

# CONSULTATION

## Dominance in Wholesale Markets

# Dominance in Wholesale Markets

A Consultation issued by the  
Telecommunications Regulatory Authority on  
Dominance in Wholesale Markets

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The deadline for responses is 5pm on 23 November 2005

**Purpose:** To determine whether Batelco has dominance in wholesale markets.



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## Dominance in Wholesale Markets

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### 1 Introduction

The Telecommunications Regulatory Authority of Bahrain (the “Authority”) issued the Access Regulation (the “Regulation”) on 30 April 2005. Under the Regulation, the Authority may impose access-related obligations on a licensed operator declared to hold a dominant position in a relevant market. Such obligations include the making available of a reference access offer in accordance with Article 4 of the Regulation.

The Authority has considered what constitutes the relevant markets for the purpose of the Regulation, and whether any licensed operator holds a dominant position in these relevant markets.

The Authority proposes to follow standard competition law practice by defining the retail markets as an initial step towards defining the wholesale markets in which dominance is assessed. This ensures, firstly, that no important retail service is omitted when analyzing dominance at the wholesale level and, secondly, that each wholesale market analyzed is directly relevant to a retail market. Since the purpose of the present exercise is to assess dominance in wholesale markets, the Authority has not attempted to define the retail markets with the level of granularity and rigor necessary for defining retail markets for their own sake. The Authority has formed the preliminary view that there are five relevant retail markets for the purposes of the Regulation, namely:

- national voice;
- international voice;
- high-speed data/Internet access (greater than 2Mbit/s);
- broadband data/Internet access (between 256kbit/s and 2Mbit/s); and
- narrowband data/Internet access (less than 256kbit/s).

The Authority also considers that there are three relevant wholesale markets for the purposes of the Regulation, namely:

- access to customer premises (with sub-categories for high-bandwidth, broadband and narrowband access);
- access to international facilities; and
- access to transmission capacity.

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The Authority has also formed the preliminary view that the Bahrain Telecommunications Company B.S.C. ("Batelco") holds a dominant position in each of these relevant wholesale markets.

Consequently, the Authority, subject to the findings of this Consultation, intends to make a formal Determination in accordance with section 3(c) of the Telecommunications Law that Batelco holds a dominant position in the relevant wholesale markets.

The Authority welcomes comments on this Consultation. Interested parties may make comments on any aspect of this Consultation that they wish. Comments should be received by the Authority by 5.00 pm on 23 November 2005.

The address for sending responses to this document is:

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

Alternatively, responses may be sent to the Authority for the attention of the Director of Economic Affairs by email to [consult@tra.org.bh](mailto:consult@tra.org.bh) or by facsimile to +973 17 532 125.

Following the receipt of responses, the Authority will review these and issue a report on the responses received together with a Determination on this matter if appropriate.

**The TRA will publish the comments as received unless respondents explicitly ask that their responses be treated as confidential, in total or in part. If any party wishes to have the whole of its submission withheld, it should state that clearly at the beginning of the submission. If the respondent wishes to have some parts withheld, it should put them in separate annexes and clearly mark them as such.**

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## 2 Dominance in Wholesale Markets

### 2.1 Introduction

Pursuant to Regulation 1 of 2005 dated 30 April 2005 (the “Regulation”), the Telecommunications Regulatory Authority of Bahrain (the “Authority”) may impose access-related obligations on a licensed operator declared to hold a dominant position in a relevant market. For the reasons given below, the Authority is satisfied that the relevant wholesale markets for assessing dominance are:

- access to customer premises (with sub-categories for high-bandwidth, broadband and narrowband access);
- access to international facilities; and
- access to transmission capacity.

The basis on which the Authority has formed this view is set out in this Consultation.

In reaching its conclusions, the Authority has followed the principles of competition law by defining the relevant markets and reviewing each market for the presence of dominance. The Authority’s approach to defining relevant markets is to define the relevant retail markets as an initial step by analyzing the boundaries of supply and demand substitution. The relevant wholesale markets are derived from the retail markets, again by analyzing the level of supply and demand substitution between different candidate definitions.

Having defined the relevant markets, the Authority examines each of them for the presence of dominance. The determination of dominance is based on a number of criteria for assessing whether competitors or potential entrants are likely to provide sufficient constraints on the largest operator to prevent it from acting independently of rivals. The remainder of this Consultation is structured as follows:

Section 2.2 sets out the legislative and regulatory background to the Consultation and summarizes the theory of market definition in competition law, in so far as is relevant for the present purpose.

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Section 2.3 sets out the Authority's view on the relevant retail and wholesale telecommunications markets in the Kingdom, and maps the access inputs to the relevant wholesale markets listed in Article 3.5 of the Regulation.

Section 2.4 considers whether any market player in the Kingdom holds a dominant position in any of the relevant wholesale markets by taking into account the actual and potential competition in each of the essential inputs to the market listed in Article 3.5 of the Regulation. The section also summarizes the approach the Authority proposes to take towards assessing dominance. Following this is an assessment of the state of actual and potential competition in each of the relevant access inputs and the Authority's proposed conclusions on dominance.

## 2.2 Background

### 2.2.1 Legislative and Regulatory Background

Batelco is a licensed operator for the purposes of the Telecommunications Law (the "Law") promulgated by Legislative Decree No. 48 of 2002. The Regulation "*applies to Licensed operators which have been declared by the TRA to hold a Dominant position in a relevant market.*" Section 3(c)(1) of the Law grants the Authority the power to make such regulations, orders and determinations as may be necessary for the implementation of the Law, including the promotion of competition and all other matters that are covered by the Law or are necessary to give effect to the provisions of the Law.

Section 1 of the Law defines "Dominant position" as follows:

*"Dominant position": the Licensee's position of economic power that enables it to prevent the existence and continuation of effective competition in the relevant market through the ability of the Licensee to act independently - to a material extent - of competitors, Subscribers and Users.*

The Authority has established a process for formally assessing whether an operator holds a dominant position in a relevant market. This process is set out in the Authority's Determination of 19 April 2003, Methodology for Determining Market Power (the "Market Power Determination"). The process to be adopted by the Authority for

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determining market power as set out in the Market Power Determination essentially involves:

- the definition of the relevant market or markets; and
- the application of a set of criteria to assess whether a licensee can prevent the existence and continuation of effective competition in that relevant market through its ability to act independently.

In order to determine whether a licensed operator has the necessary degree of market power to give rise to dominance, it is necessary to identify the market, in both its product and geographic dimension, and those competitors of the relevant licensee (actual and potential) that are capable of constraining the licensee's behavior and of preventing the licensee from behaving independently of effective competitive pressure.

### Relevant Product or Service Market

The terms "access", "telecommunications facility" and "telecommunications network" are defined in the Law as follows:

*"Access": the making available of Telecommunications Facilities and/or Telecommunications services to another Licensed Operator for the purpose of providing Telecommunications services, and including the connection of equipment by wire or wireless means, access to physical infrastructure including buildings, ducts and masts, access to mobile networks and access to number translation or networks offering equivalent functionality.*

*"Telecommunications Facility": any part of the infrastructure of a Telecommunications Network including any antenna, circuit, duct, equipment, fiber (whether partially or fully in service or not), line, mast, pole, tower or any other structure or any other thing used or intended for use in connection with a Telecommunications Network.*

*"Telecommunications Network": a network permitting the conveyance of messages, sound, visual images or signals between defined termination points by wire, radio, optical or other electromagnetic means.*

Section 57(e) of the Law states that a dominant operator shall offer access to its Telecommunications Network and Telecommunications Facilities to any licensed operator on request. The Authority is of the view that "access" encompasses the making available of any

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Telecommunications Facilities (or network element) and telecommunications services by one licensed operator to another for the purpose of providing telecommunications services. As such, “access” can be construed to include:

- resale of specified services to licensed network operators or service providers;
- co-location or other forms of facility sharing (e.g., ducts, buildings, masts);
- access to specified network elements or facilities, including, but not limited to, unbundled local metallic or non metallic path and line sharing;
- access to technical interfaces, protocols or other key technologies which facilitate the interoperability of services that relate to the relevant market;
- access to specified services needed to ensure interoperability between users of end-to-end services (end-to-end services are those network services provided to customers other than network operators as part of a retail service) relating to that market; and
- access to operational support systems or similar software systems that are needed to enable fair competition in the provision of services relating to that market.

