

DETERMINATION

Draft Determination of Significant market power in certain retail markets

Draft Determination of Significant Market Power designation in certain relevant retail markets

28 February 2008

TRA invites comments on this Draft Determination of Significant Market Power designation in certain relevant retail markets from all interested parties. Comments should be submitted before **4pm on 30 March 2008**.

The address to which responses should be sent is:

The General Director
Telecommunications Regulatory Authority
P.O. Box 10353, Manama, Kingdom of Bahrain

Alternatively, responses may be sent to TRA for the attention of the General Director by email to consult@tra.org.bh or by facsimile to +973 17 532 125.

Purpose: To determine the certain retail markets in which Bahrain Telecommunications Company B.S.C. holds significant market power.



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DETERMINATION

HAVING REGARD TO THE TELECOMMUNICATIONS LAW, THE ACCESS REGULATION, ALL RELEVANT EVIDENCE AND THE SUBMISSIONS MADE BY INTERESTED PARTIES, THE TELECOMMUNICATIONS REGULATORY AUTHORITY HEREBY MAKES THE FOLLOWING DETERMINATION:

- I. For the reasons outlined in the Annex to this Determination TRA has identified and determines that the following retail markets exist:

Table 1: list of relevant retail markets defined by TRA

Retail Market	Definition
1	Fixed narrowband access markets: <ul style="list-style-type: none">- 1a: For residential customers;- 1b: For non-residential customers.
2	Domestic calls originating on fixed lines markets: <ul style="list-style-type: none">- 2a: For residential customers;- 2b: For non-residential customers.
3	Fixed originated international calls markets: <ul style="list-style-type: none">- 3a: to Zone 1 countries;- 3b: to Zone 2 countries;- 3c: to Zone 3 countries; and- 3d: to Zone 4 countries. Mobile originated international calls markets: <ul style="list-style-type: none">- 3e: to Zone 1 countries;- 3f: to Zone 2 countries;- 3g: to Zone 3 countries; and- 3h: to Zone 4 countries
4	Mobile services (excluding international calls)
5	Broadband internet access from a fixed location
6	Dial-up internet access from a fixed location
7	Leased line services (domestic and international leased lines)
Geographic scope	Kingdom of Bahrain (except Amwaj area for markets 1,2, 3a-3d, 5-7)
Zone 1 countries: GCC countries	
Zone 2: South Asian countries: Bangladesh, India, Pakistan, the Philippines and Sri Lanka;	
Zone 3: Australia, Canada, France, Germany, Greece, Italy, Iran, New Zealand, Thailand, UK, USA, and Yemen;	
Zone 4: rest of the world.	

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II. For the reasons outlined in the Annex to this Determination TRA has identified and determines that Bahrain Telecommunications Company B.S.C. (“Batelco”) is an Operator with Significant Market Power (“SMP”) in the relevant retail markets set out in (I) above in the Kingdom of Bahrain, with the exception of the Amwaj area. In the markets, where Batelco holds SMP, there exists insufficient competition.

Table 2: Findings regarding SMP in the relevant retail markets

Retail Market	Definition	SMP
1	Fixed access narrowband connections markets: - 1a: For residential customers; - 1b: For non-residential customers.	Batelco holds SMP
2	Domestic calls originating on fixed lines markets: - 2a: For residential customers; - 2b: For non-residential customers.	Batelco holds SMP
3	Fixed originated international calls markets: - 3a: to Zone 1 countries; - 3b: to Zone 2 countries; - 3c: to Zone 3 countries; and - 3d: to Zone 4 countries. Mobile originated international calls markets: - 3e: to Zone 1 countries; - 3f: to Zone 2 countries; - 3g: to Zone 3 countries; and - 3h: to Zone 4 countries.	3a and 3c: Batelco holds SMP Other markets: No SMP
4	Mobile services (excluding international calls)	Not analysed
5	Broadband internet access from a fixed location	Batelco holds SMP
6	Dial-up internet access from a fixed location	Batelco holds SMP
7	Leased line services (domestic and international leased lines)	Batelco holds SMP

Zone 1 countries: GCC countries

Zone 2: South Asian countries: Bangladesh, India, Pakistan, the Philippines and Sri Lanka;

Zone 3: Australia, Canada, France, Germany, Greece, Italy, Iran, New Zealand, Thailand, UK, USA, and Yemen;

Zone 4: rest of the world.

III. This Determination is without prejudice to the TRA’s powers under the Telecommunications Law, Legislative Decree No.48 of 2002, the Access Regulation, TRA Regulation No. 1 of 2005, and the outcome of any ongoing 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 of new markets and designations of market power or dominance.

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IV. This Determination shall come into effect from the date of its issuance.

For the Telecommunications Regulatory Authority

Alan Horne

General Director

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Annex of Reasoning and Reasons

Purpose of this Determination

1. To determine that Batelco is an Operator with Significant Market Power in relevant retail markets in order to enable further targeted regulatory measures to be taken by the Telecommunications Regulatory Authority of the Kingdom of Bahrain (“TRA”).

Background to this Determination

2. TRA issued a consultation on 27 August 2007 on the proposed retail market definitions in a consultation document titled Strategic and Retail Market Review (the “August 2007 Consultation”).
3. TRA received responses from Batelco, Zain, Mena Telecom, Friendi Telecom and Cisco, TRA analysed and considered these responses.
4. On 28 February 2008 TRA issued its Strategic and Market Review Report (the “Report”) (Reference: MCD/0208/015). In the Report TRA outlined a summary of the August 2007 Consultation, responses to the consultation where applicable and TRA’s analysis of these and conclusions drawn for each market.
5. Based upon its findings resulting from its work with respect to its Consultation, TRA has decided that it is appropriate to proceed with a formal significant market power (“SMP”) designation as part of its competition assessment. The SMP designation constitutes a legal basis for the application of regulatory obligations.
6. This involves two stages:
 - identification of the relevant markets; and
 - identification of market power within those markets.

Analytical framework

The August 2007 Consultation

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7. In the August 2007 Consultation TRA adopted a two-step process for its market and competition review in line with international best practice. It undertook a forward-looking analysis and defined relevant markets before assessing competition in each of these markets. At each step TRA relied on well-established economic principles and tests to define markets, such as the hypothetical monopoly test, to assess supply and demand-side substitution. It looked at a large range of factors to determine the level of competition, such as barriers to entry and expansion, and market shares.
8. The approach followed is consistent with the two previous determinations by TRA on market definition and market power respectively.¹

Responses to the August 2007 Consultation

9. Although Batelco welcomed the use of standard economic tests and methodology by TRA, it considers that TRA has improperly used those tools, and has consequently reached inaccurate conclusions with respect to several market definitions and competition assessments.
10. Batelco contends that insufficient weight has been given to demand and supply-side substitution in defining markets. Batelco claims, in particular, that TRA has not properly factored into its competition analysis the competitive constraints provided by actual and potential competitors, as well as the impact of wholesale regulation in retail markets and demand complementarities. Further, Batelco considers that TRA has failed to apply the concept of prospectively competitive markets correctly in several instances, and calls for a more forward-looking and prospective approach to the review of markets.
11. From a methodological standpoint Batelco is of the view that the standard concepts of market power analysis and substitutability, used by TRA and other regulators alike, need to be modified to take into account sunk costs. Finally, Batelco stated that a market should only be deemed to be not effectively competitive if barriers to entry are high and non-transitory.
12. Other respondents did not raise specific high-level comments concerning the analytical framework.

TRA analysis and conclusion

13. As part of its competition assessment TRA has decided to proceed with a formal significant market power designation so that regulatory obligations can be applied to operators with SMP in the relevant markets. Conversely, the current retail regulation in place can be removed in markets where reliance on competitive forces, and competition provisions within the law, are sufficient to protect consumers' interests and the competitive environment.

¹ TRA, *Methodology for Determining Market Power*, A Determination issued 19 April 2003; and TRA, *Methodology for the Definition of Telecommunications Markets*, A Determination issued 19 April 2003.

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14. Despite the representation made in Batelco's submission, at the general level, TRA remains of the view that its approach is sound and in line with its previous determinations on market definition and market power assessment. The tools and principles employed by TRA are similar to those employed by other regulators and competition authorities, including the European Commission.²
15. TRA disagrees with Batelco that a competition assessment can be reduced to an analysis of entry barriers. Not only would this approach be at odds with accepted international practice, but it would also negate other important factors that affect competition in a particular market, such as vertical integration or the level of concentration.
16. Similarly, TRA does not believe that adjustments to the concept of market power and substitutability are required. As said above, TRA's approach is in line with accepted international practice. Furthermore, TRA is of the view that its approach already takes into account sunk costs appropriately. For instance, in looking at profitability as a potential indicator of market power, TRA takes incremental cost (inclusive of a contribution for common cost) as its cost standard instead of marginal cost, which is the commonly used cost standard. By definition, marginal cost ignores fixed and common costs.
17. Individual market definitions and competition assessments address other specific points raised by Batelco.
18. TRA would also like to note that market definitions are not to be applied in a mechanistic way and constitute an instrument to assess competition and, in the present case, assist in the definition of appropriate regulatory measures. A finding of effective competition and absence of dominance, in this context, does not preclude anti-competitive conduct in the future.

Identification and Determination of the Relevant Retail Markets

19. The Telecommunications Law of the Kingdom of Bahrain, Legislative Decree No.48 of 2002, (the "Telecommunications Law") does not define "relevant markets". However TRA's Determination for the Definition of Telecommunications Markets ("Markets Definition Determination") does describe the method by which TRA will define "relevant markets".³
20. Section 1.1 of the Markets Definition Determination states that in general it will follow the following procedure:

² 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*, 2002/C 165/03.

