Determination of Significant Market Power and Dominance in International Connectivity Markets

Draft Determination

Issued by the Telecommunications Regulatory Authority

29 October 2019

Ref: MCD/10/19/066

Public Version

*(Confidential information has been replaced by **[✂]**)*

Purpose: To define the relevant retail and wholesale markets for international connectivity services in the Kingdom of Bahrain and to assess competition in those markets.

Instructions for submitting a response

The Telecommunications Regulatory Authority (the 'Authority') invites comments on this draft Determination from all interested parties. Comments should be submitted to the Authority by 4pm, 28 November 2019.

Responses should be sent to the Authority preferably by email (or by post) to the attention of:

Director, Market and Competition Department
mcd@tra.org.bh
Telecommunications Regulatory Authority
P.O. Box 10353
Manama
Kingdom of Bahrain
Fax: +973 1753 2125

Responses should include:

- the name of the company/institution/association etc.;
- the name of the principal contact person;
- full contact details (physical address, telephone number, fax number, and email address); and
- in the cases of responses from individual consumers, names and contact details.

The Authority expects the responses to follow the same structure as set out in the draft Determination and the Annex. The Authority also invites respondents to substantiate their responses to the questions raised, wherever possible by providing factual evidence to support their responses.

In the interest of transparency, the Authority will make all submissions received available to the public, subject to the confidentiality of the information received. The Authority could allow one round of cross-submissions, where respondents who provided a submission on the draft Determination are able to provide a cross-submission in which they can comment on the submissions of other parties. The Authority will ensure that public versions of the submissions are available on the Authority's website with sufficient time to permit cross-submissions.

The Authority will evaluate requests for confidentiality in line with relevant legal provisions and the Authority's published guidance on the treatment of confidential and non-confidential information.[1]

Respondents are required to clearly mark any specific information included in their submission which is considered confidential. Where such confidential information is included, respondents are required to provide both a **confidential** and **non-confidential** version of their submission. If a submission is marked confidential in its entirety, reasons for this should be provided. The

[1] The Authority, "A Guidance Paper issued by the Telecommunications Regulatory Authority on its treatment of Confidential and Non-confidential Information", Guidance Paper No. 2 of 2007, 10 September 2007.

Authority may publish or refrain from publishing any document or submission at its sole discretion.

Once the Authority has received and considered submissions on this draft Determination, the Authority will issue a final Determination, together with the Reasoning for the Authority's findings.

DETERMINATION OF SIGNIFICANT MARKET POWER

HAVING REGARD TO THE LEGISLATIVE DECREE NO. 48 OF 2002 PROMULGATING THE TELECOMMUNICATIONS LAW, THE COMPETITION GUIDELINES ISSUED BY THE TELECOMMUNICATIONS REGULATORY AUTHORITY OF THE KINGDOM OF BAHRAIN ON 18 FEBRUARY 2010, ALL ADMISSIBLE EVIDENCE AND THE SUBMISSIONS MADE BY INTERESTED PARTIES, THE TELECOMMUNICATIONS REGULATORY AUTHORITY OF THE KINGDOM OF BAHRAIN HEREBY MAKES THE FOLLOWING DETERMINATION:

a. For the reasons set out in the Annex to this Determination, the Telecommunications Regulatory Authority of the Kingdom of Bahrain (the 'Authority') has defined the following relevant market:

    i. the retail market for the supply of International Connectivity Services.

b. Furthermore, the Authority has identified and determines that:

    i. The retail market for International Connectivity Services is not susceptible to ex-ante regulation.

c. This Determination will be reviewed when market conditions, as determined by the Authority, warrant it.

d. This Determination is without prejudice to the Authority's powers under the Telecommunications Law, promulgated by the Legislative Decree No.48 of 2002, the Competition Guidelines, issued by the Authority on 18 February 2010, the Access Regulation, approved by Regulation No. 1 of 2005, and the outcome of any on-going or future investigation, consultation or other regulatory process or measure carried out pursuant to such powers, all or any of which may result in the application of different terms and/or findings than those of this Determination, including the determination and definition of new markets and the designation of significant market power and dominance.

