesale broadband access in the form of a bit-stream service typically gives less flexibility over the retail service, and may be

¹² See EC “Commission Recommendation on Relevant Product and Service Markets within the electronic communications sector susceptible to ex ante regulation in accordance with Directive 2002/21/EC of the European Parliament and of the Council on a common regulatory framework for electronic communications networks and services”.

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supplied at higher points in the network (such as regional interconnection points), as well as at the MDF.”¹³

31. However, TRA underlines that the delineation of these two wholesale product markets is only a starting point from which demand and supply-side substitutability between local loop unbundling and Bitstream can be assessed. Depending on the outcome of the substitutability analyses, these two markets could be merged.
32. The next step is therefore to determine the scope of these two wholesale markets in the specific context of the Kingdom of Bahrain.

3.4 Wholesale physical network infrastructure access market¹⁴

Product dimension

33. Consistent with the market definition principles set out above, the identification of the relevant market begins with the smallest service or set of services possible. The primary platform for broadband access competition in Bahrain is Batelco’s copper local loop. Hence TRA is first assuming that the market includes just access to Batelco’s copper local loop. Then, TRA is considering other potential substitutes and testing their substitutability with access to wholesale copper local loop.

Definition of the LLU product

34. In many countries, full access to the incumbent’s copper local loop is provided by the LLU product. The LLU product is a set of basic and ancillary services provided by the incumbent to Other Licensed Operators (OLOs) so that they can connect their active exchange equipment and core network to the incumbent’s copper local loop. These basic and ancillary services are: provision of a twisted metallic path facility (the copper local loop) or access to the high frequencies of the copper loop in the case of shared access, provision and installation of jumpers, provision and installation of tie cables, provision of collocation space (in the form of a dedicated collocation room, co-mingling etc.) and associated services (power, air conditioning, access to the site etc.), and provision of a backhaul.
35. This product description is consistent with international practice, and in particular European practice. Furthermore, as per the European Regulation No 2887/2000, the European approach to LLU has always considered that the Reference Offer for unbundled access to local loops of incumbents shall not be limited to the provision of a twisted metallic path

¹³ “Commission Recommendation on Relevant Product and Service Markets within the electronic communications sector susceptible to ex ante regulation in accordance with Directive 2002/21/EC of the European Parliament and of the Council on a common regulatory framework for electronic communications networks and services”, page 32.

¹⁴ Following the consultation, TRA may modify the exact wording of this market if warranted.

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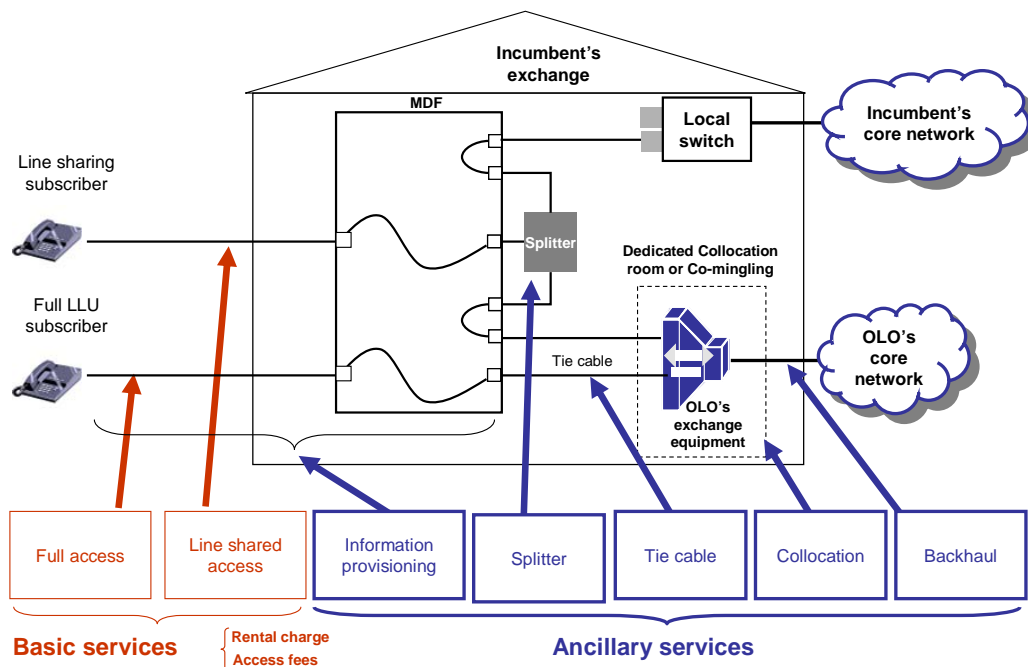
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facility but shall also encompass “related facilities”.¹⁵ Related facilities means:

“the facilities associated with the provision of unbundled access to the local loop, notably collocation, cable connections and relevant information technology systems, access to which is necessary for a beneficiary to provide services on a competitive and fair basis.”

36. When implementing Regulation (EC) No 2887/2000, regulators have paid special attention to these related facilities, the provision of which is typically considered necessary for the effective use of the twisted metallic path facility, and have catered for their inclusion in the Reference Offer of incumbents.
37. TRA is therefore of the view that the obligation to provide access to the copper local loop shall include the obligation to provide at least the following basic and ancillary services: provision of a twisted metallic path facility (the copper local loop) or access to the high frequencies of the copper loop in the case of shared access, provision and installation of jumpers, provision and installation of tie cables, provision of collocation space (in the form of a dedicated collocation room, co-mingling etc.) and associated services (power, air conditioning, access to the site etc.), provision of a backhaul service as well as information provisioning on local loop.

Figure 2- List of basic and ancillary services to be provided by the incumbent to OLOs



¹⁵ See Regulation (EC) No 2887/2000 of the European Parliament and of the Council of 18 December 2000 on unbundled access to the local loop.

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38. TRA observes that the EC has considered that “[w]here there is no merchant market and where there is consumer harm, it is justifiable to construct a notional market when potential demand exists.”¹⁶
39. Further, while there is at present no merchant market for LLU, TRA considers a notional market for the LLU product/input on the basis that:
- The Telecommunications Law explicitly refers to LLU in Section 40.¹⁷
 - The Access Regulation explicitly provides for the possibility to require a dominant operator to give access to unbundled local loops.¹⁸
 - In its Statement on the Strategic and retail market review issued on the 3 June 2008, TRA has proposed a set of nine measures, among which is the introduction of LLU.
 - Batelco has been found to have Significant Market Power in the retail market for broadband internet access services from a fixed location, and Batelco uses its local loop as an input for the provision of broadband services.
 - The local loop had also been considered as a relevant input of the wholesale broadband market in the previous Determination on Dominance in Wholesale Markets.¹⁹
40. TRA also notes that there is demand for LLU. Interviews conducted by TRA with alternative operators in November 2008 have indicated that there is potential demand from alternative operators for having access to the local loop: five operators have expressed their interest in LLU, and four of them expressed their wish to see an LLU product available as soon as possible.
41. TRA observes also that such a definition of notional markets has been used in other countries, including Malta and in Ireland:
- The Malta Communications Authority (MCA) in Malta has defined a “wholesale unbundled access to the local loop” market despite the absence of Internet Service Providers (ISPs) purchasing wholesale unbundled access in Malta.²⁰

¹⁶ See European Commission, 2007, Commission Recommendation on Relevant Product and Service Markets within the electronic communications sector susceptible to ex ante regulation in accordance with Directive 2002/21/EC of the European Parliament and of the Council on a common regulatory framework for electronic communications networks and services.