³ TRA, *Determination on the Methodology for the Definition of Telecommunications Markets*, Determination No. 1 of 2003, 19 April 2003, pages 2-3

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- TRA will define relevant telecommunications markets that may be considered for the application of some form of regulation;
 - TRA will investigate whether the market is sufficiently competitive or expected to become so in the near to medium term such that any regulatory intervention would be unwarranted, by undertaking a market dominance/significant market power analysis;
 - If the market is not likely to become effectively competitive then TRA will identify which operator or operators are dominant or have significant market power in a relevant market or markets;
21. Section 2 of the Markets Definition Determination outlines how TRA will define the relevant markets.
 22. The definition of markets forms an integral part of the analysis of competition. In the August 2007 Consultation, TRA outlined in detail its approach to market definition. This approach is consistent with that of other competition and regulatory authorities, and also with its April 2003 Determination on this matter.
 23. An economic market for a good or a service includes all goods or services that are substitutable for them, and for which either demand or supply-side substitution constrains the pricing of the goods or services in question. The definition of markets necessitates identifying substitutable products and constraints on the price setting behaviour of firms. Typically this is done by applying the hypothetical monopoly test, or the significant non-transitory increase in price (SSNIP) test.
 24. TRA also recognized in the August 2007 Consultation that a strict approach to market definition could lead to the definition of a number of granular economic markets. However, TRA considered that the outcome of its competition analysis would not be altered by the definition of more narrowly defined markets and that granular markets were not warranted given the level of development in the sector.
 25. After taking into consideration the TRA's original views as published in the Consultation and analysing and carefully considering the responses to that Review, TRA has determined the following markets.

The Markets for Fixed Narrowband Access and Domestic Calls for Residential and Non-residential Customers

The August 2007 Consultation

26. TRA originally considered defining one market for fixed narrowband access and domestic calls for residential and non-residential customers.

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27. Based on a SSNIP analysis, TRA considered that it appropriate to differentiate between residential and non-residential customers because of:
- The observed price discrimination between the two groups of users;
 - The different expectations in term of services between residential and non-residential customers; and
 - The limited supply-side substitution between non-residential and residential users.
28. TRA was of the view that there was one market for fixed access and domestic calls because of:
- The complementarity of demand between access and domestic calls; and
 - The similar level of competition for both products at this point in time.

Responses to the August 2007 Consultation

29. A first issue regarding these market definitions relates to the definition of separate markets for residential and non-residential customers.
30. Batelco did not comment specifically on this aspect of market definition. Zain supports this distinction.

TRA analysis and conclusion

31. In light of the comments received, TRA has decided to retain this distinction.

The August 2007 Consultation

32. A second issue is whether to include access and domestic calls in the same market.
33. Batelco disputed the inclusion of domestic calls originated on fixed lines with fixed narrowband access in the same market. It argued that these two products are functionally different; are complements and not substitutes; are not always sold as a bundle; and that the degree of competition for these two products is different with several OLOs providing domestic calls in competition with Batelco. In terms of supply-side substitution, Batelco noted that there are no supply-side substitution possibilities from calls to access given the economies of scale and sunk costs involved in the roll out of local access networks.

TRA analysis and conclusion

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34. TRA sees some merits in Batelco's arguments that fixed access and fixed originated calls should be in separate markets.⁴ It is indeed common for regulators to separate access from calls. TRA has therefore decided to revise its market definition and to have separate markets for fixed access and domestic calls. TRA notes however that for the purpose of this analysis, the outcome of the competition assessment does not vary with the choice of market definition.
35. Therefore, TRA has determined that the following markets exist:
- fixed narrowband access for residential and non-residential customers; and
 - domestic calls for residential and non-residential customers.

The International Calls Markets

The August 2007 Consultation

36. Considering supply-side and demand-side substitution, TRA was of the view that a definition of separate market for each of the 237 international routes was unpractical and instead proposed that routes be grouped into four zones reflecting potentially different levels of competition.
37. TRA delineated the various routes into four zones:
- Zone 1 countries: GCC countries;
 - Zone 2: South Asian countries: Bangladesh, India, Pakistan, the Philippines and Sri Lanka;
 - Zone 3: Australia, Canada, France, Germany, Greece, Italy, Iran, New Zealand, Thailand, UK, USA, and Yemen; and
 - Zone 4: rest of the world.
38. Because of demand side substitution (i.e. customer switching behaviour), TRA considered that fixed and mobile international calls markets encompassed all access methods i.e. International Direct Dial ("IDD"), Pre-Paid Calling Card ("PPCC") and Carrier Pre-Selection ("CPS").
39. International calls to Zone 1, 3 and 4 originated from fixed and mobile phones were considered to be not substitutable and therefore constituted separate markets.
40. By contrast international calls to Zone 2 from either a fixed or mobile phone were considered in the same relevant market based on the different

⁴ See e.g. European Commission, *Recommendation on the 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 communication networks and services*, 2003/311/EC.

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consumption behaviour of customers (i.e. demand-side substitution) which make calls to these destinations.

41. TRA therefore delineated in the August 2007 Consultation the following markets:
- Fixed originated international calls to Zone 1 (GCC) countries;
 - International calls to Zone 2 countries (South Asian countries: Bangladesh, India, Pakistan, the Philippines and Sri Lanka);
 - Fixed originated international calls to Zone 3 countries (Australia, Canada, France, Germany, Greece, Italy, Iran, New Zealand, Thailand, UK, USA and Yemen); and
 - Fixed originated international calls to Zone 4 countries (other destinations).
 - Mobile originated international calls to other zones considered as part of the wide mobile services market

Responses to the August 2007 Consultation

42. Batelco supports the definition of international markets route-by-route adopted by TRA. However, it disagrees with the aggregation process whereby individual routes are grouped into four zones. Batelco also disagrees with TRA grouping of routes into a group of routes which appear to be competitive, and a group of routes that are either prospectively competitive or not competitive. Batelco submitted that prospectively competitive routes should be part of the group of competitive routes, and that the grouping of routes can only be justified if competitive conditions are the same across several routes.
43. Batelco contends that TRA's grouping is not based on all the factors that affect competition on particular routes, such as actual and potential players, entry barriers and consumer's propensity to switch. Batelco therefore argued that TRA's approach is not justified.
44. Batelco also pointed out that TRA's approach is not in line with some international precedents, such as the UK and Hong Kong.
45. With regards to the definition of international calls to Zone 2 countries, which include calls originated from both fixed and mobile phones, Batelco questioned whether TRA has not thereby defined a distinct PPCC market, and hence whether other fixed routes ought to be included in this market.

TRA analysis and conclusion

46. TRA remains of the view that its approach to the grouping of routes is both pragmatic and reasonable in light of data limitations. TRA acknowledges that a route-by-route market definition and competition assessment may provide additional insights. However, it would require a large amount of data and information, which is not readily, or currently available. It will also be a disproportionately time and resource intensive endeavour with no

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clear benefits, especially given TRA's conclusions regarding competition in the defined markets, and proposals for the ex ante regulation of these markets.

47. Further, TRA notes that although Batelco calls for a route-by-route market definition, it has not submitted data and analysis at this level. Instead, it has chosen to look at international calls en masse. On balance, TRA considers that the aggregation of routes on a geographic basis is a reasonable compromise between a route-by-route and an overall analysis of international calls.
48. TRA has undertaken further analysis on the international calls market. TRA has notably considered the case for differentiating between the residential and non-residential international calls markets. Competitive conditions differ somewhat between these two classes of customer. As identified in the Consumer Survey conducted by TRA in 2007 ("Consumer Survey"),⁵ business users tend to make more extensive use of IDD calls than residential customers, for which PPCC is a widespread alternative to IDD. The provision of CPS services is also predominantly targeted at business users, who, because of their larger spend on international calls make the economics of CPS more workable. However, on balance, TRA is of the view that the definition of separate markets for residential and non-residential users is not warranted now.
49. TRA also considers that potential competition and regulatory concerns for each category of user can be addressed without separate market definitions. Accordingly, TRA has decided to retain a single market for international calls for both residential and non-residential customers.
50. Another element of the market definition relates to the treatment of mobile originated international calls, including the market definition for international calls to Zone 2. In the August 2007 Consultation TRA defined a separate market for international calls to Zone 2 countries originated from either a fixed or a mobile phone. International calls originated from a mobile phone to other destinations (i.e. to Zone 1, 3, and 4 countries) were included in the wider mobile services market.
51. After further analysis, and based notably on comments from Zain (see below), TRA is of the view that it is more appropriate to define separate markets for fixed and mobile originated international calls to the four zones. TRA also considers it is preferable to treat mobile originated international calls as separate markets from the mobile services market. Although mobile phone users typically buy access and calling services together, the Consumer Survey, and the activities of OLOs in mobile originated international calls shows that mobile users often purchase international calls from a competitor of Zain and Batelco. For instance, according to the Consumer Survey 38% of mobile customers use PPCC for international calls from their mobile.
52. The analysis of supply-side substitution between mobile originated international calls on the one hand, and mobile access domestic calls on

⁵ The survey is available at <http://www.tra.org.bh/en/marketSurveys.asp>.

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the other hand, also justifies separating mobile originated international calls from mobile services. In fact, supply substitution between those services is one-way: in response to a SSNIP in the mobile access and domestic calls market, a provider of international calls is unable to enter the mobile services market within a reasonable timeframe owing to entry restrictions (e.g. current Batelco-Zain duopoly) and other entry barriers. Competitive conditions in the supply of mobile originated international calls differ substantially from those applicable in the mobile services market. In the latter, Batelco and Zain hold a duopoly. TRA has therefore decided to separate mobile originated international calls from the mobile services market.