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

f. This Determination supersedes the Determination of significant market power in the retail market for international leased lines (Market 6b) issued by the Authority on 3 June 2008.

Signed on

[●]

Nasser bin Mohamed Al-Khalifa

Acting General Director

Telecommunication Regulatory Authority

Manama, Kingdom of Bahrain

DETERMINATION OF DOMINANCE

HAVING REGARD TO THE LEGISLATIVE DECREE NO. 48 OF 2002 PROMULGATING THE TELECOMMUNICATIONS LAW, THE COMPETITION GUIDELINES ISSUED BY THE TELECOMMUNICATIONS REGULATORY AUTHORITY OF THE KINGDOM OF BAHRAIN ON 18 FEBRUARY 2010, ALL ADMISSIBLE EVIDENCE AND THE SUBMISSIONS MADE BY INTERESTED PARTIES, THE TELECOMMUNICATIONS REGULATORY AUTHORITY OF THE KINGDOM OF BAHRAIN HEREBY MAKES THE FOLLOWING DETERMINATION:

a. For the reasons set out in the Annex to this Determination, the Telecommunications Regulatory Authority of the Kingdom of Bahrain (the 'Authority') has defined the following relevant market:

    i. The wholesale market for the supply of International Connectivity Services.

b. Furthermore, the Authority has identified and determines that:

    i. Bahrain Telecommunications Company B.S.C ("Batelco") has a Dominant Position in the wholesale market for International Connectivity Services.

c. This Determination will be reviewed when market conditions, as determined by the Authority, warrant it.

d. This Determination is without prejudice to the Authority's powers under the Telecommunications Law, promulgated by the Legislative Decree No.48 of 2002, the Competition Guidelines, issued by the Authority on 18 February 2010, the Access Regulation, approved by Regulation No. 1 of 2005, and the outcome of any on-going or future investigation, consultation or other regulatory process or measure carried out pursuant to such powers, all or any of which may result in the application of different terms and/or findings than those of this Determination, including the determination and definition of new markets and the designation of significant market power and dominance.

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

f. This Determination supersedes the Determinations of Dominance for Wholesale International Services issued by the Authority on 20 February 2013.

Signed on

[●]

Nasser bin Mohamed Al-Khalifa

Acting General Director

Telecommunication Regulatory Authority

Manama, Kingdom of Bahrain

Annex 1 – Reasoning for the draft Determination

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List of acronyms and definitions

Batelco	Bahrain Telecommunications Company B.S.C
BD	Bahraini Dinar
BIX	Bahrain Internet Exchange
BNET	The legally separate fixed network business of Batelco and holder of and holder of the Fixed Telecommunications Infrastructure Network Licence
DWDM	Dense Wavelength Division Multiplexing
EC	European Commission
EU	European Union
EWA	Electricity and Water Authority
FAS	Facilities Access Service
FOG	Fibre Optic Gulf
GBI	Gulf Bridge International
GCC countries	Gulf Cooperation Council countries
GCCIA	Gulf Cooperation Council Interconnection Authority
IDD	International direct dialing
IFC	International FALCON Connection
IFL	International Facilities Licence
IP	Internet Protocol
IPLC	International private leased circuits
IRU	Indefeasible Rights of Use
ISL	International Service Licence
KFC	King Fahd Causeway
MMR	Meet-Me-Room
MPLS	Multi-Protocol-Label-Switching
NRA	National Regulatory Authorities
NTP4	Fourth National Telecommunications Plan
OLO	Other Licensed Operator
OSI	Open Systems Interconnection
OWS	Optical Wavelength Service
POP	Point Of Presence
RO	Reference Offer
RAIO	Reference Access and Interconnection Offer
SDH	Synchronous Digital Hierarchy
SLTE	Submarine line terminal equipment
SMP	Significant Market Power
SMR	Strategic Market Review
SSNIP	Small but Significant Non-transitory Increase in Price

TRA	Telecommunications Regulatory Authority of the Kingdom of Bahrain
WDC	Wholesale Data Connection
VIVA	VIVA Bahrain BSC
VPN	Virtual Private Network
Zain	Zain Bahrain B.S.C.