¹⁷ “Public Telecommunications Operators with significant market power and every other Licensee whose License provides for the following obligations to Subscribers and Users or other Licensees provided for in his/its License shall specified the following: [...] Unbundled Local Loop: from 1 /7/2004”.

¹⁸ TRA, Access Regulation, Regulation 1 of 2005, 30 April 2005.

¹⁹ TRA, “Dominance in Wholesale Markets by Batelco A Determination issued by the Telecommunications Regulatory Authority”, 22 January 2006.

²⁰ MCA, Wholesale Unbundled Access to the Local Loop, Identification and Analysis of Markets, Determination of Market Power and Setting of Remedies, 27th November 2006

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- In its 2004 analysis of the wholesale broadband access market in Ireland, ComReg has considered notional markets.²¹
42. For all the above cited reasons, TRA defines as a starting point a notional LLU market. Based on the set of technologies available in the Kingdom of Bahrain for the provision of broadband internet access services from a fixed location, TRA considers that, for wholesale customers, potential substitutes to the LLU product are:
- upstream: building a new alternative local loop or access to ducts;
 - downstream: Bitstream and Wholesale DSL;
 - at the same functional level: access to existing alternative local loops (NFWS or others).
43. Therefore, in its analysis of demand- and supply-side substitutability to define the boundaries of the relevant market, TRA needs to consider the following questions:
- Would wholesale customers substitute the LLU product by building their own local loop?
 - Is access to ducts a substitute to the LLU product?
 - Is wholesale access to the existing NFWS local loops a substitute to the LLU product?
 - Is wholesale access to the existing fibre local loops a substitute to the LLU product?
 - Is Bitstream a substitute for LLU?
 - Should self-provision of access to the copper local loop be part of the relevant market?

Would wholesale customers substitute the LLU product by building their own local loop (without duct access)?

44. TRA is of the view that in response to a SSNIP on the LLU price, wholesale customers would not be in a position to build their own alternative local loop and thereby defeat the SSNIP in the relevant timeframe of the analysis.
45. The local loop is the “last mile” of an operator’s telecommunications network that connects the customer premises to the operator’s core network (in which switching, routing and intelligent equipment are connected to each other).
46. The local loop is “a highly capital-intensive business”.²² They are two main types of local loop: wired local loops and wireless local loops.
47. Building a wired local loop, be it based on copper or on fibre, involves very substantial civil works costs and cable costs in order to reach all targeted

²¹ ComReg, “Market analysis: wholesale broadband access. Consultation paper”, Document No: 04/25, 2004.

²² Cf. TRA, “Dominance in wholesale markets: a consultation issued by the Telecommunications Regulatory Authority on dominance in wholesale markets”, 27 October 2005, page 34.

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customer premises. The capital requirement, coupled with the sunk nature of the costs involved in deploying a wired local loop, and demand conditions make the duplication of wired local loops on a significant scale particularly challenging and highly unlikely on a commercial basis.²³

48. In addition to sunk cost, economies of scale and scope constitute another considerable barrier to entry. Batelco benefits from significant economies of scale (or density) and economies of scope, as Batelco provides voice and internet access services through its copper local loop. An operator building an alternative local loop would be unlikely to benefit from the same level of economies of scale and would have to offer the same suite of services to reach a similar level of economies of scope.
49. TRA also considers that the deployment of an alternative wired local loop would be particularly time-consuming.
50. While the investment required for building a wireless local loop is lower than for a fixed local loop, wireless local loops are also capital-intensive: they require the roll-out of a capillary mast and transmitter network to address end-users. Further, sunk cost represents a large proportion of the cost of the deployment of wireless loops and this constitutes a significant barrier to entry.
51. Building a wireless local loop with significant coverage is time-intensive. For Mena Telecom, which operates a wireless local loop, almost two years has elapsed between the granting of its NFWS licence in January 2007 and the commercial launch of its broadband services. Zain, the holder of the other NFWS licence, was able to deploy its network more quickly by leveraging its existing mobile network (i.e. Zain already had in place a certain number of masts and a backhaul network from which it could build its NFWS network).
52. Notwithstanding this, TRA considers that wireless loops are not substitutable for fixed wired loops. In fact the range of services than can be provided based on LLU is much wider than the effective range currently achievable by wireless networks.
53. In addition to the above mentioned wired local loops and wireless local loops, satellite can also be used to provide broadband services in Bahrain. However, satellite currently accounts for less than 1% of the broadband market. The marginal market share of satellite reflect the significant cost and quality disadvantages of this access technology which make it an ill-suited technology to compete in the mass retail broadband market.²⁴ TRA is of the view that satellite should be excluded from the market analysis on the basis that it is not a substitutable product for LLU.

²³ Copper local loops are considered as essential facilities in some countries, such as France. See Conseil de la Concurrence, Avis No 04-A-01 du 8 janvier 2004.

²⁴ See also TRA, SMP Determination in certain Retail Markets, 3 June 2008, page 49.

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54. For the reasons set out above, TRA is of the view that it would not be possible for a wholesale customer to substitute the LLU product by building its own local loop with significant coverage in the Kingdom of Bahrain within the timeframe of the analysis because of the high sunk costs involved and high entry barriers. In response to a SSNIP, supply-side substitution would be inoperative.

Question 1: Do you agree with TRA's opinion that building a new local loop is not a substitute to the LLU product? Please elaborate.

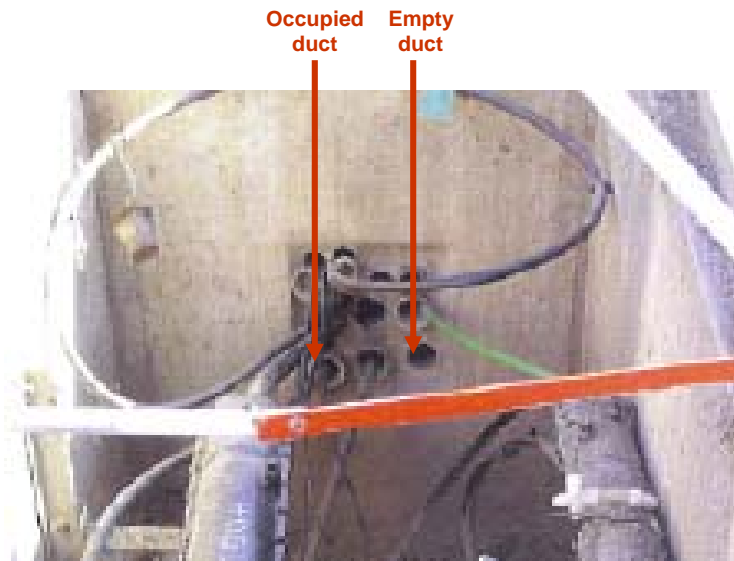
Is access to ducts a substitute for LLU?