53. Regarding the international calls market to zone 2 countries, TRA considers it is more appropriate to align this market definition to the ones applicable for international calls to other zones. Mobile and fixed originated calls tend to have different prices and are not substitutable at this point in time. It is unlikely that consumers would switch to fixed originated calls to Zone 2 countries in response to a price increase in mobile originated calls to Zone 2 countries.
54. For the reasons set out above, TRA has decided to adopt the following revised market definitions for international calls:
55. Fixed originated international calls
 - To Zone 1 (GCC) countries;
 - To Zone 2 countries (South Asian countries: Bangladesh, India, Pakistan, the Philippines and Sri Lanka);
 - To Zone 3 countries (Australia, Canada, France, Germany, Greece, Italy, Iran, New Zealand, Thailand, UK, USA and Yemen);
 - To Zone 4 countries (other destinations);
56. Mobile originated international calls
 - To GCC countries;
 - To Zone 2 countries;
 - To Zone 3 countries; and
 - To Zone 4 countries.

The Mobile Services Market

The August 2007 Consultation

57. Based on a SSNIP analysis, TRA concluded there was a separate market for mobile services. TRA was of the view that there was limited supply side substitution between fixed access and mobile access but that there was supply substitution between access and call services.

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Responses to the August 2007 Consultation

58. Whilst Batelco did not specifically comment on the definition of the mobile services market, Zain supports TRA's definition of two separate markets for fixed and mobile access. It wishes further clarification regarding the basis for including domestic and international calls originated from a mobile in the same market access.
59. Similarly, it questions why separate markets for pre-paid and post-paid mobile services have not been defined, as well as why two separate markets for non-residential and residential customers have not been identified as is the case in the fixed access market.

TRA analysis and conclusion

60. Based on supply-side substitution considerations, it is appropriate to put residential and non-residential customers in the same market, as well as prepaid and postpaid customers. A mobile operator offering solely prepaid services could easily offer postpaid services in response to a SSNIP in the postpaid market. The same supply-side substitution argument applies to the distinction between non-residential and residential customers.
61. Therefore, with the exception of the adjustment regarding the exclusion of mobile originated international calls from the mobile services market, TRA considers that the comments received do not warrant a modification of the definition of the mobile services market.

The Internet Access from a Fixed Location Market

The August 2007 Consultation

62. Based on a SSNIP analysis, TRA was of the view that dial-up and broadband services are in the same market based on considerable switching between broadband and dial-up services.

Responses to the August 2007 Consultation

63. In its submission Batelco states that dial-up and broadband Internet access should be distinct markets. From a product dimension stand point Batelco explained that broadband access differs from dial-up as it is an always-on product, allowing faster download speed, and the use of voice and data services simultaneously.
64. Consistent with the European Commission and Ofcom, Batelco further argued that there is only one-way substitutability between broadband and dial-up. One-way substitutability would make a SSNIP for broadband profitable as customers are switching from dialup to broadband, but not the other way round. Hence, the two products do not appear substitutes. Their prices differ substantially. Finally, in terms of supply-side

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substitution, Batelco stated that a rise in dial-up prices was unlikely to result in a broadband provider offering dial-up service as dial-up is a declining market, i.e. the number of subscribers is diminishing. For these reasons Batelco argued that there is a case to have two separate markets.

TRA analysis and conclusion

65. In the August 2007 Consultation TRA included broadband and dial-up internet access in the same market on the basis of extensive consumer switching between the two products. However, as submitted by Batelco, demand substitutability between the dial-up and broadband is mostly one-sided, i.e. from dial-up to broadband. This point, along with the different characteristics of the two services (e.g. always-on, speed) and the price differentials between fixed dial-up and fixed broadband Internet services, give weight to the argument for having separate markets. Similarly, TRA concurs with Batelco regarding supply-side substitution. Overall TRA has identified dial-up Internet and broadband Internet access as separate markets.
66. TRA also considered the case for having a separate broadband Internet access market for residential and non-residential customers especially given the price discrimination between these two customer segments, and the different quality of services offered (e.g. lower contention ratio for business offers). However, the precise definition of the retail broadband market does not affect the outcome of the competition assessment. TRA has therefore decided to retain a single market for fixed broadband Internet access for both residential and non-residential customers.

The Leased Lines Market

The August 2007 Consultation

67. TRA was of the view that although on the basis of demand-side substitution, domestic and international leased lines could form separate markets, competitive conditions for both services do not differ such that the conclusion of the analysis of competition is independent on the choice of market definition.

Responses to the August 2007 Consultation

68. Batelco contends that the market defined by TRA is overly narrow and should include substitute technologies, such as Free Space Optics (FSO), Single channel per carrier (SCPC) solutions used by some OLOs for local leased lines, global Multi-protocol Label Switching (MPLS) and satellite services for international leased lines.

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TRA analysis and conclusion

69. TRA disagrees with Batelco and remains of the view that there is a separate market for retail leased lines. TRA considers that the product's characteristics in terms of price, performance, and quality of the substitute technologies outlined by Batelco are not sufficiently similar to be part of the same relevant market, with the exception of leased lines services over MPLS.
70. Optical links can be used to provide point-to-point, line of sight, circuits over short distances. FSO suffers occasional periods when services are unavailable due to sandstorms, fog or any other form of optical obstruction. This makes FSO unsuitable for critical applications of some customers, such as banks. Similarly, satellite solutions suffer from greater latency and echo than traditional leased lines, and are therefore not suitable for customers who have demanding service level and reliability requirements. By contrast traditional leased lines provide greater security and guaranteed quality of service. Furthermore, satellite links are typically not cost efficient compared to traditional leased lines circuits.
71. Having considered Batelco's comment, and based on supply and demand side considerations, TRA considers that there is a separate leased lines market comprising domestic and international leased lines, including leased lines services provided over MPLS.

The Geographic Dimension of Markets

The August 2007 Consultation

72. TRA was of the view that early on in the development of competition, it is common practice by regulators not to have geographically differentiated markets and instead to rely on the geographic scope of the license and reach of the network of the incumbent.
73. Although competitive conditions may differ in areas of reclaimed lands (e.g. Amwaj Islands), TRA did not consider it proportionate to define separate markets for these types of areas at this point in time given notably the current effective scale of those operations.

Responses to the August 2007 Consultation

74. In its submission Batelco called for a more granular approach to the geographic dimension of markets. It requested the definition of separate geographic markets in respect of each significant new development, with rational and transparent criteria for the definition of new developments; a determination that Batelco is not dominant in respect of new developments where Batelco does not have its own infrastructure; and a consideration of whether an access regime should apply in respect of new developments to give access to Batelco such that it can meet its universal services obligations.

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75. Batelco considered that the main factors justifying the definition of separate geographic markets for new developments relate to: the “more disruptive (relocation) rather than incremental (enhancement) role in the demographics of businesses”;⁶ the fact that new developments tend to be physically separate areas requiring significant network roll-out; and that the risk profile of new developments, where leading-edge network and services are rolled out, is likely to be materially different.
76. In its submission Batelco referred to TRA’s dominance designation in wholesale markets. In this determination TRA considered that the geographic scope of markets was the Kingdom of Bahrain but determined that Batelco was not dominant in one part of this geographic market, the Amwaj area, on the basis that Batelco “does not at present possess infrastructure in the Amwaj area, due to the arrangements of the developers of that area with another licensed operator that has installed its infrastructure there”.⁷

TRA analysis and conclusion

77. TRA considers it is premature to have geographic markets of the kind advocated by Batelco. With the exception of Amwaj Island the majority of these new property developments are still in construction and telecommunications services providers have yet to be designated. Models for Information and Communication Technology infrastructure are not settled yet. It is therefore not justified for TRA to define separate geographic markets at this point in time.
78. Further, as indicated above, TRA is in the process of developing its regulatory approach towards new developments and will be consulting separately on this matter. This consultation will consider the geographic dimension of market definition.
79. TRA remains of the view that it is not at present necessary to form an opinion regarding the status of new property developments. TRA considers that the geographic scope of all markets defined is the Kingdom of Bahrain. TRA however considers that in fixed markets where Batelco is designated as an operator with SMP, the designation excludes the Amwaj area. This is in line with the approach adopted by TRA in the 2006 Dominance designation in wholesale markets. Batelco supports this approach in its submission to the August 2007 Consultation.

Revised list of relevant markets

80. Therefore based upon the considerations stated above TRA is satisfied that after applying the methodology outlined in the Market Definition

⁶ Cf. Batelco’s submission at page 40.

⁷ TRA, *Dominance in Wholesale Markets by Batelco*, A Determination, 22 January 2006, page 4.

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Determination, considering the views as outlined in its August 2007 Consultation in conjunction with the responses received, that it has identified the Relevant Retail Markets for Telecommunications in the Kingdom of Bahrain.

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81. The table below summarizes the revised list of relevant markets adopted by TRA.

Table 3: list of relevant retail markets defined by TRA

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2	Domestic calls originating on fixed lines markets: <ul style="list-style-type: none"> - 2a: For residential customers; - 2b: For non-residential customers.
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6	Dial-up internet access from a fixed location
7	Leased line services (domestic and international leased lines)
Geographic scope	Kingdom of Bahrain (except Amwaj area for markets 1,2, 3a-3d, 5-7)
Zone 1 countries: GCC countries	
Zone 2: South Asian countries: Bangladesh, India, Pakistan, the Philippines and Sri Lanka;	
Zone 3: Australia, Canada, France, Germany, Greece, Italy, Iran, New Zealand, Thailand, UK, USA, and Yemen;	
Zone 4: rest of the world.	