1 Introduction and purpose of this Annex

1. This Annex sets out the underlying reasoning for the adopted market definitions and conclusions regarding SMP and dominance in the supply of international connectivity services at the retail and wholesale levels in Bahrain. The Annex identifies the relevant markets in which international connectivity services are supplied at the retail and wholesale level, and assesses whether any Licensed Operator has SMP or holds a Dominant Position in those markets.

2. An SMP designation in respect of retail services and a dominance designation in respect of wholesale services provide the legal basis whereby regulatory obligations deemed necessary and/or mandated by the provision of the Telecommunications Law promulgated by the Legislative Decree No. 48 of 2002 (the “Telecommunications Law”) can be defined and implemented.

2 Background to this draft Determination

3. In this background section, the Authority provides an overview of the following:

    a. the Authority's previous dominance / SMP determinations relating to international capacity;

    b. the purpose of this Determination;

    c. relevant international connectivity services;

    d. the supply chain for international connectivity services; and

    e. the international cable systems connecting to Bahrain.

2.1 The Authority's previous dominance / SMP determinations relating to international capacity

4. The Authority has conducted three previous market reviews covering international connectivity (capacity).

    a. The Authority first considered the market for wholesale international services in Bahrain in its 2006 Dominance Determination in Wholesale Markets by Batelco ("2006 Dominance Determination")

    b. The Authority then considered the market for retail international services as part of its 2008 Determination of Significant Market Power in Certain Relevant Retail markets ("2008 Dominance Determination").

    c. Finally, the Authority updated its analysis of the relevant wholesale markets in its 2013 Dominance Determination for Wholesale International Services ("2013 Dominance Determination").

5. The Authority's three Determinations are summarised below.

6. In the 2006 Dominance Determination, the Authority defined a wholesale market for access to international facilities[2], and concluded that Batelco was dominant in the market[3]. This was on the basis that Batelco was dominant in the supply of both of the relevant inputs for this wholesale market, namely outbound call termination facilities and international capacity. As a consequence, Batelco was obligated to include in its Reference Offer the terms of access for a number of wholesale services that fell within the market. These included international private leased circuits ("IPLCs") and wholesale international direct dialling ("IDD") services.

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2 The Authority "Dominance in Wholesale Markets by Batelco", 22 January 2006, page 5.

3 ibid, page 9.

7. In its 2008 Determination, the Authority defined a retail market for international leased lines[4], and concluded that Batelco had SMP in that market. Within this Determination, Batelco's market share of retail international leased lines was reported to be greater than 90%. The Authority then concluded that the wholesale regulation introduced as a result of the 2006 Dominance Determination was not yet effective at "neutralising Batelco market power"[5].

8. In the 2013 Dominance Determination, the Authority defined the following wholesale markets, with both encompassing services to all international destinations:

    a. the wholesale market for the supply of international capacity from locations within Bahrain; and

    b. the wholesale market for the conveyance and termination of international outbound calls.

9. The Authority concluded that no operator was dominant in either of the wholesale markets defined above, and as a result, Batelco is no longer obligated to offer wholesale IPLC services and wholesale IDD services. The Authority reached this conclusion following a forward-looking review, which took into account existing competition, as well as recent (in 2013) developments by competitors to develop alternative sources of international capacity into and out of Bahrain.

10. However, the Authority's conclusion that no operator held a dominant position in these markets was conditional on the continued availability of access to key inputs that are used to supply services in these wholesale markets. In particular, the review identified the availability of domestic wholesale leased lines, duct access (and the associated facilities required to utilise those ducts for the purposes of supplying international capacity), and the International Falcon Connection (IFC) service, on fair, reasonable and non-discriminatory terms as conditions upon which its finding was based.

11. The Authority specified, in its conclusion, that in the event that the above conditions no longer hold, it would reconsider its conclusions.