55. Access to ducts enables OLOs to deploy cables without having to dig trenches or to deploy poles. In general, when an incumbent deploys its local loop for the first time, it digs trenches, lays ducts and pulls cables into the ducts. To avoid having to reopen trenches in the future, it lays spare ducts. After that, as a general rule, the incumbent does not have to reopen trenches to lay additional cables; it simply lays cables into spare ducts (this is done by opening chambers at each side of the ducts). Thus, compared to a situation where the deployment of a wired local loop is completed without access to ducts (which has been dealt with above), the deployment of a wired local loop with access to ducts is less capital- and time-intensive. Nevertheless, the incumbent would still have to undertake a thorough assessment of the effective availability of ducts and then to select those to be made available to OLOs.

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Figure 3 - Picture showing empty and occupied ducts



Source: TRA (from ARCEP pictures)

56. While effective access to ducts would improve somewhat the economic equation for the deployment of fixed local loop compared to the case without access to ducts analysed above, TRA considers that supply-side substitution based on the availability of access to ducts will be insufficient in the relevant timeframe to warrant a broadening of the market definition, i.e. access will not be sufficient to make a SSNIP on the LLU price unprofitable.
57. Despite access to ducts, the deployment of a wired local loop involves substantial capital requirements, in terms of civil works costs (notably for laying cables into these ducts), material and equipments (e.g. fibre or copper cables). Further the processes for obtaining access to ducts are in practice very long, even though TRA is currently involved in easing these. Barriers to entry remain considerable. Even if some OLOs may have the intention to deploy wired local loops, it would be limited to very small areas.
58. Nevertheless, TRA notes that access to ducts is an important remedy to address problems associated with physical network access.
59. For the reasons set out above, TRA concludes that access to ducts will not be a close substitute to LLU within the timeframe of the current analysis and is therefore excluded from the market definition.

Question 2: Do you agree with TRA's opinion on access to ducts? Please elaborate.

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Is wholesale access to the existing NFWS local loops a substitute for the LLU product?

60. TRA seeks here to determine whether a purchaser of the LLU product would consider switching to an unbundled access based on one of the two fixed wireless local loops in response to SSNIP on the LLU price.
61. Currently, NFWS operators do not offer any unbundled access to their wireless local loops.
62. To begin with, TRA considers that it is not technically feasible to provide unbundled access to NFWS local loops for the time being. Whereas the copper local loop offers a dedicated pair per end-user, the NFWS local loop is shared between multiple end-users and the active equipment (as opposed to passive) that allocates the capacity between end-users is managed by the NFWS operator. As a consequence, unbundling of the NFWS local loop does not appear to be feasible.
63. While access to the copper local loop has been successfully implemented in many countries and is therefore proven to be technically feasible,²⁵ TRA is not aware of any wireless local loop having been unbundled for the reasons mentioned above. This is consistent with the recent review of ComReg which stated that it is:²⁶

“not aware of any wholesale physical service (as opposed to virtual) which is made available on other access networks such as fixed wireless or mobile. Based on ComReg’s investigations and information provided by operators, it is not clear that a form of physical access is technically or commercially viable over alternative network infrastructure.”
64. TRA also notes that the range of services that can be provided based on LLU is much wider than the effective range currently achievable by wireless networks. TRA observes in particular that while LLU-based operators can, without particular challenges, develop triple-play offerings and offer television over IP services, it may in practice be very difficult to offer similar television over IP services on wireless networks.
65. Finally, leaving aside the question of the technical feasibility by NFWS operators (which have began their operations only recently) to offer wholesale access to their local loop, the demand from wholesale purchasers would be unlikely until NFWS operators have established a successful track record in the medium term.

²⁵ See TRA, Study on the Regulation of Wholesale Broadband Markets, Consultation Document, March 2009.

²⁶ ComReg, “Market review: wholesale physical network infrastructure access (Market 4). Response to ComReg Document 08/41 and Draft Decision Document No: 08/104”, 2008.

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66. TRA also considers that access to NFWS cannot be included in this market on the basis of the analysis of indirect pricing constraints (see paras 100-103 below for an explanation of the concept and mechanism in the context of the wholesale broadband access market). In other words, TRA does not consider that a 10% increase in the price of LLU could result in a price increase of LLU-based retail offers of a sufficient magnitude to lead to a sufficient number of retail customers to switch to retail offers based on NFWS licenses and hence to render the SSNIP in the wholesale LLU price unprofitable.
67. For the reasons set out above, TRA is of the view that access to the NFWS local loop is not a substitute to access to the copper local loop because of constraints on supply-side substitution which would render a SSNIP profitable.

Question 3: Do you agree with TRA's opinion to exclude from the relevant market wholesale access to the existing NFWS local loops? Please elaborate.

Is wholesale access to the existing fibre local loops a substitute for the LLU product?

68. TRA seeks here to determine whether a purchaser of the LLU product would consider switching to an unbundled access based on an existing fibre local loop in response to SSNIP on the LLU price.
69. Currently, the footprint of existing fibre local loops in Bahrain is very limited, and TRA believes that it will not increase significantly unless significant investment is made and that any extension required would take considerable time.
70. Leaving aside the questions of the technical feasibility and willingness of fibre operators (which have began their operations only recently) to offer wholesale access to their local loop, the demand from wholesale purchasers would be unlikely until fibre operators have established a significant footprint in Bahrain.
71. For the reasons set out above, TRA is of the view that access to the fibre local loop is not a substitute to access to the copper local loop because of constraints on supply-side substitution which would render a SSNIP profitable.

Question 4: Do you agree with TRA's opinion to exclude from the relevant market wholesale access to the existing fibre local loops? Please elaborate

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Is Bitstream a substitute to LLU?