Identification and Determination of Significant Market Power in the Relevant Retail Markets

The August 2007 Consultation

82. Having defined the relevant markets, the next step consists of analysing the extent of competition in each market. The purpose of this is to determine whether competition is currently effective in constraining the behaviour of firms. In the August 2007 Consultation, TRA proposed that

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the outcomes of its competition assessment could be one of the following three:

- Effectively competitive;
- Not competitive: markets where competition is not currently effectively competitive and where it is not expected to become so over the next few years; and
- Prospectively competitive: markets where competition can reasonably be expected to become effective over the short-to-medium term.

83. To assess competition TRA considered a number of factors in line with its Determination on the Methodology for Determining Market Power⁸ (“Market Power Determination”). For example it looked at market shares and market share trends; price trends; profitability; countervailing buyer power, and barriers to entry and expansion.

Responses to the August 2007 Consultation

84. With regards to the assessment of competition Batelco made several general comments. Batelco contested the findings of TRA that some markets are not competitive. More specifically Batelco disagreed with what it called the ‘implied dominance’ approach of TRA, whereby TRA has not explicitly found dominance in the identified markets, but has nonetheless determined a regulatory requirement on the basis that markets were prospectively competitive or not competitive.

85. Batelco is of the view that TRA has not properly factored into its analysis demand and supply-side analysis and has, in particular, failed to recognize existing, potential and prospective competition. Furthermore, Batelco disputes TRA’s definition of effective competition and indicated that TRA should define the optimal number of suppliers that can be sustained in Bahrain before assessing whether competition is effective. Batelco also wants TRA to take into account the contestability of markets, and the barriers to switching, since a high degree of contestability, and a low level of barriers to switching, would prevent the exercise of market power. Batelco requested TRA to focus on assessing market outcomes (e.g. product range, price) to gauge contestability rather than industry structure. Batelco also emphasised that competition is a means to increase consumer welfare, and is not an end in itself.

86. In its submission Batelco states that TRA has not defined what it means by cost. It contends that the standard analysis of market power and substitutability based on price elasticity need to be altered because of the fixed and sunk costs of telecommunications networks. More specifically Batelco indicated that a mark-up over marginal cost was perfectly compatible with a competitive market given the large fixed investment costs involved in the sector.

⁸ See reference in footnote 1 above.

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87. Batelco disputes the findings of TRA for each market. Batelco claims that all markets defined are either, at least prospectively competitive, or effectively competitive, on the basis of: new infrastructure entry; its assessment of current competition at the retail level; forthcoming retail competition; and proposed and/or already implemented wholesale regulation (including wholesale DSL, bitstream; CPS and CS).
88. The table below summarises the findings of TRA and Batelco regarding the state of competition in each of the relevant markets defined in the first consultation.

Table 4: TRA and Batelco conclusions regarding the level of competition in the relevant markets defined in the August 2007 Consultation

#	Market	Competition assessment	
		TRA	Batelco
1	Fixed access narrowband connections and domestic calls originating on fixed lines - non-residential customers	Not competitive	Prospectively competitive
2	Fixed access narrowband connections and domestic calls originating on fixed lines - residential customers	Not competitive	Prospectively competitive
3	All international calls made from a fixed location to Zones 1 countries (GCC countries), Zone 3 countries (USA, Australia, UK, FR, etc) and Zone 4 countries (Others)	Zone 1: Not competitive Zone 3 & 4: prospectively competitive	Effectively competitive
3b	International calls made from either a fixed or mobile phone to Zone 2 countries (South Asian countries)	Effectively competitive	Effectively competitive
4	Mobile services, including mobile originated international calls to Zones 1, 3 and 4 countries	Prospectively competitive	Effectively competitive
5	Internet access from a fixed location	Not competitive	Prospectively competitive
6	Leased line services (domestic and international leased lines)	Not competitive	Effectively competitive

TRA analysis and conclusion

89. The Telecommunications Law provides the following definition of an “operator with Significant Market Power”:

“a Licensed Operator which holds twenty-five percent or more of the market share of the relevant market as determined from time to time by the authority;

When determining such matters, there shall be taken into consideration the ability of a Licensed Operator to influence market definitions, its turnover relative to the size of the market, its control of the means of Access to Users, its financial resources and its experience of providing products and services in the market. The Authority may determine that a Licensed Operator has significant market power even if such operator holds a share of less than twenty-five percent of the

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market or that it does not have significant power even if it holds more than such percentage.”

90. Thus, according to the Telecommunications Law TRA shall take into consideration of the following when assessing SMP:
- The ability of the Licensed Operator to influence market conditions;
 - Its turnover relative to the size of the market;
 - Its control of the means of Access to Users;
 - Its financial resources
 - Its experience in providing products and services in the market.
91. Each of these factors is considered in turn.

Ability of the Licensed Operator to influence market conditions

92. For each of the relevant market, TRA looks at market shares. Amongst the relevant markets in which TRA found that Batelco has SMP, the lowest market share held by Batelco is about [70%-80%] the market for fixed originated international calls to Zone 3 countries. In all relevant markets where Batelco is found to have SMP, Batelco has market shares well in excess of the 25% set out in the Telecommunications Law.
93. Batelco’s continued high market share in each of these relevant retail markets including its continued control of not easily duplicable infrastructure used to provide services enable Batelco to influence market conditions. This point is further discussed where appropriate for each relevant market.

Turnover relative to the size of the market

94. Batelco’s total turnover for its operations in Bahrain was BD 194,872,000 for the year ended in 2006.⁹ This represents about 75% of the total revenues from telecommunications services in Bahrain. ¹⁰
95. Market shares and turnover relative to the size of the market are correlated. Hence, turnover relative to the size of the market is further considered for each relevant market below as part the analysis of market share.

Control of the means of Access to Users

⁹ See Batelco, Annual Report 2006, page 54.

¹⁰ Total revenues from telecommunications services were estimated at BD 235 millions. See TRA, 2008, *Telecommunications Services Indicators in the Kingdom of Bahrain*, February.

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96. By virtue of the ownership and control of fixed access network, Batelco controls the means of access to most users for the relevant markets for which TRA is conducting an SMP analysis.¹¹ This applies in particular for the fixed access markets for residential and non-residential customers, the broadband Internet access market from a fixed location and the leased lines market.

Financial resources

97. Batelco has large annual revenues and profits. In the year ended 31 December 2006 Batelco had a total group turnover of BD 234,990,000 (BD 194,872,000 for Bahrain), a net profit of BD 90,835,000 (BD 87,478,000 for Bahrain).¹² At 31 December 2007, Batelco had BD 213,657,000 in cash and cash equivalent.¹³ Therefore, Batelco has substantial financial resources.

Experience in providing products and services in the market.

98. Batelco, as the incumbent operator, has extensive experience in offering telecommunications services within the Kingdom of Bahrain and in other countries. Since its inception in 1981, Batelco has developed a substantial amount of experience in the development, maintenance and management of technical services, as well as an ability to market products to its consumers.

Other Factors

99. In addition to the factors above, TRA has also considered other criteria relevant to the analysis of market power. In its Market Power Determination, TRA concluded that in assessing SMP it will also consider other criteria relevant to the analysis of market power where relevant. Those include for instance, barriers to entry, the control of infrastructure not easily duplicable and vertical integration. In the August 2007 Consultation and in the analysis below, TRA has looked at criteria directly relevant to the markets defined in a manner consistent with the Market Power Determination.¹⁴
100. TRA has decided to exclude the mobile services market from its SMP analysis. TRA considers that legal entry restrictions at the wholesale level

¹¹ See also TRA, 2006, *Determination on Dominance in Wholesale Market by Batelco*, 22 January 2006.

¹² See Batelco, Annual Report 2006, pages 54-5.

¹³ Batelco, *Consolidated Financial Statements 31 December 2007*, page 7.

¹⁴ The list of criteria contained in Annex 1 of the 2003 Determination is only indicative and is non-exhaustive (Cf. TRA, 2003, *Determination on the Methodology for Determining Market Power*, page 7). It is clear from this Determination that Annex 1 lists criteria that might be considered by TRA when assessing whether a company is dominant or has SMP.

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have represented the major significant impediment to further competition at the retail level. As stated in TRA's Draft Statement (Reference: MCD/0208/014), TRA has decided to allow the entry of a third mobile network operator, and therefore it deems unnecessary to undertake a formal SMP analysis for this market at this point in time.

101. TRA disagrees with Batelco's other points. TRA considers it is not appropriate for a regulator to second-guess the market or to pre-define the optimal number of market players that the market can sustain prior to conducting a competition assessment.¹⁵ Batelco's proposed approach of defining an optimal market structure a priori is at odds with international practice and mainstream economics of free entry. Open entry is a defining characteristic of competitive markets. Section 3 of the Law requires TRA to promote effective and fair competition among new and existing licensed Operators. Effective and fair competition supports the promotion of end-user benefits through the discipline it provides to market participants to strive to offer innovative products at the lowest cost possible. Competition is not an end in itself, but a means to serve consumers interests. Typically, entry restrictions distort the competitive process in favour of incumbents and to the detriments of consumers.
102. TRA takes the contestability of markets into account as part of its analysis of barriers to entry and expansion. A market is contestable when there is free entry and exit is costless.¹⁶ The key element that affects the contestability of a market is the level of sunk costs. Sunk costs are those costs that an operator must sink to enter a market and that cannot be recovered upon exiting a market (e.g. civil infrastructure costs). Sunk costs are widespread in the telecommunications sector. They create entry barriers. As a consequence the level of contestability of markets is analysed by TRA as part of its analysis of barriers to entry and the expansion of individual markets.
103. More generally, with regards to Batelco's points on contestability, TRA notes that the results of the theory of contestable markets developed by Baumol, Panzar and Willing in the early 1980's hold only when strict assumptions are met and, in particular, the absence of sunk costs. In a perfectly contestable market incumbent firms are vulnerable to hit-and-run entry. This possibility ensures that a monopoly can only recover its cost, and hence that market power is constrained. This is the key insight of the theory of contestable markets. However, research has shown that even a small proportion of sunk costs drastically limit the applicability of this general result.¹⁷ This point appears to be largely neglected in Batelco's view on contestability.