2.2 The purpose of this draft Determination

12. Given the elapsed time since the Authority conducted its previous review, it sets out in this Annex, its consideration of whether the findings from the 2008 and 2013 Determinations remain valid, focusing on the market defined by the Authority in 2013 for the supply of international capacity.[6] The Authority has commenced this review for a number of reasons:

    a. Government policy, as set out in the Fourth National Telecommunications Plan (NTP4), has directed the Authority to further address potential concerns in the

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[4] The Authority "Significant Market Power in Certain Relevant Retail Markets", 3 June 2008, page 3.

[5] Ibid, page 51.

[6] The Authority does not consider, in this review, the wholesale market for the conveyance and termination of international outbound calls. In 2016, the Authority conducted a separate review which found that no licensee has SMP in the retail market for outbound international calls from Bahrain.

markets for international connectivity, with a view to promoting Bahrain as a regional content and data hub;

b. The Authority has, since the 2013 Determination, received a number of complaints in relation to the provision of international connectivity services,[7] which, taken at face value, may suggest that the markets concerned are not delivering the desired outcomes; and

c. It is generally accepted best practice to review the state of competition in relevant markets at least every 3-5 years.

13. The Authority now describes the first two of these factors in more detail.

2.2.1 Fourth National Telecommunications Plan

14. The Fourth National Telecommunications Plan ("The Plan", "NTP4") was issued on the 6th of May 2016[8]. The Plan sets out key policies for the telecommunications sector going forward, recognising that the sector should play a central role in attracting new investment to the Kingdom, promoting Bahrain as an ICT and business hub.

15. One of the policy areas considered by NTP4 is the provision of international connectivity services. In particular, it addresses two main topics in this area:

a. The state of international connectivity to and from Bahrain, including the ability of licensees to access such international connectivity.

b. The state of the arrangements for internet peering in the Kingdom and specifically, the future role of the Bahrain Internet Exchange (BIX) as an internet exchange point.

16. To address the first topic, NTP4 required the Authority to conduct a strategic review of the entire supply chain of international capacity, including the provision of cross-border dark fibre. The Authority completed this review in 2018, and identified a number of possible bottlenecks in the supply chain that may constrain the market for international connectivity and which should be considered further in a formal market review process and subject to public consultation. These included the:

a. Cost of national connectivity to and cross-connects at submarine cable landing stations.

b. Constraints created by the licensing regime on the ability of cable operators to sell international capacity directly to other parties in Bahrain;

c. The cost and degree of choice in domestic capacity to reach landing stations; and

d. The level of investment in new cables landing in Bahrain.

17. This current market review is therefore, a formal analysis of the relevant markets for international connectivity, in which the Authority applies its market review process (as described in more detail in the Authority's Competition Guidelines) and international best practice (e.g. the Three Criteria Test) to consider the extent to which competition is effective in these markets. This takes into account the Authority's previous Dominance and SMP Determinations in international connectivity markets. In so doing, the Authority considers

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7 These complaints are further discussed in Section 2.2.2 below.

8 Available at http://www.tra.org.bh/media/document/NTP4_EnglishTranslation_May20161.pdf.

the factors listed above, although it notes that the remedy toolkit at its disposal within a market review cannot deal directly with some of these. For example, changes to the licensing regime are beyond the scope of this review (although the impact of the licensing regime on competitive conditions is taken into account). However, by considering these bottlenecks in a formal market review and ensuring that licensees can access redundant and resilient international capacity at reasonable prices, the Authority believes it can have a beneficial impact on the Kingdom's ability to develop as a regional business and ICT hub.

18. The second issue included in NTP4's key policy measures on international connectivity in Bahrain (i.e., the future role of BIX) is not within the scope of the current market review.

2.2.2 Complaints received by the Authority in relation to international connectivity services

19. Since the publication of the 2013 Determination, the Authority has become aware, through meetings with Licensed Operators and various responses to Article 53 Information Request, of several issues in respect of international connectivity services. These issues have covered both retail services (with such issues often focusing on the price terms of international connectivity services) and wholesale services, such as, for example, around the ability of licensees to gain access to the infrastructure of other licensees for establishing international connectivity.