The methodology for defining markets is set out in the Authority’s Determination of 19 April 2005, Methodology for the Definition of Telecommunications Markets (the “Market Definition Determination”). Section 2.2.2 briefly summarizes the Authority’s approach.

### **2.2.2 Fundamentals of Market Definition**

The identification of the relevant market is an important initial step in identifying whether or not any market participant is dominant. If a market participant, for the sake of argument, supplies 100% of demand for a product, this is insufficient to declare it dominant without analysis confirming that the supply of that product is a relevant product market. The market definition must contain both a product dimension and a geographic dimension. There are two factors to consider in defining markets:

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1. the availability of demand-side substitutes: whether there are other products that customers consider substitutes (when defining the product market) or whether the same products supplied in a different location are substitutes (when defining the geographic market); and
2. the availability of supply-side substitutes: whether any suppliers producing different products could easily switch to production of a given product (when defining the product market) or whether suppliers of the same product could easily divert them to a different location (when defining the geographic market).

To conclude that two markets are separate, the two products must be *neither* demand- *nor* supply-side substitutes. If they are *either* demand- *or* supply-side substitutes, they are in the same market. It is worth noting that, especially in telecommunications where there is always a degree of differentiation, different products (or products in different locations) are almost never *perfect* substitutes. The aim is to identify the range of products and geographic locations in which there is sufficiently close substitution for there to be effective competition between them.

### 2.2.3 Testing a Market Definition

To evaluate the scope of product and geographic markets, it is common to use the hypothetical monopolist test (“HMT”). The HMT assumes that an entire market is served by a single supplier and asks whether a small increase in price (say, 5 to 10%) would be profitable in the long term. If sufficient substitutes exist, the hypothetical monopolist would not be able to sustain the increase in price because it would lose market share to competitors. In this case the Authority would have to conclude that the correct market definition is broader than the one proposed. If the price increase would have been profitable, our conclusion is that the actual market is at least as narrow as the one proposed (and may actually be narrower).

To evaluate whether alternative technologies are substitutes on the supply-side, we consider the extent to which a supplier of such alternatives could easily switch to supplying the product/service supplied by the hypothetical monopolist.

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A number of techniques, both qualitative and quantitative, may be used to conduct the HMT. Regulators and competition authorities often use *a priori* reasoning to assist with market definition. This involves examining the demand and supply characteristics of the product in question and making a judgement as to the availability of substitutes. This approach is useful when the answer is clear but should not be relied upon when the question is more finely balanced.<sup>1</sup>

Quantitative techniques for defining markets can also be used when data are available (although it is relatively rare in telecoms markets, especially recently liberalized ones, for sufficient data to exist). One of the most useful quantitative tests is the “parallel-pricing” test. If the changes in prices of two products are observed to be unrelated to each other over a long period of time, this is strong evidence that they do not exist in the same market because if they were close substitutes, price differences could not be profitably sustained for more than a very short period. The parallel pricing test is useful as a negative test for establishing that two products are not in the same market, but unfortunately cannot be used affirmatively to conclude that products *are* in the same market, because similar price changes could arise from an external, common cause.

Statistical or econometric techniques can be used to help establish that two products are in the same market, by estimating the cross-elasticity of demand.<sup>2</sup> A high value for the cross-elasticity of demand indicates close substitutes, whilst a low value indicates the reverse.

### 2.2.4 Application to the Telecommunications Sector

A few examples can be used to demonstrate how the theory of market definition applies to the telecommunications sector. Suppose, for example, that we are analyzing whether any player holds market power in the supply of leased lines to business customers and, if so, in which regions. Leased lines provide customers with relatively high quality dedicated access, mostly at high bandwidth, which may be used for a

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<sup>1</sup> As an example of *a priori* reasoning, it may be clear that two alternative brands of bottled water are direct substitutes and are therefore in the same product market. Similarly, it may be equally clear that bottled water and cooking oil are not direct substitutes and therefore not in the same product markets.

<sup>2</sup> Cross-elasticity of demand: the change in demand for one product resulting from a change in price of another product.

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number of applications, including wide-area networking, internet access and voice services.

Firstly, the product market must be defined: the question is whether “leased lines” constitute a distinct relevant product market or whether alternative technologies are close substitutes. Candidate alternative technologies might include broadband access using digital subscriber line (“DSL”) technology, or fixed broadband wireless access. To evaluate whether these are substitutes on the demand-side, we may evaluate characteristics of the products and the manner in which they are used by end-users. Similar patterns of use and product functionality indicate that they might be close demand-side substitutes. In terms of the supply side, we would evaluate how easily a supplier of one type of service could switch to supplying another.

A further factor requiring consideration is the relationship between retail and wholesale markets. This is especially important in telecommunications as supply conditions can differ fundamentally in different sections of the supply chain. A high market share in a retail market may, for example, appear to indicate dominance, yet this would not necessarily indicate that the remedy should be at the retail level if the source of the market power exists further upstream (for example, at the level of the local loop).

Secondly, the geographic market must be defined. The definition of geographic markets in telecommunications is complex and controversial, as entry barriers to penetrating new geographic areas are very high, mainly because of digging costs and the effects of economies of density.

The approach most commonly adopted in the telecommunications sector is to define geographic markets as the range of zones where competitive conditions are uniform. For example, a geographic market may be defined as an entire country if there is a similar degree of competition in all parts of the country for the product market being considered. Alternatively, different geographic markets may be used for city center and rural zones if competition is more developed in one than in the other.

In section 2.3 below, the Authority sets out its proposed retail and wholesale market definitions in the Kingdom of Bahrain.

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### 2.3 Defining Relevant Telecommunications Markets in the Kingdom of Bahrain

The Authority proposes to approach the definition of markets by starting at the retail level. The reason for starting at the retail level is to ensure that the subsequently defined wholesale markets correspond with the relevant services provided to end-users. The approach avoids the risk of failing to identify a wholesale market comprising essential inputs to retail services that are important to customers. It also avoids the risk of identifying a wholesale market that might not be essential or directly relevant to a service demanded by customers.

As explained above, the purpose of defining retail markets in this context is to identify the appropriate wholesale markets in which the Authority has to determine dominance. It is not to define relevant retail markets for their own sake. Accordingly, the approach taken only distinguishes between retail markets where doing so is necessary to determine the related wholesale market for the purposes of finding dominance. The analysis should not therefore be interpreted as the Authority's final word on the definition of retail markets.

The first step the Authority proposes to take is to consider the range of telecommunications services supplied and identify which services belong in which retail markets. The second step is to identify the relevant wholesale markets related to these retail markets and to map the access inputs to the appropriate wholesale market.