¹⁵ In line with standard economic thinking, where there is no or very limited scope for competition, behavioural regulation is typically warranted in order to maximise economic welfare. Allocative efficiency can be improved by eliminating the deadweight loss associated with monopoly pricing whilst productive efficiency can be enhanced.

¹⁶ See, for example, Chruch, J., and Ware R., *Industrial Organization: A Strategic Approach*, MacGraw-Hill, 2000, page 507.

¹⁷ See, for example, Chruch, J., and Ware R., 2000 referred to at footnote 16, at page 52.

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104. TRA concurs with Batelco's view that, in a sector characterised by large fixed costs, a mark-up over marginal cost is not in itself indicative of market power, and that it can be compatible with effective competition. A deviation from marginal cost pricing is necessary for recovering fixed and common costs. The typical cost standard applicable in the sector is incremental cost with, or without, a contribution to recover common costs. Incremental costs include both fixed and variable costs. Incremental costing (plus a reasonable contribution to common costs) is used by TRA for setting interconnection and access prices where TRA seeks to ensure the recovery of efficiently incurred incremental costs, including a return on capital commensurate with risks and a contribution to common costs.
105. For the analysis of competition and SMP in each relevant market, TRA has considered market shares. This is consistent with the definition of SMP contained in the Telecommunications Law. TRA considers it appropriate to indicate market shares through the use of ranges in this Draft Determination. TRA reserves the right to publish specific figures in the future where it considers such publication to be appropriate.

Residential and non-residential markets for fixed narrowband access and for domestic calls originating on fixed lines

The August 2007 Consultation

106. The August 2007 Consultation concluded that the fixed access and domestic calls markets for non-residential and residential customers are not competitive. TRA noted the very high level of concentration in those two markets, with Batelco's market share in excess of 90% for non-residential users and close to [90%-100%] for residential customers. TRA also considered that there are significant entry barriers in these two markets. The entry barriers include notably the large sunk costs involved in the provision of direct access services to customers and the switching cost faced by customers due to the lack of number portability.
107. TRA also noted the distorting effects of unbalanced rates and the absence of nominal tariff changes since 2000. As a result the fixed retail line of business is unprofitable on a stand alone basis. Finally, TRA indicated that wholesale products (e.g. CAT for business users and CPS regulation) did not effectively curb Batelco dominance in retail markets.

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108. According to Batelco these markets are prospectively competitive and therefore should not be subject to any form of retail regulation. It contends that current wholesale regulation provides appropriate access conditions to OLOs; the market is contestable as evidenced by the domestic calls and bundle offers of Lightspeed and Etisacom for example; and that forthcoming competition from other platforms (e.g. fixed wireless services)

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will have a major impact. Further, it contends that there is, in any case limited scope for competitive entry into the fixed line access markets.

109. With regards to wholesale access services, Batelco claimed that there are currently a substantial number of operators that buy wholesale access services from Batelco such that end-users have a choice of competing providers for fixed access services. Alternative operators can provide direct access to business customers via Customer Access Tails (“CATs”), WiFi (mesh) networks, mobile and satellite networks.
110. Further, Batelco claims that access services in conjunction with interconnection (including free-phone origination), termination services and carrier pre-selection offered at regulated rates ensure that OLOs can offer competitive retail services to business and residential users.
111. For the non-residential customer markets, Batelco noted that there are a number of OLOs offering domestic calls services (via CPS or VoIP services) and that although there is no wholesale access product for narrowband access services to business customers, such as wholesale line rental, it was unlikely that any OLOs would want to enter the narrowband fixed access market.
112. In its submission, Batelco argued that the inclination to switch service providers identified by the business module of the Consumer Survey suggested that non-residential markets were at least prospectively competitive.
113. In the case of residential customers, Batelco considers that alternative operators have direct access to customers thanks to wholesale DSL and bitstream, which allow them to provide voice over broadband. Batelco also pointed out several domestic call offers of OLOs. Finally, Batelco requested TRA to fully consider the likely impact of Zain’s entry and its offer to residential customers of broadband, voice and access services.

TRA analysis and conclusion

114. TRA remains of the view the residential and non-residential markets for fixed access and fixed originated domestic calls are not effectively competitive. TRA considers that Batelco has SMP on these four markets.
115. With regards to the fixed access markets, it is worth mentioning Batelco’s market share again. The table below shows that Batelco has [90%-100%] market share in both the residential and non-residential market and that no significant changes have occurred in Q1 and Q2 2007. As mentioned in the August 2007 Consultation, there are significant barriers to entry to provide fixed access to non-residential and residential customers. Most of the costs of Batelco access network are sunk in nature. Batelco controls a network that is not easily duplicated.

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Table 5: Estimated market shares: residential and fixed narrowband access markets

Residential users	2005	2006	Q1 2007	Q2 2007
Batelco's market share	100%	100%	[90% - 100%]	[90% - 100%]
OLO's market share	0%	0%	[0% - 10%]	[0% - 10%]
Total	100%	100%	100%	100%

Non-residential users	2005	2006	Q1 2007	Q2 2007
Batelco's market share	100.0%	100.0%	[90% - 100%]	[90% - 100%]
OLO's market share	0%	0%	[0% - 10%]	[0% - 10%]
Total	100%	100%	100%	100%

116. The impact of the competitive entry of Zain and Mena Telecom in these markets is difficult to predict with any accuracy. However, in the relevant time horizon, it seems unlikely that it will be sufficient to curb Batelco's dominance. The unbalanced structure of rates is a further factor distorting entry in these markets. TRA is of the view that Batelco overestimate the effect of wholesale regulation at the downstream level. CAT, leased lines and satellites networks are not substitutes to fixed line access for non-residential customers. They are not part of the relevant markets.
117. For the reasons outlined above, TRA concludes that Batelco has SMP in the fixed access markets for residential and non-residential customers.
118. With regards to the fixed originated domestic calls markets, TRA disagrees with Batelco's claim that these markets are prospectively competitive. The table below summarizes Batelco's market share in these markets.

Table 6: Estimated market shares: fixed originated domestic calls market

All users	2005	2006	Q1 2007	Q2 2007
Batelco	100%	100%	[90% - 100%]	[90% - 100%]
OLOs	0%	0%	[0% - 10%]	[0% - 10%]
Total	100%	100%	100%	100%

119. Batelco controls virtually all the market for fixed originated domestic calls. Batelco's monopoly position has not been challenged despite the introduction of wholesale products. OLOs can provide domestic calls in competition to Batelco based on their own access infrastructure, such as Zain's fixed wireless network or by purchasing wholesale services from Batelco. Interconnection products include cost-based origination and termination services for PCCs and CPS. OLOs that offer CPS have targeted mainly non-residential users with large monthly spends. Domestic calls originated from a fixed location can also be offered based on regulated access products. For instance, bitstream can be used to offer voice over broadband services to residential and non-residential customers, while

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CAT and leased lines can constitute the basis to supply calls to non-residential customers only.

120. By allowing OLOs to put together retail services, the availability of wholesale products reduces the level of barriers to entry. However, updated market information for Q1 and Q2 2007 indicates that these wholesale products have not had any material impact. TRA has in fact received numerous complaints alleging for example delays in provisioning CAT and bitstream.¹⁸ Thus, unless wholesale regulation is effective, the control by Batelco of the underlying infrastructure gives Batelco an opportunity to seek to leverage its upstream market power into the downstream market. In doing so, it can hinder the development of competition at the retail level.
121. With regards to entry of the two NFWS licenses, as noted above it is difficult to predict their potential effect in the market. TRA considers that their entry is unlikely to undermine Batelco dominance in the fixed originated domestic calls markets over the relevant time frame. Zain packages of broadband and calls services are predominantly geared towards broadband users with domestic calls as an add-on providing an extra stream of revenues. Given the unbalanced rate structure, it seems unlikely that an operator could profitably enter the market focusing only on the supply of access and domestic calls. Thus the magnitude of the likely impact of Zain and Mena Telecom entry may be limited by the size of the addressable broadband market relative to the fixed access markets.
122. For the reasons indicated above, TRA concludes that Batelco has SMP in the residential and non-residential fixed originated calls markets and that there is insufficient competition in these markets.

International Calls Markets

The August 2007 Consultation

123. In the August 2007 Consultation, TRA concluded that:
- the international calls market to GCC countries (Zone 1) was not competitive;
 - the international calls market to Zone 2 countries was effectively competitive; and finally
 - the international calls markets to Zone 3 and Zone 4 were prospectively competitive.
124. TRA based its findings on an analysis of the level of concentration, of barriers to entry and expansion, of price levels and profitability as well as of countervailing buyer power.

¹⁸ Note that TRA has not at the time of the release of this Report made any conclusive findings.