20. It is not part of this market review for the Authority to rule on those complaints or to set out in detail the nature of such complaints. However, where such complaints have been raised formally, the Authority has sought to resolve those. ***[✂]***.

21. It is not necessarily the case that complaints would only arise in non-competitive markets. Nevertheless, the Authority does consider that some of the complaints raised since 2013 do call into question whether the markets for international connectivity are working appropriately, consistent with the Kingdom's ambition to become a regional content and data hub. ***[✂]***. Therefore, as part of this market review the Authority is considering to what extent any licensees may hold a position of market power and, in the event that one or more licensees do, the degree to which ex ante regulation in the relevant markets may be appropriate. In so doing, the Authority is placing particular focus on the supply chain for the provision of international connectivity services, such that it is able to identify clearly any relevant bottlenecks within that supply chain and ensure that proposed remedies are proportionate and targeted at dealing with those bottlenecks.

2.3 Description of relevant services

22. Before setting out its analysis of the relevant markets, the Authority describes below the nature of international connectivity services.

2.3.1 Retail international connectivity services

23. The Authority's 2008 Determination of market power relevant to this market review focused on international leased lines. Such lines were described to be made up of two segments, a local segment which requires access to domestic infrastructure and an international segment which requires access to international capacity.[9]

24. Leased lines are, however, one of two main groups of retail services that use international connectivity.

25. The first group relates to international connectivity services that have the primary function of providing international connectivity to large customers. International connectivity services are dedicated physical or logical international links carrying a customer's traffic between its point-of-presence (for example, the customer premise) in Bahrain to a location outside of Bahrain. The technical provision of these services can vary (as indicated by different products being available for international connectivity) from IPLCs and wavelength services (Open Systems Interconnection (OSI) Layer 1) to Ethernet, VPN and MPLS products (OSI Layers 2 and 3). For simplicity and when considering the distinction, the Authority groups these services together in the remainder of this Annex, describing them as, separately, Layer 1 services and Layer 2/3 services. This is because technically, Layer 1 type services differ more significantly from Layer 2/3 type services in the type of equipment they use, while Layer 2/3 type services are provisioned using similar or the same equipment. For example, operators can use the same equipment and by means of changes in the equipment configuration (i.e. in the software of that equipment and not its physical setup), switch between Layer 2 and Layer 3 services.

Figure 1: Retail international leased lines

Retail international leased line	Open Systems Interconnection (OSI) Layer	
▪ International private leased circuits (IPLC) ▪ Wavelength	Layer 1	*Physical layer* Provides a basic physical connection over which Layers 2/3 can be established.
▪ International Ethernet / VLANs	Layer 2	*Datalink layer* Defines the protocol of a connection between two physically connected devices.
▪ International virtual private network (VPN)	Layer 3	*Network IP layer* Creates logical paths for the transmission of data between network nodes.

Source: the Authority

26. The second group of services are those that rely on international connectivity as an input for the provision of another service. As examples, the provision of retail international outbound calling services requires international connectivity as well as call termination as

[9] The Authority "Significant Market Power in Certain Relevant Retail Markets", 3 June 2008, page 23.

inputs. Retail broadband, dedicated internet access and IP transit services also require international connectivity in order to interconnect with global internet exchanges for the provision of internet services.

27. These retail services differ from the first group in that customers value international connectivity for its ability to support another service (e.g. the outbound calling service, or internet connection) rather than for the point-to-point interconnection itself. Given recent TRA Determinations in these other markets,[10] the current market review will focus on the supply of services that have the primary function of providing international connectivity to large customers.

2.3.2 Wholesale international connectivity services

28. Wholesale international connectivity services are supplied by one Licensee in Bahrain to other Licensed Operators in Bahrain so that they can, in turn, provide retail services that require international connectivity. A wholesale international connectivity service provides a dedicated international physical or logical link from the Licensed Operator's Point of Presence (or that of its retail customer) at a location in Bahrain to a location outside Bahrain. Similar to the retail international connectivity services described in the preceding section, wholesale services can be offered using different technical solutions (such as wholesale IPLC, VPN and MPLS services).