72. TRA has proposed above to consider as a starting point two wholesale markets related to the retail broadband market: the wholesale physical network infrastructure access market and the wholesale broadband access market. One of the questions which need to be analysed is whether these two markets should be merged in the specific context of the Kingdom of Bahrain on the basis of substitution between Bitstream and LLU.
73. On the demand side, TRA believes that, following a 10% increase in the LLU price, OLOs using LLU would not switch to Bitstream for several reasons. First, OLOs purchasing LLU will have a greater ability to differentiate their services from Batelco's retail products than with Bitstream. With LLU, OLOs manage their own active exchange equipments (including but not limited to DSLAMs/MSANs) as well as the bandwidth of their backhaul and consequently the contention ratio for their customers (which is the ratio of the potential maximum demand to the actual bandwidth). The higher the contention ratio, the greater the number of users that may be trying to use the actual bandwidth at any one time and, therefore, the lower the effective bandwidth offered, especially at peak times. This enables OLOs to provide new innovative services with greater independence from the incumbent. For example, Bitstream does not enable the provision of television over IP services while LLU does (to the extent that the copper local loop quality allows it).
74. Second, even if LLU and Bitstream allowed OLOs to offer similar services at the retail level, it is unlikely that OLOs that would have invested in LLU (by notably purchasing and installing their own equipment) would, in response to a SSNIP, switch to Bitstream precisely because they have undertaken LLU-specific investments.
75. For these reasons, TRA considers that OLOs purchasing LLU would not switch to Bitstream following a 10% increase in the LLU price. Conversely, TRA is also of the view that OLOs purchasing Bitstream would not switch to LLU following a 10% increase in the Bitstream price. While TRA acknowledges that there may be some one-way substitution from Bitstream to LLU for operators wishing to further differentiate their services, TRA considers that this one-way substitution would be limited in the relevant timeframe given the additional investment required and the economics of LLU-based entry.
76. On the wholesale supply side, the question of substitutability between LLU and Bitstream is purely theoretical: would a Bitstream provider decide to provide LLU in the case of a hypothetical monopolist providing LLU increases its LLU prices by 10%? The Bitstream provider would have to build its own copper local loop for that, which is not likely within the timeframe of the analysis because of the time and investment required (see above).

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77. As a consequence, the analysis of both wholesale demand-side and supply-side substitution indicates that LLU and Bitstream are not substitutable. This is because LLU and Bitstream are very different products: LLU provides more flexibility and technical capabilities but requires more investment, while Bitstream provides less flexibility and technical capabilities and requires less investment²⁷. As a consequence, TRA concludes that Bitstream is not part of the wholesale physical network infrastructure access market.
78. Considering that the Wholesale DSL product is lower than the Bitstream product in the investment ladder and that Bitstream and LLU are not substitutable, TRA also concludes that the Wholesale DSL product is not a part of this relevant market.

Question 5: Do you agree with TRA's opinion that LLU and Bitstream (and therefore the Wholesale DSL product) are in different relevant markets? Please elaborate.

Should Batelco's self-provision of access to the copper local loop be part of the relevant market?

79. Batelco controls the copper local loops in Bahrain and is the only firm that is in a position to provide a copper local loop access product. TRA also observes that no LLU product is available in Bahrain. Moreover, there is no technical difference between the LLU product and the service based on the copper local loop that Batelco provides to its retail arm. Thus, if the price for LLU increases, it should affect both Batelco's retail arm and wholesale LLU customers. TRA therefore considers that self-provision should be included in the relevant market. TRA points out that, if self-provision were not included, it would not be possible to assess market shares in this notional market.
80. TRA notes that this approach is also recommended by the EC as illustrated in the following quote:

"In many cases the incumbent is the only firm that is in a position to provide a potential wholesale service. It is likely that there is no merchant market as this is often not in the interest of the incumbent operator. Where there is no merchant market and where there is consumer harm, it is justifiable to construct a notional market when potential demand exists. Here the implicit self-supply of this input by the incumbent to itself should be taken into account."²⁸

²⁷ See also TRA, Study on the Regulation of Wholesale Broadband Markets, 26 March 2009

²⁸ See "Commission recommendation on relevant product and service markets within the electronic communications sector susceptible to ex ante regulation in accordance with

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Question 6: Do you agree with TRA's position that self-provision by Batelco should be included in the relevant market? Please elaborate.

Functional dimension

81. The relevant functional dimension of the market definition is the wholesale level, because access to physical network infrastructure is an input provided by operators to other operators for the provision of services.

Geographic dimension

82. The definition of geographic markets involves an assessment of the extent to which competitive conditions and constraints are appreciably different across geographic areas. In considering the geographic scope of a relevant market, it is important to consider the relatively small overall size of the telecommunications sector in the Kingdom of Bahrain and the relative costs and benefits of defining separate markets since the benefits of defining granular markets are likely to be outweighed by the associated costs.
83. TRA explained in its Draft Competition Guidelines that it "will have regard to the likely size of the proposed market, in order to determine the likely materiality of the issues at stake". With regards to the specific case of new property developments (such as the Amwaj area), it indicated that "[it] will normally only consider defining a new development as a separate geographic market once the development has been launched and the competitive landscape stabilised".²⁹
84. In an *ex ante* context, the definition of relevant markets is a preliminary step prior to the analysis of competition and the definition of appropriate remedies (such as access to infrastructure), should market failures be identified. For the purposes of *ex ante* regulation of Batelco as a dominant operator, TRA considers that the definition of the relevant market on a national basis is appropriate. Thus it is not necessary to define separate geographic markets to address the case of the Amwaj area or for that matter in any new property developments, where Batelco does not have infrastructure.

Directive 2002/21/EC of the European Parliament and of the Council on a common regulatory framework for electronic communications networks and services".

²⁹ See TRA, "Draft competition guidelines: a consultation document", 4 November 2008, page 13.

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85. Besides the case of Amwaj addressed above, TRA considers that there are no other potential factors that could justify sub-national markets, having regards notably to the size of Bahrain, potential costs and benefits as well as supply and demand conditions for LLU. The supply conditions of LLU are reasonably homogenous throughout the country. Broadband competition is also homogeneous all over the country, as both NFWS operators' offers and Batelco's DSL offers are in principle available throughout the country. TRA notes also that broadband prices are uniform across the country.
86. The obligations arising from this Dominance Determination only apply to areas in which Batelco has infrastructure. Hence the exact geographic scope of the market does not impact the practical implementation of the relevant obligations arising from this Determination.
87. For the reasons set out above, TRA is of the view that the geographic dimension of the market is national.

Question 7: Do you agree with TRA's position on the national geographic scope of the relevant market, considering the size of the country and of candidate geographic markets? Please elaborate.

Conclusion on the relevant market for wholesale physical network infrastructure access market

88. For the reasons set out above, TRA considers that the relevant market is the wholesale physical network infrastructure access market, which:
- includes LLU (access to the copper local loop and all the ancillary services listed above);
 - includes self-supply by Batelco;
 - excludes wholesale access to existing NFWS local loops and fibre local loops;
 - excludes wholesale access to other local loop infrastructure (satellite);
 - excludes Bitstream (as well as the Wholesale DSL product);
 - excludes access to ducts.
89. The geographic dimension of the market is the Kingdom of Bahrain.