#### 2.3.1 Identifying the Relevant Retail Markets

The main retail services provided by telecommunications service providers fall into the following broad categories:

1. Services to business customers
  - domestic voice
  - international voice
  - data services (e.g. wide-area networking solutions such as leased lines)
  - broadband Internet access inputs
  - narrowband Internet access inputs
2. Services to residential customers
  - domestic voice

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- international voice
- broadband internet access
- narrowband internet access

To determine whether the services above belong in the same or separate markets, we use the principles of demand and supply-side substitution outlined above. To avoid the practical problems associated with having too many narrowly defined markets, the Authority takes account of the uniformity of competitive conditions in the supply of services. In other words, where the analysis of substitution may indicate a very large number of separate markets, for practical purposes the number of markets evaluated may be reduced by including in the same category those with uniform competitive conditions.

### **Service Grouping**

To establish the scope of the markets we may start with a set of hypotheses as to where the boundaries between the markets might be drawn. We then consider whether and, if so, how, the service types listed above should be categorized for the purposes of market definition. The following are the categories most commonly used in other jurisdictions for defining markets:

1. by market sector (for example, business and residential);
2. by service type (voice, data and Internet access, national and international);
3. by bandwidth (narrowband and broadband, or a continuum encompassing a range of bandwidths); or
4. by geography.

To assist the process of market definition, the Authority considers all four dimensions. The first three relate to the product market definition, whilst the fourth relates to the geographic market definition.

### **Market Sector (Business and Residential)**

Voice and Internet access services are offered to business and residential customers. Different price plans are offered for different usage patterns. Also, to obtain commercial or residential service the respective registrations must be provided. Commercial customers cannot obtain a residential service or vice versa.

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In terms of supply-side substitution, a supplier of voice services to the residential sector would face significant barriers to entry to the business sector, as the latter normally involves multiple lines (sometimes provided over fiber) to a single site terminating to a private branch exchange. Also, business services involve functions, such as private networking, that are not required by residential users.

This suggests that, regarding voice services, business and residential sectors belong in separate markets. However, whilst this may be the correct conclusion from a competition law standpoint, competitive conditions typically do not differ materially between the two sectors in recently liberalized markets (such as the Kingdom of Bahrain), so for the purposes of market analysis we may treat them as if they belong in the same market. As the market matures, competition may develop at different rates, which would require us to treat business and residential voice services as belonging in separate markets. Furthermore, since the wholesale inputs to the business and residential sectors are broadly similar, there is nothing to be gained, in the current context, by distinguishing between the business and residential sectors.

If the uniformity of competitive conditions is used as a criterion for treating products in different markets as if they were in the same market, it may be asked why we do not include all products in the same market where competitive conditions are similar. The reason is that the definition of the wholesale markets (section 2.3.2 below) also needs to take account of the differences in the wholesale inputs used to provide the retail service.

Similar reasoning may be applied to Internet access for most services. However, some Internet access services are only used by the business sector, for example, those involving very high bandwidth access, services provided over a dedicated (meaning uncontended) access link and those using symmetrical bandwidth.<sup>3</sup>

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<sup>3</sup> Such as symmetrical DSL, which offers the same bandwidth on the upstream and downstream links and contrasts with asymmetric DSL, which offers lower bandwidth on the uplink.

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### **Service Type (Fixed, Mobile, Voice, Data, Internet Access, National and International Service)**

A number of users have switched from fixed to mobile subscriptions in recent years. Superficially, this might indicate a degree of substitution, but this is not necessarily the case: if substitution is occurring mostly in one direction, it suggests that fixed and mobile services may not be substitutes in the economic sense, as users may be switching to take advantage of different technical features (such as mobility) and would not be persuaded to switch back in response to a small increase in price charged by a hypothetical monopolist. Significant differences in price between fixed and mobile services also indicate that the two services are purchased to fulfil different functions. Regulatory authorities in international markets (for example the European Union) have concluded on this basis that fixed and mobile services fall in separate retail markets. Likewise, the Authority proposes to conclude that fixed and mobile services operate in separate markets.

Retail data and Internet access services would not provide a substitute for voice services in the event of a small increase in the price of voice, because voice services provided over Internet connections do not universally provide the same level of quality and reliability as standard voice services and are not yet sufficiently widely accepted as alternatives for most users to switch between them. Therefore, it is reasonable to suggest that retail voice services fall in separate product markets from data and Internet access.

Formally, the principles of demand and supply-side substitution might suggest very narrow market definitions for different types of voice service. For example, a single call between two users will generally not be a substitute for a single call between another pair of users. However, given the similarity of competitive conditions within which calls between different destinations (at different times) are provided, we may for practical purposes treat them as belonging to the same market, at least where the same wholesale inputs are required to provide the services.

Currently, there is only one owner of a national fixed services licence in the Kingdom of Bahrain, who is providing publicly available national fixed services, whilst there are several international facilities and services licences holders, who can provide international calls. This suggests that competitive conditions may differ in relation to the provision of national voice services on the one hand and international voice services on the other, leading to the view that they should be treated as belonging to separate markets.

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Data services are used for wide-area-networking and employ technologies such as leased lines, frame-relay, asynchronous transfer mode (“ATM”) and Internet protocol (“IP”) virtual private networks (“VPN”). There are many different types of data services, involving different levels of reliability, security and delay tolerance. Some wide-area-network applications, especially those connecting multi-site users to business-critical applications, require very high levels of reliability, security and relatively low delay tolerance. Such applications are normally provided using leased lines or high-security managed VPN services.

Access to the public Internet, however, offers relatively low security and “best-efforts” reliability and quality of service, which is adequate for data applications that do not require these features. Therefore, it is possible to say that, at the retail level, Internet access might provide a substitute for some data applications, though not for all.

However, the lack of substitutability between certain data services and Internet access is not important in the present context, because the purpose is to identify the upstream wholesale markets which are susceptible to market power. These inputs, which comprise elements of the local loop, are likely to be the same regardless of whether the downstream market is a data service or Internet access.

### **Bandwidth**

We now consider whether retail markets should be defined by reference to the level of access bandwidth used. Services range in bandwidth from “kilo-stream” services (9.6kpbs-64kbps) to STMx services (155Mbps and above), and are available at almost any speed in between.

The purpose of the current Consultation is ultimately to define wholesale markets for the purposes of determining the existence of dominance. On this basis, it is appropriate to distinguish between services depending on the types of wholesale inputs used, for example, whether the wholesale input is narrowband dial-up facilities, DSL or fiber based. The Authority therefore proposes to consider the following categories separately:

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1. narrowband (using dial-up facilities): approx. 64kbit/s-128kbit/s
2. broadband (using DSL technology): approx. 256kbit/s- <2Mbit/s
3. high speed (using fiber access): approx. => 2Mbit/s

The above does not necessarily represent the Authority's view on whether these categories form separate retail markets.

Some regulators, for example Ofcom in the United Kingdom, have chosen to distinguish between markets on the basis of whether the bandwidth is symmetrical or asymmetrical. This was premised on the assumption that SDSL services of below 2Mbit/s would be available. In practice, however, whilst such services are available, they have only had a limited impact. Since most services in the broadband category are asymmetric and those in the high-speed category are symmetric, there is little if anything to be gained by defining the market according to whether the service is symmetric or not.

### **The Relevant Geographic Market**

We now consider whether, and to what extent, markets should be distinguished according to geography.

Supply and demand-side substitution analysis appears to suggest very narrow geographic market definitions. Services in one location cannot, by definition, be substitutes for services at another location, even one that is comparatively close by (e.g., across the street). However, the Authority intends to define relevant geographic markets by including regions in which conditions of competition are similar in a single geographic market.

In some jurisdictions, competition is highly developed in dense urban locations, though not in rural locations. This has led to calls to declare areas with strong competition as separate markets for the purposes of evaluating market power. This does not apply in the Kingdom of Bahrain, as the telecommunications market is in a relatively early stage of liberalization and, therefore, the pattern of competition is currently uniform throughout the Kingdom. However, this is not relevant in the current context, as we are only analyzing retail markets in so far as is relevant for distinguishing between wholesale markets. For convenience,

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“Bahrain” or the “Kingdom of Bahrain” in the remainder of this Consultation are taken to mean the entire national territory.