29. However, to access wholesale international connectivity, licensees do not have to purchase end-to-end wholesale international connectivity services. Instead, licensees can self-supply some or all of the elements of a wholesale service. To self-supply international connectivity, Licensed Operators in Bahrain need to access the supply chain for international connectivity services. This supply chain is discussed in the following section.

Q1. Do stakeholders agree with the retail and wholesale services considered relevant for this international connectivity market review?

2.4 The supply chain for international connectivity services in Bahrain

30. The provision of international connectivity services relies on bringing together a number of different network elements, which together can be considered as the supply chain for international connectivity in Bahrain. Licensed Operators offering international connectivity services (at both a retail and wholesale level) can, therefore, combine the self-supply of some of these elements with purchasing others from third party providers. This also means that an effective bottleneck in one part of the supply chain hampers a party's ability to offer international connectivity services.

[10] Including, for example, The Determination of Significant Market Power in the Retail Market for Outgoing International Calls from Bahrain, issued 20 April 2016 (MCD/04/16/022), and the Determination of Significant Market Power and the Determination of Dominant Position in the markets for the Provision of Broadband Internet Access from a Fixed Location, issued 27 March 2014 (MCD/03/14/018)

31. The Authority considers that, from a network perspective, the supply chain for international connectivity is made up of 4 key elements.[11]

    a. National access to the POP for international connectivity (e.g. domestic backhaul, from the customer site)

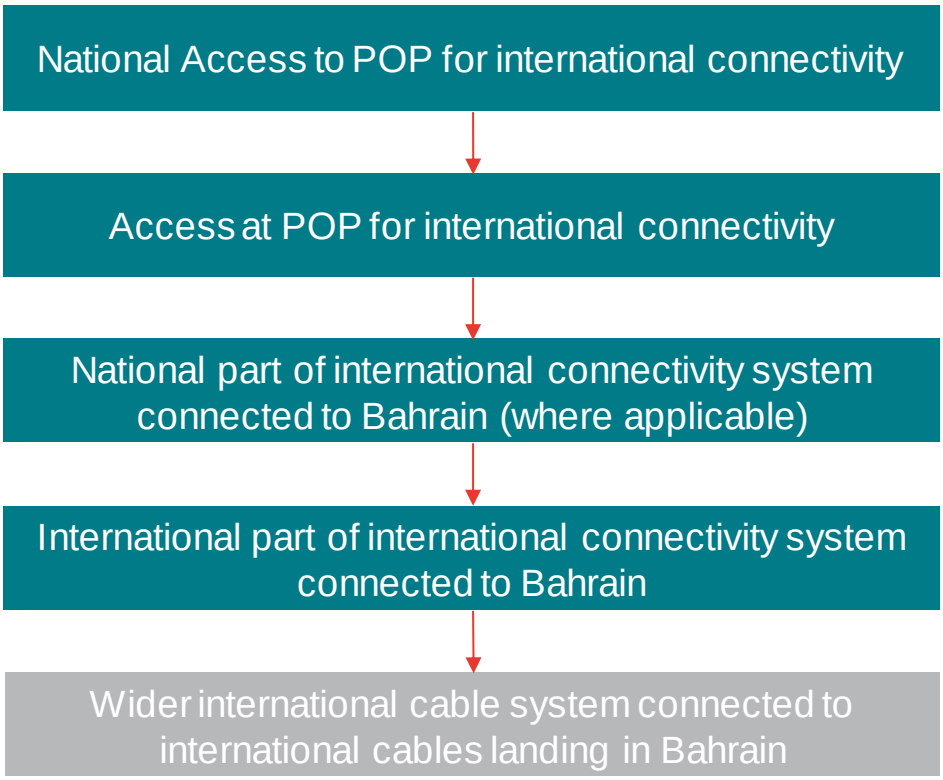
    b. Access at the POP for international connectivity (e.g. cross-connect, colocation)

    c. That part of the international connectivity system that is within Bahrain's national territory, such as its territorial waters (where applicable)[12]

    d. The international part of the international connectivity system.