Question 8: Do you agree with TRA's definition of the wholesale physical network infrastructure access market? Please elaborate.

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3.5 Wholesale broadband access market

Product dimension

90. In Section 3.3 above, two wholesale markets related to the retail market for broadband internet access services from a fixed location in the Kingdom of Bahrain have been taken as a starting point. They are the wholesale physical network infrastructure access market and the wholesale broadband access market. There is *de facto* a wholesale broadband access market in Bahrain, because one OLO has concluded an agreement with Batelco for purchasing Bitstream. This OLO provides retail broadband services to end-users on the basis of this wholesale product. Other OLOs can purchase the Bitstream services of Batelco should they wish to.
91. Batelco's Bitstream product is an access service that enables OLOs to provide high-speed services to end-users via a digital pathway – made of an ADSL link and an aggregation link (backhaul) – across Batelco's network. A total of eight different Bitstream products with different download speeds and contention ratios are available (see Figure below). One way for OLOs to differentiate their retail services from those of the incumbent is to propose different thresholds for data volumes (maximum amount of data in Gbps that can be downloaded per month). With Bitstream, OLOs are responsible for the provision of internet connectivity.

Figure 4 - Batelco's Bitstream products

Bitstream Access Speed	Residential Packet Access Contention Ratio	Business Packet Access Contention Ratio
256kbps	15:1	8:1
512bkps	10:1	8:1
1Mbps	10:1	8:1
2Mbps	10:1	8:1

Source: Batelco's reference offer

92. Contrary to Bitstream products available in larger countries, the broadband traffic is delivered at a single point in Bahrain.
93. Only Batelco offers a wholesale broadband access product. NFWS operators or fibre-based operators do not provide Bitstream products.
94. Consistent with the market definition principles set out above, the identification of the relevant market begins with the smallest service or set of services possible, in this case Batelco's Bitstream product. Then, TRA considers potential substitutes in order to set the boundaries of the market. TRA is of the view that the following questions need to be analysed:
- Should NFWS access be included in the relevant market?

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- Should self-provision of Bitstream by Batelco be part of the relevant market?
- Is LLU a substitute for Bitstream?
- Is Wholesale DSL a substitute for Bitstream?

Should NFWS access be included in the relevant wholesale broadband access market?

95. This question needs to be analysed from two angles:

- whether NFWS access provides a direct pricing constraint on Bitstream; and
- whether NFWS access provides an indirect pricing on Bitstream.

96. With regards to the first angle, TRA observes that NFWS operators are not currently providing any wholesale access in the form of a Bitstream product to third parties. Therefore NFWS access does not constitute a direct pricing constraint and cannot be included in the relevant market on this basis. For the purposes of this Determination and having regards to TRA's conclusion on the indirect pricing constraints provided by NFWS access on Bitstream (see below), it is not necessary for TRA to carry out a forward-looking analysis of the direct pricing constraint.³⁰

97. Before analysing indirect pricing constraints, TRA notes that there is no wide consensus regarding whether indirect constraints should be taken into account at the market definition stage or at the competition analysis stage even though the particular route chosen should not lead to conclusions materially different.

98. For example, while the EC generally advocates taking into account indirect pricing constraints at the competition analysis stage in the field of telecommunications, it commonly factors indirect pricing constraints at the market definition stage in its antitrust work. Similarly, regulators such as Ofcom, Comreg and the New Zealand Commerce Commission use the latter approach.

99. In this instance, TRA has decided to factor the indirect pricing constraints at the market definition stage.

100. The operation of indirect pricing constraints can lead to products which do not directly compete to fall in the same market. At the retail level, Batelco's services compete mainly with OLO's services either based on Batelco's wholesale products or based on NFWS. To define the wholesale broadband access market, it is appropriate to analyse whether substitution at the retail level provides an indirect constraint on the pricing of wholesale

³⁰ Such an analysis would need to consider elements such as: whether it is technically feasible to offer Bitstream on NFWS, the systems (e.g. wholesale billing and accounting management) required, whether the two NFWS licencess would be interested in and have the incentives to offer Bitstream access, whether existing wholesale customers would be interested in switching and the switching cost they would face as well as whether all the above would be feasible in the relevant timeframe.

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products. This is done by asking whether Batelco (absent regulation) could profitably sustain a SSNIP at the wholesale level. Batelco's Bitstream is used by certain OLOs and notionally by Batelco's retail arm as an input to construct retail offers.

101. Hence, a 10% increase in the price of Bitstream could be expected to result in a price increase of retail prices, as operators, seeking to avoid a margin squeeze for example, will need to pass through the increase in input price. While the hypothetical price increase of 10% can be expected to be diluted, a reasonable approximation of the likely resulting price increase at the retail level can be derived from the proportion of the input price in the end-to-end price of retail offers. Based on Batelco's current retail and Bitstream tariffs, a 10% increase in Bitstream could be expected to lead to an increase of 5% to 8% in retail prices, assuming that the rise of the input price is entirely passed on to end-users.³¹
102. TRA is of the view that an increase in the retail prices of offers based on Bitstream of this magnitude could lead to a sufficient number of retail customers to switch to retail offers based on NFWS licenses to render the SSNIP in the wholesale Bitstream price unprofitable.
103. On the basis of the indirect pricing constraints provided by NFWS licenses via the retail level, TRA therefore concludes that NFWS access should be included in the wholesale broadband access market. No other OLOs are included in the market definition on the basis of indirect pricing constraints.³²

Question 9: Do you agree with TRA's inclusion of NFWS access in the wholesale broadband access market? Please elaborate.

Should self-supply of Bitstream by Batelco be a part of the relevant market?

104. TRA seeks here to determine whether Batelco's self-supply of Bitstream should be included in the relevant market. Having included self-supply of NFWS licensees (which do not provide wholesale broadband access to third parties), TRA is of the view that it is appropriate to include self-supply by Batelco. The exclusion of Batelco's self-supply would indeed be inconsistent with the treatment of self-supply for NFWS. And this would produce a distorted view of competitive constraints and market shares.

³¹ In other words, Bitstream prices represent 50% to 80% of the retail prices of Batelco.

³² Other potential candidates were satellite and fibre-based operators. However they account for less than 1% of the retail market. Further TRA considers that indirect pricing constraints via the retail level will be inoperative owing for example to capacity expansion constraints over the timeframe of the analysis.

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Question 10: Do you agree with TRA's analysis that self-provision by Batelco should be included in the wholesale broadband access market? Please elaborate.

Is LLU a substitute to Bitstream?

105. This question has already been addressed above in the analysis of the wholesale physical network infrastructure access market. As per the arguments set out above at paras 72-78, TRA is of the view that LLU is not substitutable to Bitstream.

Question 11: Do you agree with TRA's conclusion that the LLU product should not be included in the wholesale broadband access market? Please elaborate.

Is Wholesale DSL a substitute for the Bitstream product?