The definition of a single geographical market covering the Kingdom of Bahrain is further supported by the fact that telecommunications networks elements and facilities located in Bahrain are owned and operated pursuant to licenses granted by the Authority. The scope of each of these licenses is the whole of the Kingdom of Bahrain.

It is also clear that the relevant telecommunications networks elements and telecommunications facilities to which Bahrain’s new entrants seek access are located in Bahrain. The requirements for access could not be met by telecommunications network elements and telecommunications facilities, which are located outside Bahrain. In conclusion, the Authority considers that the geographic scope of these wholesale markets is the Kingdom of Bahrain.

### **Retail Market Definition: Summary**

On the basis of the above, the Authority has identified the following retail markets:

1. retail national voice;
2. retail international voice;
3. retail high-bandwidth data/Internet access;
4. retail broadband data/Internet access; and
5. retail narrowband data/Internet access.

In each case, the relevant geographic market is the Kingdom of Bahrain.

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### Consultation Issue 1.

The TRA invites comment on its approach to defining retail markets and the relevant geographic markets for the purposes of analyzing wholesale markets for the presence of dominance. Respondents should bear in mind that the Authority's views on retail markets should be interpreted in the current context only, and do not necessarily represent its views on whether they form separate markets in competition law terms.

### 2.3.2 Defining the Relevant Wholesale Market

Having defined the relevant retail markets, the Authority must now define the relevant upstream wholesale markets. This is the purpose of this section. The Authority also considers which of the access inputs listed in Article 3.5 of the Regulation are relevant to each wholesale market. The identification of relevant wholesale markets prepares the ground for the assessment of dominance (dealt with in section 2.4), which the Authority undertakes by assessing the presence of dominance in each of the relevant inputs.

One possible approach would be to define a "mirror-image" wholesale market for each of the five retail markets described above. This, however, would not take account of the fact that the wholesale market consists of a range of input network services, elements and facilities which retailers utilize in different ways to create their services. In most cases, such inputs can be used to provide a range of downstream retail services in multiple relevant retail markets. Therefore, while it is important to consider how demand for the wholesale inputs is derived from the retail services that use these inputs, it is also important to ensure that the wholesale markets are defined so as not to prescribe the downstream services that can be provided using the relevant wholesale input.

Furthermore, some of these inputs are interconnection services (e.g., call origination, termination, carrier pre-selection and switched transit services) that are dealt with under Sections 57(a) to (d) of the Law. In the context of this Consultation, it is only those access inputs that are dealt with under Section 57(e) of the Law that the Authority is concerned with.

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The approach that the Authority adopted is to focus its assessment of the markets on those wholesale markets in which the access inputs fall, which display an economic structure that renders them susceptible to the existence and exercise of market power.<sup>4</sup> By identifying in advance those elements of the wholesale market that are susceptible to market power, the Authority can focus its regulatory resources.

On this basis, the Authority defines the following wholesale markets for the purposes of assessing market power:

- the market for access to customer premises:
  - High-bandwidth Access;
  - Broadband Access;
  - Narrowband access;<sup>5</sup>
- the market for access to international facilities; and
- the market for access to transmission capacity and facilities.

The Authority has used the same principles of demand and supply-side substitution described above to define relevant markets.

These markets are briefly described below.

### **Market for Access to Customer Premises (High Bandwidth)**

There are a number of features of high-bandwidth connections that render them necessary inputs for the provision of certain types of retail services (for example, those requiring “always on”, high capacity connections and uncontended bandwidth). Both leased lines (terminating segments) and dark fiber loops offer retail service providers the ability to permanently link locations over connections with a stable

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<sup>4</sup> These are mostly areas characterised by significant economies of scale, economies of scope and high barriers to entry. On this basis, we focus our attention on markets related to the local loop and some core network facilities and services. It is not necessary in this section to analyze the geographic and product dimensions, as these are implied by the geographic and product dimensions of the relevant retail markets discussed above.

<sup>5</sup> As noted above, origination and Carrier Selection are regulated as interconnection services, under Sections 57(a) to (d) of the Law.

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(and prescribable) bandwidth, over which a range of services can be provided.

Different service providers might find one or the other of leased line terminating segments and dark fiber to be more appropriate for their particular circumstances. For example, a retail service provider will only consider acquiring dark fiber loops if it has invested (or is investing) in electronic equipment needed to light the fiber and other network elements required to provide a retail end-to-end service.

The Authority considers that (taking into account other investments and payments to third parties) acquirers of either leased lines (terminating segments) or dark fiber would switch to the other if prices were to increase by up to 10%. The Authority takes the view that the choice between different forms of access reflects different investment decisions and business plans of access seekers. Therefore, it proposes to assess market power regarding the provision of high-bandwidth access to customer premises, and the appropriateness of dark fiber and wholesale leased lines (terminating segments) provided for in the Regulation.

### **Market for Access to Customer Premises (Broadband)**

The Authority has considered the appropriate wholesale market(s) upstream from the provision of retail broadband data (and Internet) services, such as DSL services. In considering the technical and functional characteristics of the services, the Authority has identified the characteristics (common and differentiating) that might justify the definition of distinct wholesale product markets.

The Authority notes that retail DSL services can be offered by service providers by acquiring wholesale DSL services or unbundled local loops (together with access to the necessary ancillary facilities, such as concentrators and co-location). The Authority considers that (taking into account other investments and payments to third parties) acquirers of either wholesale DSL or unbundled local loops would switch to the other if prices were to increase by up to 10%. The Authority takes the view that the choice between different forms of access reflects different investment decisions and business plans of access seekers. Therefore, it proposes to assess market power regarding the provision of broadband access to customer premises, and the appropriateness of wholesale DSL and unbundled local loops provided for in the Regulation.

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The Authority is not satisfied that the competitive cost of wholesale broadband services is such that service providers would respond to a price increase of up to 10% by making the network investments required to switch to dedicated access services. Further, the Authority is not satisfied that it would be feasible to make such a switch in the short to medium term.

### **Market for Access to Customer Premises (Narrowband)**

The Authority has considered the appropriate wholesale markets upstream from the provision of narrowband retail services. Some of these services are voice-specific, for which the relevant wholesale inputs are dealt with under the interconnection regime.

The Authority is not satisfied that the competitive cost of wholesale narrowband access is such that service providers would respond to a price increase of up to 10% by making the network investments required to switch to broadband. Further, the Authority is not satisfied that it would be feasible to make such a switch in the short to medium term.

Therefore, it proposes to assess market power regarding the provision of narrowband access to customer premises (for the purposes of providing Internet access), and the appropriateness of narrowband dial-up access provided for in the Regulation.

### **Market for Access to Transmission Capacity and Facilities**

The Authority has considered, in addition to wholesale access to end-user customer premises, the extent to which the provision of the defined retail markets requires additional wholesale access inputs. In particular, it has considered whether it is necessary to define a relevant wholesale market for wholesale transmission capacity and related facilities.

In addition to services such as switched transit (addressed through the interconnection regime), the Authority is of the opinion that it is necessary for service providers to be able to access unswitched (or dedicated) capacity, both nationally (between local switches) and internationally (to and beyond international gateways).

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There are a number of services available that provide the necessary functionality, including trunk segments of leased lines, and dark fiber. These services provide different levels of functionality. For example, leased lines are conditioned for traffic, while dark fiber must be lit and have the appropriate electronics added to the circuit and be conditioned for traffic before it can be used to provide retail services.