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125. Batelco submitted that the international calls markets are effectively competitive and should therefore not be subject to any form of retail tariff regulation. To substantiate this view, Batelco provided estimates of its market share of minutes of traffic. It estimated its overall market share of outbound traffic at [20%-30%], its market share of international outbound retail traffic from mobile at [15%-25%], and its international outbound retail traffic from fixed phones at [40%-50%].
126. With regards to entry conditions, Batelco noted that current wholesale regulation (including CPS, PPCCs and VoB providers) allowed OLOs to compete effectively with Batelco; that barriers to entry were low, and hence that international markets were contestable as evidenced by the competitive pressures of PPCCs and the drop in international rates.
127. Further, Batelco indicated it is unable to increase IDD rates as customers would switch. It said the use of the HHI index in this particular context was not appropriate, and that instead TRA's analysis ought to focus on analysing contestability. Although Batelco recommended a route-by-route analysis, it did not attempt to carry out such an analysis.
128. Batelco argued that calls from fixed locations to Zone 3 and Zone 4 are prospectively competitive and should therefore not be subject to price controls. It is concerned that doing otherwise would be disproportionate given the volume of IDD minutes to Zone 3 and 4 in relation to the total volume of traffic to those countries.
129. With respect to calls to Zone 1, Batelco indicated that its market share and volume of traffic has been declining and despite price drops Batelco has been unable to invert this trend. Hence, Batelco argues that imposing a retail price control would be disproportionate.

TRA analysis and conclusion

130. TRA has undertaken further analysis since the release of the August 2007 Consultation based on international traffic data for Q1 and Q2 2007. TRA has accordingly amended the conclusions of its competition assessment.
131. Two adjustments to the data provided by licensed operators were required to estimate the market shares of operators by zone and by access type, i.e. mobile or fixed originated calls. The first adjustment consisted of splitting Batelco's IDD traffic for Q1 and Q2 2007 by access type based on the relative proportion of international calls originated from mobile and fixed phone in 2006.
132. The second adjustment made relates to the treatment of traffic from PPCCs. Here, TRA considered that 20% of PPCCs traffic is made from a fixed line and 80% is originated from a mobile phone. This adjustment is based on the proportion of fixed and mobile phones in Bahrain. It implicitly assumes that there is an equal probability of originating a PPCC

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call from a fixed and mobile phone. A similar adjustment was made for Batelco's PPCCs traffic.

133. These adjustments are most likely to underestimate Batelco's market share in the fixed originated international calls market and correspondingly to overestimate its share for mobile originated international calls markets.

134. At the high level, the main insights from the quantitative analysis of international traffic are:

- Whereas the volume of international traffic has increased dramatically,¹⁹ overall revenues for calls have dropped significantly as a result of price competition. The decline of revenue per minute has been particularly significant for calls to Zone 2 and, to a lesser extent, to Zone 3 and Zone 4 countries since market liberalisation. Calls to GCC countries have experienced only a marginal decrease in revenue per minute.
- The geographic distribution of traffic based on volume is as follows: about 20% to GCC countries, 60% to Zone 2, 10% to Zone 3 and 10% to Zone 4. The percentages based on revenues are respectively about 30%, 40%, 15% and 15%.
- There are a large number of active operators in the international calls markets. OLOs have gained significant market share in some markets (see below details of markets concerned). Market shares tend to fluctuate in most markets. This suggests fierce competition in some markets (see below details of markets concerned).
- Batelco's market shares based on revenues has been systematically higher than its market shares based on volume. In most markets the difference is significant. The same applies to Zain. To the extent that the traffic of Zain and Batelco is mostly IDD, this is not surprising as IDD rates are typically higher than PPCCs' rates. Providers of PPCCs also tend to use low-cost switching and transmission solutions. However, this may also suggest the existence of market power.

135. The tables below summarise market shares for each of the fixed international calls markets defined.

¹⁹ Between Q2 2006 and Q2 2007, international traffic grew by 82%. See TRA, 2008. *Telecommunications Services Indicators in the Kingdom of Bahrain*, February, page 24, available at <http://www.tra.org.bh/en/marketinfo.asp>

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Table 7: Batelco estimated market share: fixed originated international calls markets

Volume	2005	2006 Q1	2006 Q2	2006 Q3	2006 Q4	2007 Q1	2007 Q2
Zone 1 GCC	100%	[90% - 100%]	[90% - 100%]	[90% - 100%]	[90% - 100%]	[80% - 90%]	[80% - 90%]
Zone 2	100%	[50% - 60%]	[30% - 40%]	[30% - 40%]	[0% - 10%]	[0% - 10%]	[10% - 20%]
Zone 3	100%	[90% - 100%]	[90% - 100%]	[80% - 90%]	[70% - 80]	[70% - 80]	[70% - 80]
Zone 4	100%	[90% - 100%]	[90% - 100%]	[80% - 90%]	[70% - 80]	[50% - 60%]	[30% - 40%]

Revenues	2005	2006 Q1	2006 Q2	2006 Q3	2006 Q4	2007 Q1	2007 Q2
Zone 1 GCC	100%	[90% - 100%]	[90% - 100%]	[90% - 100%]	[90% - 100%]	[90% - 100%]	[90% - 100%]
Zone 2	100%	[70% - 80%]	[60% - 70%]	[50% - 60%]	[20% - 30%]	[20% - 30%]	[30% - 40%]
Zone 3	100%	[90% - 100%]	[90% - 100%]	[90% - 100%]	[90% - 100%]	[80% - 90%]	[80% - 90%]
Zone 4	100%	[90% - 100%]	[90% - 100%]	[90% - 100%]	[80% - 90%]	[60% - 70%]	[50% - 60%]

136. The main findings from the analysis of market shares for each relevant fixed market are:

- The geographic distribution of traffic based on volume is as follows: about 25% to GCC countries, 50% to Zone 2, 15% to Zone 3 and 10% to Zone 4. The percentages based on revenues are respectively about 40%, 30%, 20% and 10%.
- For fixed originated international calls to GCC countries, Batelco has retained an extremely high market share, both measured in volume [80%-90%] and revenues [90%-100%].
- For fixed originated international calls to Zone 2 countries, Batelco has lost about [80%-90%] of the market in terms of volume, although the impact on revenues has been less dramatic. Several PPCCs providers have greater traffic volumes than Batelco. Along side those competitors there is a fringe of smaller players.
- For fixed originated international calls to Zone 3 countries, OLOs have gained about [20%-30%] market share based on volume and [10%-20%] based on revenues.
- For international calls to Zone 4 countries, Batelco has lost about two thirds of the market with one operator emerging as its largest competitor by market share. Here too, the impact on revenues has been less pronounced with Batelco still holding a market share in excess of 50%.
- CPS traffic amounts to about 5% in each market, except for call to Zone 4 countries where the market share is about 8%. One CPS provider stands out.

137. The analysis of market shares suggests that Batelco may have SMP in the fixed originated international calls markets to GCC countries and to Zone 3 countries and to a lesser extent to Zone 4 countries.

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138. Estimates of market shares for mobile originated international calls are provided in the table below.

Table 8: Estimated market shares: mobile originated international calls markets

Volume							
Zone 1 GCC	2005	2006 Q1	2006 Q2	2006 Q3	2006 Q4	2007 Q1	2007 Q2
Batelco	100%	[70% - 80%	[70% - 80%	[60% - 70%]	[60% - 70%]	[60% - 70%]	[60% - 70%]
Zain	0%	[20% - 30%]	[20% - 30%]	[20% - 30%]	[20% - 30%]	[20% - 30%]	[20% - 30%]
OLOs	0%	[0% - 10%]	[0% - 10%]	[0% - 10%]	[0% - 10%]	[0% - 10%]	[0% - 10%]
Total	100%	100%	100%	100%	100%	100%	100%
Zone 2	2005	2006 Q1	2006 Q2	2006 Q3	2006 Q4	2007 Q1	2007 Q2
Batelco	100%	[40% - 50%]	[20% - 30%]	[20% - 30%]	[10% - 20%]	[0% - 10%]	[0% - 10%]
Zain	0%	[0% - 10%]	[0% - 10%]	[0% - 10%]	[0% - 10%]	[0% - 10%]	[0% - 10%]
OLOs	0%	[40% - 50%]	[60% - 70%]	[70% - 80%]	[80% - 90%]	[80% - 90%]	[80% - 90%]
Total	100%	100%	100%	100%	100%	100%	100%
Zone 3	2005	2006 Q1	2006 Q2	2006 Q3	2006 Q4	2007 Q1	2007 Q2
Batelco	100%	[60% - 70%]	[50% - 60%]	[40% - 50%]	[20% - 30%]	[30% - 40%]	[30% - 40%]
Zain	0%	[20% - 30%]	[20% - 30%]	[20% - 30%]	[20% - 30%]	[10% - 20%]	[10% - 20%]
OLOs	0%	[0% - 10%]	[20% - 30%]	[30% - 40%]	[50% - 60%]	[40% - 50%]	[40% - 50%]
Total	100%	100%	100%	100%	100%	100%	100%
Zone 4	2005	2006 Q1	2006 Q2	2006 Q3	2006 Q4	2007 Q1	2007 Q2
Batelco	100%	[70% - 80%]	[60% - 70%]	[50% - 60%]	[30% - 40%]	[40% - 50%]	[20% - 30%]
Zain	0%	[20% - 30%]	[20% - 30%]	[20% - 30%]	[20% - 30%]	[10% - 20%]	[20% - 30%]
OLOs	0%	[0% - 10%]	[10% - 20%]	[20% - 30%]	[30% - 40%]	[40% - 50%]	[50% - 60%]
Total	100%	100%	100%	100%	100%	100%	100%
Revenues							
Zone 1 GCC	2005	2006 Q1	2006 Q2	2006 Q3	2006 Q4	2007 Q1	2007 Q2
Batelco	100%	[70% - 80%]	[70% - 80%]	[70% - 80%]	[60% - 70%]	[70% - 80%]	[60% - 70%]
Zain	0%	[20% - 30%]	[20% - 30%]	[20% - 30%]	[30% - 40%]	[20% - 30%]	[20% - 30%]
OLOs	0%	[0% - 10%]	[0% - 10%]	[0% - 10%]	[0% - 10%]	[0% - 10%]	[0% - 10%]
Total	100%	100%	100%	100%	100%	100%	100%
Zone 2	2005	2006 Q1	2006 Q2	2006 Q3	2006 Q4	2007 Q1	2007 Q2
Batelco	100%	[60% - 70%]	[50% - 60%]	[40% - 50%]	[30% - 40%]	[20% - 30%]	[20% - 30%]
Zain	0%	[0% - 10%]	[0% - 10%]	[0% - 10%]	[0% - 10%]	[10% - 20%]	[0% - 10%]
OLOs	0%	[20% - 30%]	[40% - 50%]	[40% - 50%]	[50% - 60%]	[60% - 70%]	[60% - 70%]
Total	100%	100%	100%	100%	100%	100%	100%
Zone 3	2005	2006 Q1	2006 Q2	2006 Q3	2006 Q4	2007 Q1	2007 Q2
Batelco	100%	[70% - 80%]	[60% - 70%]	[60% - 70%]	[30% - 40%]	[40% - 50%]	[50% - 60%]
Zain	0%	[20% - 30%]	[20% - 30%]	[20% - 30%]	[40% - 50%]	[20% - 30%]	[20% - 30%]
OLOs	0%	[0% - 10%]	[0% - 10%]	[10% - 20%]	[20% - 30%]	[30% - 40%]	[20% - 30%]
Total	100%	100%	100%	100%	100%	100%	100%