106. Wholesale DSL is typically no longer regulated in many countries. Generally it is not considered to be in the same wholesale market as Bitstream and no specific market for Wholesale DSL is generally identified.

107. For example, the European Regulatory Group ("ERG") states that Bitstream and Resale products are not substitutable, the main reasons being that Bitstream allows OLOs to differentiate their services from those of the incumbent and that Bitstream requires OLOs to build their own networks.³³

108. TRA observes that the difference between the Bitstream product and the Wholesale DSL product is narrower in Bahrain. First of all, the level of additional differentiation offered by the Bitstream product is currently limited compared to the Wholesale DSL product (See Figure below):

- download speeds offered are the same: 256 kbps, 512 kbps, 1 Mbps and 2 Mbps;
- any threshold value can be proposed with the two products.

109. As a consequence, it would appear to be difficult for an OLO which relies on the Bitstream product to differentiate significantly its services compared to an OLO which uses the Wholesale DSL product.

³³ ERG, "Bitstream access: ERG common position", 2 April 2004.

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Figure 5 - Batelco's Wholesale DSL products

Access Speed for Residential Customers	Included Usage (Upload and download)	Increment for usage above threshold
265kbps downstream / 64kbps upstream	5 GB	1 MB
512kbps downstream / 128kbps upstream	8 GB	1 MB
1 Mbps downstream / 256kbps upstream	15 GB	1 MB
2Mbps downstream / 512kbps upstream	20 GB	1 MB

- Does not include an ADSL modem.
- Includes one email account with 10Mb storage limit.
- Recommended modems and suppliers are:
 1. **INMA:** GreatSpeed USB
 2. **A. Rashid Est:** Aztech USB
 3. **Intercol:** SpeedTouch USB

Access Speed for Business Customers	Included Usage (Upload and download)	Increment for usage above threshold
265kbps downstream / 64kbps upstream	2.5 GB	1 MB
265kbps downstream / 64kbps upstream	5 GB	1 MB
512kbps downstream / 128kbps upstream	10 GB	1 MB
1 Mbps downstream / 256kbps upstream	15 GB	1 MB
2Mbps downstream / 512kbps upstream	20 GB	1 MB
265kbps downstream / 64kbps upstream	N/A	N/A
512kbps downstream / 128kbps upstream	N/A	N/A
1 Mbps downstream / 256kbps upstream	N/A	N/A
2Mbps downstream / 512kbps upstream	N/A	N/A

Source: Batelco's reference offer

110. Also, in the particular case of Bahrain, the Bitstream traffic is delivered at a single point, which means that OLOs do not need to deploy a national backbone which OLOs would have to do if the Bitstream traffic was delivered at a regional level as in larger countries. As a consequence, the level of investment required by the Bitstream product is not significantly higher than the level of investment required for the Wholesale DSL product. Compared to Wholesale DSL, an OLO that wishes to provide services based on Bitstream needs to source international connectivity.
111. On the wholesale demand side, TRA is of the view that a 10% increase in the Wholesale DSL product price would make OLOs based on the Wholesale DSL product switch towards the Bitstream product and vice versa, because of the low differentiation offered by the two products and because of the low level of investment required. Interviews conducted by TRA with alternative operators in November 2008 have indeed indicated that OLOs consider that the main advantage of the Bitstream product compared to the Wholesale DSL product in the particular case of Bahrain is essentially the higher flexibility offered thanks to the absence of threshold values in the Bitstream product.
112. On the wholesale supply side, the question of substitutability between the Bitstream and Wholesale DSL products is purely theoretical: would a Wholesale DSL product provider decide to provide Bitstream in the case of

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a hypothetical monopolist providing Wholesale DSL product increases its Wholesale DSL product prices by 10%? The Wholesale DSL product provider would provide Bitstream, because the level of investment required to allow provision of Bitstream is not significant for a Wholesale DSL provider.

113. TRA concludes here that the Bitstream product and the Wholesale DSL product are in the same wholesale market.

Question 12: Do you agree with TRA's analysis that the Wholesale DSL product is a substitute to the Bitstream product? Please elaborate.

Functional dimension

114. The relevant functional dimension of the market definition is the wholesale level, as Bitstream is an input provided by operators to other operators.

Geographic dimension

115. The reasoning and arguments put forward at paras 82-87 regarding the geographic dimension of the wholesale physical network infrastructure access market, apply equally for the wholesale broadband access market. They are therefore not repeated here.

Question 13: Do you agree with TRA's opinion that the geographic dimension of the market is national? Please elaborate.

Conclusion on the relevant wholesale broadband access market

116. For the reasons set out above, TRA considers that the relevant market is the wholesale broadband access market, which:

- includes Batelco's Bitstream product;
- includes NFWS access ;
- excludes access to other local loop infrastructure access (fibre, satellite);
- includes self-supply by Batelco;
- includes Batelco's Wholesale DSL product;
- excludes LLU.

117. The geographic dimension of the market is the Kingdom of Bahrain.

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Question 14: Do you agree with TRA's definition of the wholesale broadband access market? Please elaborate.

3.6 List of relevant wholesale markets

118. For the reasons set out above, TRA concludes that there are two relevant wholesale markets:
- the wholesale physical network infrastructure access market; and
 - the wholesale broadband access market.
119. The geographic scope of both markets is national.

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4 Identification and determination of dominance in the relevant markets

120. Having defined the relevant markets, the next step consists of analysing the extent of competition. The Telecommunications Law provides the following definition of “dominant position”:

“the Licensee’s position of economic power that enables it to prevent the existence and continuation of effective competition in the relevant market though the ability of the Licensee to act independently – to a material extent – of competitors, subscribers and users”.

121. As outlined in TRA’s Determination on the Methodology for Determining Market Power,³⁴ as well as in the Draft Competition Guidelines,³⁵ a large number of factors can be considered in assessing dominance, including:

- market share;
- overall size of undertaking;
- control of infrastructure not easily duplicated;
- network effects;
- the conduct of the participants;
- technological advantages or superiority;
- absence of or low countervailing buying power;
- easy or privileged access to capital markets/financial resources;
- product/services diversification (e.g. bundled products or services);
- economies of scale;
- economies of scope;
- vertical integration;
- highly developed distribution and sales network;
- absence of potential competition;
- barriers to expansion;
- ease of market entry.

122. Given the characteristics of the markets under consideration, the most determinant factors are: market share, barriers to entry including the control of infrastructure not easily duplicable, economies of scale and economies of scope, countervailing buying power and vertical integration.

4.1 Assessment of dominance in the wholesale physical network infrastructure access market

Competition analysis and market share

123. As defined above, the relevant wholesale physical network infrastructure access market includes LLU and self-supply by Batelco. Knowing that no line has been unbundled in the Kingdom of Bahrain as of today, Batelco’s

³⁴ TRA, Methodology for Determining Market Power A Determination issued by the Telecommunications Regulatory Authority, 2003.