However, the Authority takes the view that the appropriate competitive price differentials reflecting these differences indicate the level of investment that the purchaser would need to make in order to carry out the same changes in functionality. Further, the steps required to make dark fiber ready to provide retail services can be taken in the immediate short term.

### **Market for Access to International Facilities**

Finally, the Authority has considered whether access to any further facilities or network elements is required, in addition to those addressed above and those within the scope of the interconnection regime, in order to provide retail international voice services.

The Authority has considered the appropriate wholesale market(s) upstream from the provision of international voice services. The Authority notes that retail international voice can be provided by service providers via access to international capacity or access to international outbound call termination facilities. The Authority considers that (taking into account other investments and payments to third parties) acquirers of either access to international capacity or international outbound call termination facilities would switch to the other if prices were to increase by up to 10%. The Authority takes the view that the choice between different forms of access reflects different investment decisions and business plans of access seekers.

Therefore, the Authority proposes to define a relevant wholesale market for access to international facilities for the assessment of market power and the appropriateness of access to international capacity and international outbound call termination facilities provided for in the Regulation.

The table below indicates how these wholesale markets relate both to the retail markets previously defined and also to the access inputs specified in Article 3.5 of the Regulation.

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**Table 1 - Relationship between retail markets, wholesale markets and access inputs.**

Retail Market	Relevant Markets for Wholesale Access	Relevant Access Inputs (from Article 3.5 of the Regulation)
High-bandwidth data/internet access	Access to customer premises (high bandwidth)	Wholesale leased lines Dark fiber
	Access to transmission capacity and facilities	Wholesale leased lines Dark fiber
Broadband data/internet access	Access to customer premises (broadband)	Unbundled local loops Main distribution frames or concentrators for bitstream access or DSL co-location Wholesale DSLs
	Access to transmission capacity	Wholesale leased lines Dark fiber
Narrowband data/internet access (retail)	Access to customer premises (narrowband)	Narrowband dial-up access (wholesale)
	Access to transmission capacity	Wholesale leased lines Dark fiber
National voice	Access to customer premises (narrowband)	Not applicable
International voice	Access to customer premises (narrowband)	Not applicable
	Access to international facilities	International capacity International outbound call termination facilities

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### Wholesale Market Definition: Summary

The wholesale markets which the Authority proposes to review for the purposes of determining whether any player possesses market power together with the relevant access inputs listed in Article 3.5 of the Regulation are as follows:

- the wholesale market for high-bandwidth access to customer premises: the relevant access inputs are wholesale leased lines and dark fiber;
- the wholesale market for broadband access to customer premises: the relevant access inputs are unbundled local loops, wholesale DSLs and main distribution frames or concentrators for bitstream access or DSL co-location;
- the wholesale market for narrowband access to customer premises (for the purposes of providing Internet access): the relevant access inputs are narrowband dial-up facilities;
- the wholesale market for access to transmission capacity: the relevant access inputs are wholesale leased lines and dark fiber; and
- the wholesale market for access to international facilities: the relevant access inputs are international outbound call termination facilities and international capacity.

There are additional relevant inputs, such as call origination and termination. However, these are not considered here as they are dealt with under Sections 57(a) to (d) of the Law.

Consultation Issue 2.

The TRA invites comment on its approach to defining wholesale markets as well as on the wholesale markets that it proposes to define.

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### 2.4 Assessment of Dominance

In this section, the Authority considers whether any operator is dominant in the wholesale markets defined.

Section 2.3.2 defined the wholesale markets and considered which of the access inputs listed in Article 3.5 of the Regulation are necessary to serve each of the wholesale markets.

Section 2.4.1 below sets out the approach to assessing dominance that the Authority proposes to take. It sets out some of the theory of dominance assessment, highlighting the particular aspects that require close attention in the telecommunications industry.

Section 2.4.2 sets out some market data relevant to the assessment of competition in the Kingdom of Bahrain.

Sections 2.4.3-2.4.7 contain the Authority's analysis and proposed conclusions on dominance in the relevant wholesale markets.

#### 2.4.1 Assessment of Dominance: General Considerations

The techniques for assessing whether or not an organization holds a dominant position are the subject of substantial research and literature. As organizations with high market share generally find it easier to operate independently of the competition, especially if their competitors are very small, market share is generally held to provide initial guidance. The basic rule of thumb in a number of jurisdictions, for example, the European Union, is that market share above 50% gives rise to a presumption of dominance, whilst a market share of less than 40% gives rise to a presumption of non-dominance.

However, a number of other factors must be taken into account. For example, if there are very low barriers to entry and exit, an organization with high market share may not enjoy a dominant position, as its commercial activity is always constrained by the risk of competitive entry.

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When assessing market power in the telecommunications industry, there are five types of barriers to entry that draw particularly close attention. These are sunk costs, economies of scale, economies of scope, economies of density and network effects.

“Sunk costs” are costs that must be incurred to enter a market but cannot be recovered on exit. Investment in telecoms network infrastructure, particularly the local loop, is widely considered to involve high levels of sunk costs.

“Economies of scale” (where average costs per unit of output decrease as output increases) are features of some elements of telecoms networks. For example, switching and transmission services all feature strong economies of scale. The need to achieve economies of scale can act as a barrier to entry, which is one of the reasons why market entrants adopt incremental market entry strategies, and therefore the rate at which competition develops in these services is usually very slow.

“Economies of scope” refers to the phenomenon where average costs per unit of output decrease with the number of services or functions offered. Economies of scope are prevalent in the telecoms industry: an operator providing voice and internet access, for example, will have lower costs per unit of traffic than an operator providing just one service, other things being equal. Economies of scope can act as a barrier to entry as a new operator offering a limited range of services will experience a cost disadvantage relative to an established competitor providing a broader range.

Markets experience “economies of density” when costs decline as the physical or geographic density of users increases. Telecoms access networks experience economies of density as loop lengths (and hence infrastructure costs) are lower when subscribers are in close proximity to each other compared with situations where they are more dispersed. Economies of density can act as a barrier to entry for providing alternative access facilities, as a new operator cannot obtain the level of subscriber density necessary to compete cost-effectively with established competitors.

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“Network effects” is the phenomenon whereby the value of a network to its subscribers rises more than proportionately with the number of subscribers. Without interconnection, members of different networks would not be able to communicate with each other. Without appropriate regulatory remedies to ensure inter-operability, this would act as a strong barrier to entry for a new entrant who, by definition, would start with a small user base in competition with an established player with a large user base.

Whilst these are amongst the most important contributors to market power in the telecoms industry, other factors must be considered. A more comprehensive list of criteria (as set out in the Market Power Determination referred to above) is as follows:

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

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- ease of market entry (including the level of sunk costs).

The Authority considers that the use of all or some of these criteria should be adapted to the particular circumstances in which a market power assessment is being made. The Authority considers that certain factors can be determinative of dominance *per se*, whereas other factors may be used to strengthen or to add weight to an assessment of dominance in circumstances where the analysis of particular factors is inconclusive.

If there is strong countervailing buyer power, this may be sufficient to conclude that there is no dominance, even if all other factors suggest a different conclusion. However, there is no evidence that countervailing buyer power provides a significant constraint on Batelco's power in wholesale access markets. However, it is possible that this situation may change in the future.

The next section provides a broad overview of the state of competitive development in the Kingdom.