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Zone 4	2005	2006 Q1	2006 Q2	2006 Q3	2006 Q4	2007 Q1	2007 Q2
Batelco	100%	[70% - 80%]	[60% - 70%]	[50% - 60%]	[40% - 50%]	[40% - 50%]	[20% - 30%]
Zain	0%	[20% - 30%]	[20% - 30%]	[20% - 30%]	[30% - 40%]	[20% - 30%]	[40% - 50%]
OLOs	0%	[0% - 10%]	[0% - 10%]	[10% - 20%]	[10% - 20%]	[30% - 40%]	[30% - 40%]
Total	100%	100%	100%	100%	100%	100%	100%

139. The main findings from the analysis of concentration in each of the relevant mobile market are:

- The geographic distribution of traffic based on volume is as follows: about 20% to GCC countries, 65% to Zone 2, 5% to Zone 3 and 10% to Zone 4. The percentages based on revenues are respectively about 30% 45%, 10% and 15%.
- For mobile originated international calls to Zone 1 countries, the market shares of Batelco and Zain are broadly in line with their relative position in terms of number of subscribers. Batelco has a market share of about [60%-70%] whilst PPCCs providers control about 6% of the value of the market.
- For mobile originated international calls to Zone 2 countries, PPCCs providers have about [80%-90%] of the market based on volume and 65% based on revenues. Three providers have substantial market shares in excess of the share of the two MNOs.
- For mobile originated calls to Zone 3 countries, Batelco and Zain hold respectively about [30%-40%] and [10%-20%] of the market based on volume and about [50%-60%] and [20%-30%] based on revenues. Two strong PPCCs providers are emerging. They control about [40%-50%] of the volume of traffic.
- For mobile originated calls to Zone 4 countries, Batelco and Zain have respectively about [20%-30%] and [20%-30%] of the market based on volume. OLOs control about [30%-40%] of the value of the market.

140. The analysis of concentration in mobile originated international calls markets points to a possible position of SMP by Batelco for calls to GCC countries and Zone 3 countries as well as a position of SMP by Zain for calls to Zone 4 countries.

141. High market shares are not necessarily indicative of market power. It is necessary to assess barriers to entry. The August 2007 Consultation indicated that barriers to entry and expansion were likely to be low in international calls markets.

142. Competitors to Zain and Batelco fixed and mobile need not have their own infrastructure to operate in these markets. To complete an international call, there are two main inputs required at the wholesale level: call origination and wholesale transmission including termination At the far end. Call origination on Batelco fixed and mobile networks is regulated and provided at cost-based rates while Zain offers call origination services to PPCCs providers on a commercial basis. Batelco also offers a wholesale IDD service on a regulated basis as per the reference offer. Finally, for

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fixed markets OLOs have the possibility to offer services directly to customers through the regulated CPS service.

143. Through wholesale regulation, OLOs have been able to enter the international calls markets and to exert competitive pressures on Batelco and Zain. These pressures have been lesser for calls to GCC countries where incumbent operators have retained strong positions.
144. With low barriers to entry at the retail level and cost based regulation for call origination (or similarly regulated CPS), the level of competition in retail markets is largely determined by the competitive conditions at the level of wholesale transmission (including termination at the far end). At that level, barriers to entry may be significant. They arise as a result of the contractual arrangements required, the level of competition at the far end (i.e. the destination country), economies of scale, and restrictions such as the inability to by-pass the traditional accounting rate regime, a ban on simple resale or on VoIP termination. The level of competition and extent of restrictions at the far end are likely to explain to a degree the limited impact of competition from PPCC and CPS providers in international calls markets to GCC countries.
145. Lower price sensitivity of callers and greater customer inertia are other likely reasons for the persistence of strong market shares in the markets for calls to GCC countries and fixed originated calls to Zone 3, and to a lesser extent to Zone 4 countries markets. Further, in these markets the proportion of business calls is likely to be greater than for the market to Zone 2 countries. This, combined with the fact that the only true alternative available for businesses is CPS, may also explain the limited market share captured by OLOs.
146. Although TRA does not have the breakdown of traffic between residential and non-residential users, business users, especially large companies, are unlikely to use PPCCs for their international communications. The Consumer Survey showed that business users make very limited use of PPCCs for their international communications, making instead extensive use of fixed IDD calls. CPS therefore constitutes the main source of competitive constraint to Batelco for international calls originated from fixed lines. In turn, the strength of this constraint depends on the effectiveness and implementation of the CPS regulation, which need to be constantly improved in order to facilitate customer switching. In this context, TRA notes that it is currently investigating a number of complaints regarding the CPS product provided by Batelco received from OLOs.²⁰
147. The market share threshold indicator of 25%, set in the definition of Operator with Significant Market Power in the Telecommunications Law would suggest that Batelco may hold SMP in the following markets: fixed originated international calls to Zone 1, to Zone 3 and to Zone 4 countries as well as mobile originated international calls to Zone 2 countries. However, when determining SMP TRA must consider other factors, inter alia, the ability of the operator to influence market conditions, its turnover

²⁰ Note that TRA has not at the time of the release of this Report made any conclusive findings.

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relative to size of the market, control of the means of Access to users, financial resources, its experience or providing products and services to the markets, entry barriers and the impact of wholesale regulation on downstream competition need to be considered as well.

148. On balance, it appears that except for international calls originated from fixed lines to Zone 1 and Zone 3 countries, the remaining markets are competitive. For mobile originated calls, Zain provides a sufficient competitive constraint to Batelco and vice versa. With regards to the market to Zone 1 countries, this category is a residual group that includes all remaining destinations in which Batelco market share has been continually decreasing.
149. For the reasons set out above, TRA considers that Batelco has SMP in the fixed originated international calls markets to Zone 1 and Zone 3 countries and that there is insufficient competition in these markets. No operator has SMP in the remaining international calls markets. These findings are predicated on the availability and effectiveness of wholesale regulation and in particular cost based call origination and effective CPS.

The Fixed Internet Access Markets

The August 2007 Consultation

150. In the August 2007 Consultation, TRA found the fixed Internet access market to be not effectively competitive. This finding was principally based on the very large market shares of Batelco, the level of profitability of Batelco, and the limited availability of higher speed broadband services. TRA noted that it will monitor closely the impact of the entry of NFWS licenses on competition and competition from OLOs based on regulated wholesale DSL and bitstream.

Responses to the August 2007 Consultation

151. Batelco disputed this finding and argued that the fixed Internet access market is effectively competitive. Batelco referred to the large number of competing offers by OLOs, the set of wholesale products and the entry of the NFWS operators which, according to Batelco, will have a profound impact on competition. Batelco called for more retail pricing flexibility and deemed unnecessary the imposition of any form of retail regulation.
152. With regards to dial-up Internet access, Batelco indicated that this market has been declining rapidly and, accordingly, that market entry was unlikely. It also noted that no OLOs have taken up its wholesale offer and that it has stopped all development plans for dial-up Internet products. Overall, Batelco believed that no retail regulation is warranted for this market.

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153. Cisco provided evidence of the extent to which Bahrain performance in terms of broadband penetration and service offerings (e.g. absence of unlimited offers) was lagging behind other countries. It argues that this results partly from the lack of effective competition in the Internet Services Provider (“ISP”) market. Similarly, Zain underscores the lack of competitive broadband offers at speed in excess of 2Mbs and the low penetration of broadband.

TRA analysis and conclusion

154. With regards to the retail dial-up Internet access market from a fixed location, TRA considers that Batelco has SMP. Batelco is the only provider of dial-up services in the Kingdom of Bahrain and has therefore a 100% market share. As indicated in the table below, the number of dial-up subscribers has declined rapidly in the last few years. TRA concurs with Batelco that this is a declining market as dial-up Internet access is being superseded by broadband Internet access. This specificity needs to be reflected in the regulatory treatment of this market.