³⁵ TRA, Draft Competition Guidelines, 4 November 2008.

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market share in the relevant market is 100%. This market share is strongly indicative of dominance.

124. While TRA appreciates that market shares are not by themselves determinative of dominance, TRA notes that they are particularly high in this instance (European case law has, in the AZKO vs. Commission case, established a presumption of dominance where market shares are in excess of 50%). Further, TRA does not expect Batelco's market share to decrease significantly within the timeframe of the analysis given the substantial barriers to entry in this market.

Barriers to entry – including the control of infrastructure not easily duplicable

125. In line with its Determination of dominance in wholesale markets of 22 January 2006 (No. 1/06) and as explained in detailed above in paras 46-51, the local loop controlled by Batelco is an infrastructure that is not easily duplicable because of the scale and nature of the investment required.
126. It would also require take a considerable amount of time and money to deploy an alternative access network, even with effective access to ducts. Batelco is currently the only operator that controls a local loop with dedicated links between end-users and MDFs. As investments related to the deployment of a copper local loops network are sunk costs (i.e. not recoverable in the case of exit), entry barriers are particularly high. Sunk costs tend to give established firms significant first mover advantages and limit the incentives to invest of potential entrants.

Economies of scale/density and of scope

127. Economies of scale arise when increasing production causes average costs to fall. Batelco, as the incumbent fixed operator, enjoys significant economies of scale/density because it is the main provider of fixed voice services and of fixed broadband services in Bahrain. The deployment of a copper local loop in a given area is a fixed cost. TRA considers that a new entrant would not be able to reach a similar level of economies of scale/density and hence would suffer a cost disadvantage compared to Batelco.
128. Economies of scope exist where the average costs of one product are lower as a result of it being produced jointly with another product. Cost savings may be made where common processes are used in production. Batelco's copper local loop also benefits from economies of scope because it supports voice and broadband services and is also able to support television over IP services (TRA indeed observes that in many countries the copper local loop supports television over IP services). As a consequence, Batelco's competitors would have to supply at least the same type of services to benefit from a similar level of economies of scope.

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129. TRA is of the view that potential competitors would face significant difficulties in achieving the same level of economies of scale and economies of scope as Batelco. This, therefore, negatively impacts the incentives to invest by potential entrants and expected profits. The significance of economies of scale, scope and density is compounded by the presence of large sunk costs in this market.

Countervailing buying power

130. The Draft Competition Guidelines identified certain conditions likely to enhance countervailing buyer power. They are:

- the buyer has alternative choices;
- the buyer is well informed about alternative sources of supply;
- the buyer could switch to alternative sources of supply without incurring significant costs;
- the buyer could produce the input itself or “sponsor” new entry by another supplier; and
- the buyer is an important outlet for the seller and therefore the seller would be prepared to negotiate – i.e. limited alternative buyers.

131. TRA considers that potential buyers of LLU will not be in a position to exert countervailing buyer power and hence to constrain Batelco’s ability to behave independently because of the absence of alternative sources of supply. In fact Batelco has been identified as the sole provider of wholesale unbundled lines and there are significant barriers to entry. This implies that any large company making use of wholesale unbundled lines cannot exert any sufficient countervailing buyer power to pose a serious constraint on the price of wholesale products in the absence of regulation.

132. Further, this question of countervailing buying power also has to be apprehended in the context of the vertical integration of Batelco as a result of which Batelco actually has limited incentives to sell to its downstream competitors.

Vertical integration

133. Batelco is a vertically integrated firm and operate at all the different stages of the value chain: local loop, Bitstream, Wholesale DSL and retail broadband products.

134. Batelco currently operates and enjoys significant market power in a large number of retail fixed markets where its copper local loop is an input including: the retail market for broadband internet access services for a fixed location, the retail markets for fixed narrowband access services for residential and non-residential customers, and the retail market for dial-up internet access services.

135. As a consequence, by virtue of its vertical integration, Batelco may be able to leverage its market power at the wholesale level into downstream markets, thereby reinforcing its market power at these two levels and making new market entry harder within the timeframe of the analysis.

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While vertical integration is not necessarily indicative of dominance when taken in isolation, it has to be comprehended in the context of other factors (e.g. market shares, economies of scale/density and scope, barriers to entry).

Conclusion

136. Considering that Batelco holds a 100% market share in the wholesale physical network infrastructure access market, the fact that the copper local loop is an infrastructure not easily replicable characterised by significant entry barriers, the high economies of scope and of scale enjoyed by Batelco, the absence of countervailing buying power and Batelco's vertical integration, TRA concludes that Batelco is dominant in the wholesale physical infrastructure network access market in the Kingdom of Bahrain.

Question 15: Do you agree with TRA's analysis that Batelco is dominant in the wholesale physical infrastructure network access market in the Kingdom of Bahrain? Please elaborate.

4.2 Assessment of dominance in the wholesale broadband access market

Market share and competition

137. As defined above, the wholesale broadband access market includes: Batelco's Bitstream product, Batelco's Wholesale DSL product, self-supply by Batelco and self-supply by NFWS operators.
138. Based on data collected from operators, TRA estimates that Batelco's market share is above 80%. While TRA appreciates that market shares are not by themselves determinative of dominance, TRA notes that they are particularly high in this instance (European case law has established a presumption of dominance where market shares are in excess of 50%). TRA considers that it is very unlikely that, without regulation, Batelco's market share will be lower than 60% or 50% within the timeframe of the analysis given barriers to entry and competitive pressures.
139. While TRA expects competition from NWFS operators to increase within the timeframe of the analysis, TRA considers that the indirect pricing constraint exercised by those operators via the retail market will be insufficient to effectively constrain Batelco's market power. NWFS operators may also suffer limitations in the provisions of certain advanced services (e.g. television over IP) which would further limit the ability of NWFS operators to constraint Batelco. Barriers to (new) entry in this market are also considerable (see below).

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140. Further, forthcoming competitive pressures from self-supply by OLOs based on LLU is not expected to be sufficiently strong to curb Batelco's dominance within the timeframe of this analysis notably because the constraint exercised would be limited by the geographic footprint of LLU, which is likely to be limited initially.

Barriers to entry – including the control of infrastructure not easily duplicable

141. Batelco controls an infrastructure not easily duplicable. This market is characterized by significant barriers to entry. Entry in the wholesale broadband access market could be achieved by:

- deploying an alternative local loop network and a backbone network;
- using Batelco's LLU product (if available) and deploying a backhaul network connecting Batelco's Service Nodes;³⁶ and
- introducing a Bitstream product by NFWS operators.

142. TRA has indicated above that the deployment of a new local loop is capital- and time-intensive and therefore highly unlikely within the timeframe of the current analysis.