### 2.4.2 Competition in the Kingdom of Bahrain: Overview

In deciding which factors should be analyzed to assess dominance in the relevant wholesale markets, the Authority notes that Bahrain's telecommunications sector is in its early stages of liberalization. The mobile sector was opened in late 2003 when MTC Vodafone (Bahrain) ("MTC") commenced the provision of mobile services in competition with Batelco. With the exception of mobile services, the Bahrain telecommunications sector was fully liberalized from 1 July 2004. Prior to MTC's entry to the market, Batelco was the sole provider of fixed and mobile telecommunications services in Bahrain. As such, Bahrain's telecommunications sector is characterized by the ubiquity of Batelco across all market segments, the emergence of MTC as a second mobile operator and a number of new entrants which are currently establishing their business activities across all major market segments with the exception of mobile.

Batelco is the only licensed operator currently in operation, which already provides, or is able to provide access to, all of the items specified in Article 3.5 of the Regulation. The other fixed network licensees (because of their very early stage of development, the first having only been issued licenses in May 2005) have not yet completed deployment of

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telecommunications infrastructure. They are therefore not in a position to provide access of the same scale and ubiquity as Batelco.

The overall size of Batelco is a significant factor for assessing dominance in all of the wholesale markets. Batelco's Consolidated Financial Statement for the year ending 31 December 2004 shows that its gross turnover for that year from its business, telecommunications and information services was BD203,764,000, and that its gross profit for that year was BD82,282,000 (40.4% of gross turnover). In addition, Batelco is the largest company listed on the Bahrain Stock Exchange by market capitalization. Its market capitalization as at 30 September 2005 was BD1,250,000,000 as reported by the Bahrain Stock Exchange in its September Monthly Trading Bulletin. This market data suggests that the overall size of Batelco is a significant factor in an assessment of Batelco's market power and is consistent with a finding that Batelco is dominant in the relevant wholesale markets.

A pervasive theme across much of the Authority's analysis of dominance in the identified wholesale markets is Batelco's unique position in Bahrain's telecommunications sector. This is evidenced by the structure of telecommunications operator licenses issued by the Authority, which is discussed below.

The ownership and operation of telecommunications infrastructure and the provision of telecommunications services in Bahrain is subject to the grant of licenses by the Authority pursuant to the Law. The Authority currently issues nine different types of licenses. Of these licenses there are only three which effectively enable the licensee to own and operate telecommunications facilities to which Bahrain's new licensees seek access. These relevant "telecommunications infrastructure" licenses are the following:

- national fixed services ("NFS") license;
- mobile telecommunications ("Mobile") license; and
- international telecommunications facilities ("IF") license.

It is noted that public access mobile radio ("PAMR") and paging licenses also enable license holders to own and operate telecommunications infrastructure. However, access to such infrastructure is not generally sought by new entrants. In any case, Batelco is the only holder of PAMR and paging licenses granted by the Authority. Only those operators that have been granted the above "infrastructure" licenses are

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capable of providing access. That is, it is only these licensees which would be authorized to own and operate the telecommunications networks' elements and telecommunications facilities to which access is provided. The following table summarizes the current holders of the relevant "telecommunications infrastructure" licenses granted by the Authority.

<b>Table 2 – Telecommunications Infrastructure Licenses Issued by the Authority as at 4 October 2005</b>			
<b>Licensee</b>	<b>NFS License</b>	<b>Mobile License</b>	<b>IF License</b>
Batelco	Yes	Yes	Yes
Lightspeed Communications W.L.L.	Yes	No	No
Amwaj Telecom S.P.C Osos Property Developers ("Amwaj")	Yes	No	Yes
MTC	No	Yes	Yes
Mena Broadband Services W.L.L ("MENA")	No	No	Yes
Northstar Technology Company W.L.L ("Northstar")	No	No	Yes
FLAG Telecom Group Limited-Bahrain Branch Office	No	No	Yes
Viacloud W.L.L.	No	No	Yes
Kasiopia Net Com – KNC (Bahrain)	No	No	Yes
2Connect W.L.L.	Yes	No	No
Kalaam Telecom Bahrain B.S.C	Yes	No	No
Orbit Communications Company W.L.L.	No	No	Yes

The above table shows that Batelco has been granted all three of the "telecommunications infrastructure" licenses necessary to provide access. The other NFS licenses have been granted by the Authority in

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May 2005 and as such the licensees are in their very early stages of development. This indicates that Batelco holds a unique and unrivalled market position.

In the discussion that follows, the Authority has examined each of the identified wholesale markets to assess whether Batelco can be considered to hold a dominant position. This examination focuses on an assessment of market share and barriers to entry, which (linked to the overall size of Batelco) the Authority considers to be determinative of dominance.

### **2.4.3 Market for Access to Customer Premises (High Bandwidth).**

The relevant access inputs in this market are wholesale leased lines and dark fiber. The economic characteristics of supplying leased lines and dark fiber are very similar because both require trench digging, as well as duct and fiber cable (all of which involve significant sunk costs). Therefore, the Authority proposes to consider barriers to entry for both these access inputs.

#### **Wholesale Leased Lines**

Leased lines are typically used by “service” licensees (i.e., value added service (“VAS”) providers and internet service providers (“ISPs”)) to enable them to provide services to their customers, where such providers do not have their own telecommunications networks.

Batelco currently offers a range of national and international wholesale leased line services. The difference in the physical location and functionality between national and international leased lines suggests that they are not substitutable and therefore are in separate markets. However, the Authority is not concerned with this particular issue because the characteristics of the provision of either type of leased line are the same, i.e., Batelco is at present the only provider of wholesale leased lines in the market.

#### **Dark Fiber**

Access to dark fiber encompasses the making available of optical fiber capacity which while being in place is currently unused by one operator to another operator. Dark fiber is owned and operated in Bahrain pursuant to the NFS license.

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Dark fiber can be used for a wide range of applications including the provision of dedicated access, Ethernet WAN, interconnection between different networks and for conveying all types of traffic, including fixed, mobile, internet and international services over high-capacity trunk routes.

### Barriers to Entry

Leased line services are provided under the NFS license and the IF license in the case of national and international leased lines respectively. As shown in Table 2 above, Batelco holds both an NFS and IF license. Batelco is the only licensee that owns and operates leased lines and dark fiber in Bahrain and as such is the only licensee able to provide access to these services.

Barriers to entry in leased lines and fiber differ substantially according to the application. In local access, barriers to entry will be very high. As competition and alternative networks develop, it will become increasingly economic for new entrants to supply short fiber spurs to provide access to the highest spending corporate customers in urban regions, but this relies on metropolitan networks already having been established. New entrants may build short distance metropolitan fiber networks in the most dense business districts (as they have done in most major cities in Western Europe and the United States) but the sunk costs involved are substantial and experience shows that it will take some time. Similar considerations apply to leased lines and fiber used for long distance national, international and submarine services.

Therefore, while other existing and new entrant NFS licensees could potentially build fixed telecommunications infrastructure and provide access to leased lines and dark fiber, the Authority does not consider it likely that there would be effective competition to Batelco in the provision of access to dark fiber in the near future, given the relatively high cost of fixed infrastructure and the incumbency position of Batelco.

As Batelco is the only owner and provider of fixed network infrastructure encompassing leased lines and dark fiber in Bahrain, the Authority considers that it is the only operator capable of providing access to these services. Therefore, the Authority considers that Batelco is dominant in the supply of leased lines and dark fiber.

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As Batelco is dominant in the supply of leased lines and dark fiber, the Authority is of the view that it holds a dominant position in the wholesale market for access to customer premises (high bandwidth).

Consultation Issue 3.

The TRA invites comment on its preliminary conclusion that Batelco is dominant in the wholesale market for access to customer premises (high bandwidth).

### 2.4.4 Market for Access to Customer Premises (Broadband)

The relevant access inputs in this market are unbundled local loops, wholesale DSLs, and main distribution frames or concentrators for bitstream access or DSL co-location.