Table 9: Estimated market shares: dial-up fixed Internet access market

Dial-up	2005	2006	Q1 2007	Q2 2007
Number of subscribers	28,867	21,466	9,356	8,171
Batelco	100%	100%	100%	100%
OLO's	0%	0%	0%	0%
Total	100%	100%	100%	100%

155. With regards to the retail broadband Internet access market from a fixed location, TRA remains of the view that competition is not effective and that Batelco has SMP in this market. Although competition is progressing with the entry of Zain into the market and access-based competition from OLOs, TRA considers that Batelco is highly likely to retain SMP over the relevant period of analysis.

156. The introduction of wholesale DSL and bitstream in Q2 2007 has finally allowed OLOs to introduce retail broadband services in competition with Batelco. At the end of Q2 2007, the market share of OLOs was [0%-10%]. Infrastructure based competition has also started to emerge in December 2007 with the entry of Zain and the launch of its fixed wireless broadband services. Mena Telecom is also expected to launch its services within the next four months.

Table 10: Estimated market shares: broadband Internet access market

Broadband	2005	2006	Q1 2007	Q2 2007
Number of subscribers	21432	38628	53754	58864
Batelco	100%	100%	[90% - 100%]	[90% - 100%]

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OLOs	0%	0%	[0% - 10%]	[0% - 10%]
Total	100%	100%	100%	100%

157. However, competition based on regulated access products will take time to have an impact on the market. Wholesale regulation is not considered effective yet. In the last six months there have been a number of issues which have affected the effectiveness of wholesale regulation. It is very likely that they prevented a more significant up-take of wholesale products. The uptake of wholesale products is still very limited. TRA has received a number of formal and informal complaints and comments regarding the non-price terms of access products and processes.²¹ Operation issues take time to be resolved. In the meantime Batelco enjoys a competitive advantage over its competitors as its upstream market power is not effectively constrained.
158. Compared to bitstream, the potential competitive impact of wholesale DSL is limited to price, as wholesale DSL does not allow OLOs to differentiate their services, it is a straight resale product.
159. Batelco's vertical integration and control of the underlying infrastructure for the provision of DSL services give rise to opportunities to leverage upstream market power in the downstream market. This can take place through non-price strategic behaviour (e.g. non-price discrimination between Batelco retail and OLOs) and pricing strategies (e.g. price squeeze).
160. The impact of market entry by the two NFWS operators is, as explained above, difficult to predict with any accuracy. However, the ability of NFWS operators to provide an effective competitive constraint to Batelco is limited by the technological capabilities of their networks. For limited incremental costs, Batelco's network is capable of delivering download speed of up to 8Mbps using ADSL2 and up to 20Mbps if ADSL2+ is implemented. Whilst in theory NFWS networks could attain sustainable bit rates approaching 8Mbps, substantial incremental investment would be required in order to maintain acceptable quality of service levels. Therefore, the ability of facility-based competitors to compete with Batelco on quality of services is constrained.
161. Furthermore, satellite based broadband provides only a limited competitive constraint in the retail broadband Internet access market. In terms of market share, satellite broadband is marginal. The offers of competing providers, such as Mena Telecom or Orbit for example, have attracted a very limited number of customers. Satellite broadband suffers from significant cost and quality disadvantages, compared to other broadband delivery mechanisms, such as fixed DSL. As a result, satellite broadband is not well suited to compete in the mass retail broadband market. It is typically confined to users with specific needs that are located in areas, which are challenging to cover. The retail price of a 512kbps/128kbps of

²¹ Note that TRA has not at the time of the release of this Report made any conclusive findings.

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Orbit is BD56 per month whereas the equivalent services from Batelco costs BD 25. This is a significant cost disadvantage.

162. Further, as noted in the August 2007 Consultation, the persistence of high retail broadband tariffs by international standards and prices well in excess of cost is suggestive of the persistence of market power.
163. Overall, for the reasons above and included in the August 2007 Consultation, TRA considers that Batelco holds SMP in the retail broadband Internet access market and in the dial-up Internet access from a fixed location market and that there is insufficient competition in these markets.

The Leased Lines Market

The August 2007 Consultation

164. TRA concluded in the August 2007 Consultation that the leased lines market, defined broadly to include domestic and international circuits, was not effectively competitive. It reached this view on the basis of the large market share of Batelco, and the substantial barriers to entry and expansion in the market, and in particular the magnitude of investment costs to enter the market. TRA also indicated it will monitor the development of competition following the launch of wholesale products.

Responses to the August 2007 Consultation

165. In its submission, Batelco found the market of leased lines to be effectively competitive or at least prospectively competitive. According to Batelco, there are three OLOs offering domestic leased lines based on FSO technology, and three competing providers of international leased lines based on alternative technologies. Batelco also pointed to the loss of customers to competitors and the aggressive behaviour of OLOs as evidence of the level of competition in the market.
166. Furthermore, Batelco expressed the view that OLOs can effectively compete with Batelco in the retail leased line market thanks to the wholesale regulation of leased lines which has facilitated market entry and made the market contestable. Batelco also noted the limited expected level of entry that can be expected in this market and referred to the position of the European Commission according to which leased lines are not viewed as susceptible to ex ante regulation.

TRA analysis and conclusion

167. TRA disagrees with Batelco's view on the level of competition and considers that Batelco has SMP in the retail leased lines market. Batelco has [90%-100%] market share. As indicated in the August 2007 Consultation, there

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are significant barriers to entry and expansion for facility-based entry in the leased lines market. They relate to the sunk nature of the cost involved and the difficulties for OLOs to gain access to ducts and, more generally, access to public roads corridors to roll out their own physical infrastructures.

Table 11: Estimated market shares: leased lines market

	Q1 07	Q2 07	Q1 07	Q2 07
	Domestic leased lines		International leased lines	
Batelco	[90% - 100%]	[90% - 100%]	n/a	[90% - 100%]
OLO's	[0% - 10%]	[0% - 10%]	n/a	[0% - 10%]
Total	100%	100%	n/a	100%

168. Wholesale regulation is not yet effective at neutralising Batelco market power at the wholesale level. Competition based on wholesale products has been problematic with a numerous issues relating to delays in the supply CAT's for example. As a consequence, OLOs have experienced significant difficulties in competing with Batelco in the retail market. The effect of the wholesale regulation in place has yet to be felt.
169. For the reasons stated above, TRA concludes that Batelco has SMP in the retail leased lines market and that there is insufficient competition in this market.

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Conclusion on Significant Market Power

170. The table below summarizes TRAs' findings regarding SMP in the relevant markets. In all the markets where TRA considered that Batelco holds SMP, TRA also concluded that there is insufficient competition.

Table 12: Findings regarding SMP in the relevant retail markets

Retail Market	Definition	SMP
1	Fixed access narrowband connections markets: <ul style="list-style-type: none"> - 1a: For residential customers; - 1b: For non-residential customers. 	Batelco holds SMP
2	Domestic calls originating on fixed lines markets: <ul style="list-style-type: none"> - 2a: For residential customers; - 2b: For non-residential customers. 	Batelco holds SMP
3	Fixed originated international calls markets: <ul style="list-style-type: none"> - 3a: to Zone 1 countries; - 3b: to Zone 2 countries; - 3c: to Zone 3 countries; and - 3d: to Zone 4 countries. Mobile originated international calls markets: <ul style="list-style-type: none"> - 3e: to Zone 1 countries; - 3f: to Zone 2 countries; - 3g: to Zone 3 countries; and - 3h: to Zone 4 countries. 	3a and 3c: Batelco holds SMP Other markets: No SMP
4	Mobile services (excluding international calls)	Not analysed
5	Broadband internet access from a fixed location	Batelco holds SMP
6	Dial-up internet access from a fixed location	Batelco holds SMP
7	Leased line services (domestic and international leased lines)	Batelco holds SMP
Zone 1 countries: GCC countries Zone 2: South Asian countries: Bangladesh, India, Pakistan, the Philippines and Sri Lanka; Zone 3: Australia, Canada, France, Germany, Greece, Italy, Iran, New Zealand, Thailand, UK, USA, and Yemen; Zone 4: rest of the world.		

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List of Acronyms

AREGNET	Arab Regulators Network
BD	Bahraini Dinar
BT	British Telecom
CAT	Customer Access Tail
CPI	Consumer price index
CPS	Carrier pre-selection
CPU	Central Planning Unit of the Ministry of Works
CS	Carrier selection
DWLFM	Directorate of Wireless Licensing, Frequencies and Monitoring
EU	European Union
FSO	Free Space Optics
FTTx	Fibre to the x, with “x” referring to the kerb, home, building or node
GCC	Gulf Cooperation Council
HHI	Herfindahl-Hirschman Index
IDD	International Direct Dial
IMT	International Mobile Telecommunications
IP	Internet Protocol
ISP	Internet Services Provider
Kbps	Kilo bits per second
LLU	Local Loop Unbundling
Mbps	Mega bits per second
MNO	Mobile network operator
MPLS	Multi-protocol Label Switching
MVNO	Mobile virtual network operator
NFWS	National fixed wireless services
Ofcom	Office of Communications (UK)
OLO	Other licensed operator
PPCC	Prepaid calling card
SCPC	Single Channel Per Carrier
SMP	Significant market power
SSNIP	Small but Significant and Non-transitory Increase in Price
TRA	Telecommunications Regulatory Authority of the Kingdom of Bahrain
UK	United Kingdom
USA	United States of America
VoB	Voice over broadband
VoIP	Voice over IP
WiFi	Wireless Fidelity
WRC-07	World Radiocommunications 2007