143. If LLU is successful, it is possible that OLOs which use LLU could envisage developing a Bitstream product. While this would be less capital-intensive and time-intensive than building a new local loop it would take time for LLU to be implemented and to take-off. As overseas experience shows, a significant footprint in LLU is a key prerequisite for an OLO to be in position to provide a competitive Bitstream offer to other OLOs. This makes this scenario highly unlikely within the timeframe of this analysis. Also, the constraint exercised by a potential competing Bitstream offer would be limited by the geographic coverage and penetration of unbundling, which is likely to be limited initially. Further, given the economics of LLU, it may not be feasible to unbundle all the Service Nodes.

144. The provision of Bitstream by NFWS operators to third party is another potential entry scenario. It would be technically feasible, although difficult, for NFWS operators to develop and offer Bitstream to third parties.³⁷ TRA considers that this scenario is also highly unlikely within the timeframe of this analysis given notably the investment in time and money required and the incentives of potential sellers and buyers.

³⁶ This case is dealt with at para 140 above.

³⁷ This possibility was considered recently the Maltase regulator, MCA, which concluded that Bitstream could be provided using different technologies: "Based on the analysis provided above, the MCA is of the view that wholesale broadband access services can be provided using different technologies. Although the technology is different, the underlying network elements and functionality are very similar for all network types." See MCA, "Wholesale broadband access market: identification and analysis of markets, determination of market power and setting of remedies. Final Decision", 2008.

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145. Further, the deployment of a backhaul with sufficient capacity for supporting a Bitstream product would constitute another potential entry barrier for the provision of Bitstream services by NFWS operators or by OLOs purchasing LLU. The provision of Bitstream may indeed require significant capacity in the backhaul and the backbone network. While Batelco has deployed fibre in the vast majority of its core network, TRA observes that NFWS networks rely mainly on microwave links to provide backhaul transmission. This may result in capacity constraints which would require significant investment in time and money to be addressed.
146. The deployment of fibre backhaul would also be a capital-intensive and time-consuming undertaking.
147. TRA concludes that there are barriers to entry in the provision of Bitstream services that may constrain the ability of OLOs to compete effectively with Batelco in the wholesale broadband access market. Batelco effectively controls an infrastructure not easily duplicable.

Economies of scale/density and scope

148. TRA has considered above the importance of economies of scale / density and scope enjoyed by Batelco in the local loop. Batelco benefits from significant economies of scale and scope in the provision of wholesale broadband access services that are larger than the potential economies of scale and scope of its competitors. This confers Batelco a cost advantage.
149. Batelco's backbone and backhaul network are shared by fixed services (leased lines, voice services, broadband services etc.) and by mobile services. Batelco also has the majority of broadband users, fixed access and voice users, leased lines users and a substantial market share in the mobile market. While Zain holds a NFWS licence and a mobile licence and therefore enjoys economies of scale and scope, TRA considers that they are lower than those of Batelco, notably because the size of its Bahraini operations and its smaller product mix.
150. TRA is of the view that potential competitors would face significant difficulties in achieving the same level of economies of scale and economies of scope as Batelco. This gives Batelco a large cost advantage.

Countervailing buying power

151. TRA considers that buyers of Bitstream will not be in a position to exert countervailing buyer power and hence to constrain Batelco's ability to behave independently, mainly because of the absence of alternative sources of supply expected over the relevant timeframe (see above analysis of barriers to entry). This also has to be apprehended in the context of the vertical integration of Batelco as a result of which Batelco actually has limited incentives to sell to its downstream competitors.

Vertical integration

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152. As explained above, TRA is of the view that by virtue of its vertical integration, Batelco is in a position to leverage its upstream market power in downstream markets. Such leveraging would enable Batelco to reinforce its market power across the broadband value chain. It would also make new entry more difficult. While NFWS operators are also vertically integrated, they operate in a more limited number of markets and do not benefit from similar size effects.

153. TRA acknowledges that vertical integration is not necessarily indicative of dominance in itself, it has to be comprehended in the context of other factors (e.g. market shares, economies of scale/density and scope, barriers to entry).

Conclusion

154. Considering that Batelco holds a market share superior to 80% in the wholesale broadband access market, the high economies of scope and of scale that benefit Batelco, the existence of barriers to entry and Batelco's vertical integration, TRA concludes that Batelco is dominant in the wholesale broadband access market in the Kingdom of Bahrain.

155. TRA considers that in the absence of regulation the potential entry of competitors (NFWS operators) is not sufficient to prevent Batelco from behaving independently of its competitors, subscribers and ultimately of users such that prices are constrained in the relevant market.

Question 16: Do you agree with TRA's analysis that Batelco is dominant in the wholesale broadband access market in the Kingdom of Bahrain? Please elaborate.

4.3 List of relevant wholesale markets in which Batelco is determined

156. For the reasons set out above, TRA determines that Batelco is dominant in the Kingdom of Bahrain in the following markets:

- the wholesale physical network infrastructure access market; and
- the wholesale broadband access market.

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Consolidated list of questions

Question 1: Do you agree with TRA's opinion that building a new local loop is not a substitute to the LLU product? Please elaborate.

Question 2: Do you agree with TRA's opinion on access to ducts? Please elaborate.

Question 3: Do you agree with TRA's opinion to exclude from the relevant market wholesale access to the existing NFWS local loops? Please elaborate.

Question 4: Do you agree with TRA's opinion to exclude from the relevant market wholesale access to the existing fibre local loops? Please elaborate.

Question 5: Do you agree with TRA's opinion that LLU and Bitstream (and therefore the Wholesale DSL product) are in different relevant markets? Please elaborate.

Question 6: Do you agree with TRA's position that self-provision by Batelco should be included in the relevant market? Please elaborate.

Question 7: Do you agree with TRA's position on the national geographic scope of the relevant market, considering the size of the country and of candidate geographic markets? Please elaborate.

Question 8: Do you agree with TRA's definition of the wholesale physical network infrastructure access market? Please elaborate.

Question 9: Do you agree with TRA's inclusion of NFWS access in the wholesale broadband access market? Please elaborate.

Question 10: Do you agree with TRA's analysis that self-provision by Batelco should be included in the wholesale broadband access market? Please elaborate.

Question 11: Do you agree with TRA's conclusion that the LLU product should not be included in the wholesale broadband access market? Please elaborate.

Question 12: Do you agree with TRA's analysis that the Wholesale DSL product is a substitute to the Bitstream product? Please elaborate.

Question 13: Do you agree with TRA's opinion that the geographic dimension of the market is national? Please elaborate.

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Question 14: Do you agree with TRA's definition of the wholesale broadband access market? Please elaborate.

Question 15: Do you agree with TRA's analysis that Batelco is dominant in the wholesale physical infrastructure network access market in the Kingdom of Bahrain? Please elaborate.

Question 16: Do you agree with TRA's analysis that Batelco is dominant in the wholesale broadband access market in the Kingdom of Bahrain? Please elaborate.