#### Local Loops

Access to local loops encompasses the making available of any part of the physical connection in a fixed telephone network from the subscriber's premises to the local exchange of one operator to another. Local loops are owned and operated pursuant to the NFS license.

As shown in Table 2 above, Batelco is one of only five operators which have been granted an NFS license. The other NFS operators have yet to establish their respective networks. Accordingly, Batelco is the only licensee that owns and operates local loops in Bahrain, and as such is the only licensee able to provide access to unbundled local loops.

Therefore, Batelco currently controls the totality of local loop infrastructure in the Kingdom of Bahrain. As discussed in detail above, this may not be sufficient by itself to declare Batelco dominant in the supply of this input, as the criteria discussed above must be used to evaluate the degree of Batelco's market power.

A local loop network is a highly capital-intensive business. The costs of developing an alternative local loop infrastructure are very high (because of the cost of ducts, cables and the need to dig roads) and largely sunk, i.e., mostly non-recoverable upon exit from the market.

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The presence of such sunk costs is likely to constitute a strong barrier to entry.

The local loop is also characterised by strong economies of density, as loop lengths (the primary determinant of cost) are closely related to the physical proximity of customers to one another. To be cost-competitive with Batelco, a new entrant would need to establish a similar level of customer density within a short period of time. The experience from other countries, such as Western Europe and North America, has shown that alternative access facilities develop slowly and on an incremental basis. This suggests that it is unlikely that any entrant would be able to obtain the requisite density for cost-competitiveness for a number of years.

Services provided over the local loop also experience economies of scope since local loops can be used to provide voice and data/internet access services. Such economies of scope are likely to constitute barriers to entry for alternative networks, which would need to supply the full range of services offered by Batelco in order to be cost-competitive.

As a result of Batelco's high market share and the significant barriers to entry to alternative local loop infrastructure, the Authority is satisfied that Batelco is dominant in the supply of local loops.

As market entry occurs, it is possible, at least in theory, for competitive conditions to change sufficiently for the Authority to re-evaluate any conclusion on market dominance it may reach as a result of the current Consultation. Local loop entry may, for example, occur in metropolitan districts and for high-spending customers. This might lead to market definitions and conclusions on market power being altered in the future if significant differences develop in the degree of competition in different geographic regions or for different types of customer.

While other existing and new entrant NFS licensees could potentially build fixed telecommunications infrastructure and provide access to unbundled local loops, the Authority does not consider it likely that there would be effective competition to Batelco in the provision of access to unbundled local loops in the foreseeable future. This view reflects the relatively high cost of fixed infrastructure and the incumbency position of Batelco.

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The Authority considers that, as Batelco is the only owner and provider of local loops, it is the only operator capable of providing access to unbundled local loops. Therefore, the Authority considers that Batelco is dominant in the supply of local loops.

### **Wholesale DSLs**

Access to wholesale DSLs encompasses the provision of service whereby licensed operators such as ISPs may offer telecommunications services such as an Internet access service to end-customers by using the direct exchange lines of another operator. Direct exchange lines are owned and operated pursuant to the NFS license.

As shown in Table 2 above, Batelco is one of only five operators that have been granted an NFS license. The other NFS operators have yet to establish their respective networks. Accordingly, Batelco is the only licensee that owns and operates direct exchange lines in Bahrain. While other existing and new entrant NFS licensees could potentially build fixed telecommunications infrastructure and provide access to wholesale DSLs, the Authority does not consider it likely that there would be effective competition to Batelco in the provision of access to wholesale DSLs in the foreseeable future. This view reflects the relatively high cost of fixed infrastructure and the incumbency position of Batelco.

Batelco has developed a commercial wholesale DSL offer in compliance with section 40 of the Law. As such, Batelco is the only operator in a position to offer access to wholesale DSLs.

In theory, alternative operators could provide a competitive DSL service over their own facilities. However, for similar reasons as those discussed above in the context of the local loop, entry barriers to access are likely to prove insurmountable for the foreseeable future.

DSLs can also be supplied by new entrants using unbundled local loops and co-location. If Batelco provided unbundled local loops (as a result of a commercial decision or a regulatory obligation) alternative operators would be able to provide DSLs. However, the ability to do so depends on these new entrants having their own network infrastructure, including multiplexer equipment and backhaul capabilities. For similar reasons as those discussed above, the barriers to entry for such facilities are likely to be high, at least in the initial stages. The Authority is therefore of the view that, for the foreseeable future, competition in the provision

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of DSLs will be very limited. However, as the market matures and if local loop unbundling proves effective in addressing the access bottleneck, it may be necessary for the Authority to reconsider its assessment.

The Authority considers that the exclusive ownership and provision of wholesale DSLs by Batelco, combined with the high barriers to entry and the absence of countervailing buyer power, indicate that Batelco is dominant in the supply of wholesale DSLs.

### **Main Distribution Frames or Concentrators for Bitstream Access or DSL Co-location**

Access to main distribution frames (“MDFs”) or concentrators for bitstream access or DSL co-location encompasses access to network facilities and equipment which are located on premises of the network operator. Such facilities and equipment are owned and operated in Bahrain pursuant to the NFS license.

As shown in Table 2 above, Batelco is one of only five operators that have been granted an NFS license. The other NFS operators have yet to establish their respective networks. Accordingly, Batelco is the only licensee that owns and operates such MDFs and concentrators in Bahrain and as such is the only licensee able to provide access to these particular items.

Access to MDFs, concentrators and co-location is directly linked to Batelco’s access infrastructure. Operators using Batelco’s local infrastructure will require such access, whilst those providing their own access infrastructure will not. It is possible that new entrants could use distant or virtual co-location in an adjacent building (for example via external tie-cables or other means), but this would involve significant additional costs and therefore would only be likely to be considered if co-location space is exhausted or if access is frustrated by some other means.

Therefore, for the assessment of dominance in access to MDFs, concentrators and bitstream should be linked to the assessment of dominance regarding Batelco’s local loop infrastructure.

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While other existing and new entrant NFS licensees could potentially build fixed telecommunications infrastructure and provide access to MDFs and concentrators, the Authority does not consider it likely that there would be effective competition to Batelco in the provision of access to such facilities and equipment in the foreseeable future. This view reflects the relatively high cost of fixed infrastructure and the incumbency position of Batelco.

The Authority considers that, as Batelco is the only owner and provider of fixed network infrastructure encompassing MDFs and concentrators, it is the only operator capable of providing access to such facilities.

As explained above, the Authority is of the view that Batelco is dominant in the provision of local loops, and therefore the Authority also considers that Batelco is dominant in the provision of access to MDFs, concentrators and co-location.

Since the Authority concludes that Batelco is dominant in the supply of local loops, wholesale DSLs and main distribution frames or concentrators for bitstream access or DSL co-location, it proposes to conclude that Batelco is dominant in the wholesale market for broadband access to customer premises.

Consultation Issue 4.

The TRA invites comment on its preliminary conclusion that Batelco is dominant in the wholesale market for access to customer premises (broadband).

### **2.4.5 Market for Access to Customer Premises (Narrowband)**

The relevant access input in this market is narrowband dial-up access.

#### **Narrowband Dial-Up Access**

Narrowband dial-up access is provided in the Kingdom today through both fixed and mobile networks. Currently, Batelco offers narrowband Internet access over its fixed line infrastructure and provides by far the greatest part of such access in the Kingdom.

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As explained above, the Authority is currently of the view that fixed and mobile retail services operate in separate markets, although it recognizes that this has the potential to change over time. By extension, the Authority concludes that fixed and mobile narrowband dial-up access operate in separate markets.

To provide service in competition with Batelco, an operator must have access to its own local loop infrastructure. For reasons given in the section on local loops above, barriers to entry are high and the Authority therefore sees little chance that significant competition will develop in the near future.

For these reasons, the Authority is of the view that Batelco holds a dominant position in the supply of narrowband dial-up facilities. Consequently, the Authority proposes to conclude that Batelco is dominant in the wholesale market for narrowband access to customer premises.

Consultation Issue 5.

The TRA invites comment on its preliminary conclusion that Batelco is dominant in the wholesale market for access to customer premises (narrowband).

### 2.4.6 Market for Access to Transmission Capacity and Facilities

The relevant access inputs in this market are wholesale leased lines and dark fiber. As explained above in the section on high capacity access to customer premises, the Authority is of the view that Batelco is dominant in the supply of wholesale leased lines and dark fiber. It therefore also proposes to conclude that Batelco is dominant in the wholesale market for access to transmission capacity and facilities.

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Consultation Issue 6.

The TRA invites comment on its preliminary conclusion that Batelco is dominant in the wholesale market for access to transmission capacity and facilities.

### **2.4.7 Market for Access to International Facilities**

The relevant access inputs in this market are international outbound call termination facilities and international capacity.

#### **International Outbound Call Termination Facilities**

Access to international outbound call facilities encompasses access to a service for the transportation and termination of international telephone calls originating in Bahrain to telephone numbers in locations outside Bahrain. In particular, Batelco offers this service on commercial terms within its Reference Offer under the description “wholesale international outbound switched service”.

Batelco provides this access service using telecommunications network elements and facilities which it operates under its IF license. As shown above in Table 2, Batelco is one of nine operators that have been issued with this type of license. As such, other operators have the potential to compete with Batelco to provide access to relevant network elements and facilities. However, Batelco is currently the only provider of access to international outbound call termination facilities. Its near 100% market share strongly suggests that Batelco is dominant in this market, but in order to establish dominance it is necessary to identify whether there are any competitive constraints such as barriers to entry or countervailing buyer power that might limit its market power.

The provision of international outbound call termination facilities involves the establishment of international gateway switching facilities and interconnection agreements covering all possible international destinations. Similarly to the discussion on transit above, the establishment of international gateway switching facilities involves significant sunk costs but experience from advanced liberalized markets has shown that these costs are generally low relative to revenue. Therefore, in the long term, the need to establish international gateway switching facilities is unlikely to constitute a significant barrier to entry.

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However, the need to establish relations with other carriers possibly constitutes a more significant barrier to entry, as physical links (via submarine cable, international leased lines or satellite links) and commercial agreements covering all possible international routes would need to be established. Any new entrant would require a considerable amount of time to build such relations and would enjoy considerably less bargaining power than Batelco in establishing commercial agreements. Consequently, the Authority expects that new entrants will need to purchase international termination from Batelco, which would function as the supplier of last resort for a considerable period of time. Experience from other markets has shown that, as competition develops, markets need to be analyzed on a route-by-route basis. However, under current circumstances, the Authority considers that Batelco is dominant in the supply of international outbound termination for all international routes.

### International Capacity

Access to international capacity encompasses access to a range of network elements and facilities for the transportation of traffic to and from Bahrain. International capacity services comprise a range of international bandwidth services, including leased satellite bandwidth, satellite uplink and downlink, and leased submarine cable bandwidth.

The ownership and operation of relevant telecommunications networks elements and facilities necessary to provide access to international capacity is pursuant to the IF license issued by the Authority. As shown above in Table 2, Batelco is one of nine operators which have been issued an IF license. As such, all nine licensees are potentially able to provide access to international capacity.

Among these nine licensees, Batelco together with Northstar and MENA currently offer access to international capacity on commercial terms. Of these three, only Batelco is in a position to offer access to international capacity over satellite, cross-border cable and submarine cable. Northstar and MENA are limited to satellite only and, as new players in this market, could not have established significant market share. The Authority is satisfied that the market share currently attributable to Northstar and MENA is not significant relative to that of Batelco.

With respect to the other six IF licensees, none currently offer access to international capacity on competitive commercial and technical terms.

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However, the Authority considers that the competitive situation in this market could change, given the relatively lower overall cost of international telecommunications infrastructure compared with national fixed infrastructure.

The ability to provide international capacity through cross-border cables, submarine cables and satellite involves very high sunk costs, leading to significant barriers to entry. The extent to which these barriers can be overcome is likely to vary between different types of international routes. For high capacity routes, international experience has demonstrated strong potential for a competitive wholesale market, as the value of traffic is sufficient to overcome the high sunk costs. For certain low capacity routes (otherwise known as “thin” routes) hubbing is possible, whereby traffic takes an indirect route, via a high capacity hub, to aggregate traffic. Again, international experience has shown that a competitive market can develop. For some thin routes, hubs are not readily available and barriers to entry may be more substantial.

This suggests that, as the market develops, it may be necessary to distinguish between different routes for the provision of international capacity. However, today, on most routes, the amount of international capacity available provided by competitors to Batelco is inadequate in relation to total demand, and therefore Batelco is likely to operate as the supplier of last resort. Furthermore, it is by no means certain that demand will be sufficient to justify entry by the number of players required to challenge Batelco’s market position effectively in the foreseeable future. On some international routes, where a cross-border cable is possible, it is likely that new entrants will depend on leased lines supplied by Batelco, so the competitiveness of these routes will depend on the supply conditions for the services in question.

On the basis that Batelco is the main provider of access to international capacity over different platforms, and given also the high barriers to entry and the absence of countervailing buyer power, the Authority proposes to conclude that Batelco is dominant in this market. However, the Authority recognizes that this situation has the potential to change in due course, at least for some routes.

Since the Authority proposes to conclude that Batelco is dominant in the supply of international outbound call termination and international capacity, it proposes to conclude that Batelco is dominant in the wholesale market for access to international facilities.

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## **Dominance in Wholesale Markets**

Consultation Issue 7.

The TRA invites comment on its preliminary conclusion that Batelco is dominant in the wholesale market for access to international facilities.

### **2.5 Conclusion**

Based on the analysis set out in this Consultation, the Authority considers that Batelco holds a dominant position in the following relevant markets in the Kingdom of Bahrain:

- the wholesale market for access to customer premises (including high-bandwidth, broadband and narrowband access);
- the wholesale market for access to transmission capacity; and
- the wholesale market for access to international facilities.

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## Dominance in Wholesale Markets

### 3 Summary

The TRA invites comments on the proposals in this document. They are summarized below in Table 3.

<b>Table 3 - Summary of Consultation Issues</b>
The TRA invites comment on its approach to defining retail markets and the relevant geographic market for the purposes of analyzing wholesale markets for the presence of dominance. Respondents should bear in mind that the Authority's views on retail markets should be interpreted in the current context only and do not necessarily represent its views on whether they form separate markets in competition law terms. (section 2.3.1).
The TRA invites comment on its approach to defining wholesale markets as well as on the wholesale markets that it proposes to define (section 2.3.2).
The TRA invites comment on its preliminary conclusion that Batelco is dominant in the wholesale market for access to customer premises (high bandwidth) (section 2.4.3).
The TRA invites comment on its preliminary conclusion that Batelco is dominant in the wholesale market for access to customer premises (broadband) (section 2.4.4).
The TRA invites comment on its preliminary conclusion that Batelco is dominant in the wholesale market for access to customer premises (narrowband) (section 2.4.5).
The TRA invites comment on its preliminary conclusion that Batelco is dominant in the wholesale market for access to transmission capacity and facilities (section 2.4.6).
The TRA invites comment on its preliminary conclusion that Batelco is dominant in the wholesale market for access to international facilities (section 2.4.7).