32. Figure 2 shows an illustration of the supply chain.

Figure 2: Supply chain of international connectivity in Bahrain



Source: the Authority

[11] For retail services, the supply chain would also include additional (non-network) retail elements. These are not shown here.

[12] While submarine and other international cables or connections in national and international territory are physically the same and typically not separable at the international boundary, the logical separation into national and international parts seems appropriate in the case of Bahrain as only licensed operators can provide services or facilities within the territorial boundaries of Bahrain, whereas non-licensees can clearly supply connectivity beyond these boundaries. This could, therefore, lead to differences in the competitiveness of access to the different parts of the cable.

33. The first element relates to national access to the POP for international connectivity. This is typically provided through fibre infrastructure, either provided by BNET or another licensed entity with a domestic fibre network in Bahrain. Such connectivity is included within the market for domestic data connectivity services previously defined by the Authority.[13] For submarine cables, the POP is housed in a cable landing station, which provides the infrastructure required for the cable to land in Bahrain and for Licensed Operators in Bahrain to interconnect with the cable system. Each cable landing station has a cable landing party that provides the infrastructure required, and in most/all cases in Bahrain is responsible for maintenance and management of the cable. Batelco is the cable landing party for FOG, Falcon and GBI, and BIX is the cable landing party for the Tata cable. The Authority understands that there is no third-party cable landing party for GCCIA and KFC cables. GCCIA, in response to the Article 53 Information Request, noted that the active equipment required to connect to the cable is owned by the Licensed Operators, who are also responsible for maintenance. That equipment is located at a meet-me-room providing access to the international cable and co-location space for access seekers, or the facility to cross connect between the international cable and a national connectivity service acquired or self-provided by the access seeker.

34. To access the POP for international connectivity, domestic data connectivity is required from the Licensed Operator's POP or the customer premises to the cable landing station. Domestic data connectivity services offered by BNET are included in BNET's Reference Offer ("RO") with access seekers able to use BNET's Wholesale Data Connect (WDC)[14] service for that connection. The WDC service is an active wholesale product which provides symmetric, synchronous, dedicated and uncontended data connectivity within Bahrain.

35. The second element relates to access at the POP for international connectivity. At cable landing stations, this access requires colocation and cross-connection services, which are managed by the cable landing partner. For GCCIA and KFC cables, Access Seekers arrange their national connectivity service to the Meet-Me-Rooms where access to the GCCIA and KFC cables is provided. Upon securing access, licensees can connect directly to capacity at the given cable or access dark fibre , rather than be reliant on a landing party for their international connectivity. Technically, by having effective access at the landing station for the FOG, FALCON and GBI cables, Access Seekers could, bypass Batelco (the party landing those cables) and instead purchase capacity directly from the cable owner, subject to these owners holding the relevant licenses (i.e. an IFL and ISL). As such, this access, if provided on reasonable terms, could increase the number of options available to licensees in Bahrain for international connectivity. In contrast, if this access is not available, licensees would be limited to purchasing international capacity from the landing party.

36. The third and fourth elements of the supply chain for international connectivity relate to access to the international cable system itself. Within the supply chain shown in Figure 2, the Authority has illustrated separately the national and international parts of the international cable system. This reflects the requirement for a party to hold appropriate

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[13] For the avoidance of doubt, the inclusion of domestic data connectivity within the supply chain for international connectivity services has no impact on the Authority's previous analyses of domestic data connectivity markets within the Kingdom.

[14] http://batelco.com/reference/20161004-sch-1-2-17-service-description-wholesale-data-connection-service-(wdc).pdf

licences to operate and manage the part of the international cable system in Bahrain's territorial waters and to sell international services within Bahrain. That is, a party without the appropriate licences cannot sell international submarine cable capacity within Bahrain's territorial waters, even if it owns an IRU for that cable. Consequently, ownership of the national and international parts of cables may differ, with the national segment being owned by the landing party (or another holder of an IFL) and the international segment remaining with the submarine cable operator.

37. Figure 2 also shows a fifth element that refers to wider international cable systems that connect to Bahrain indirectly through the international cable systems directly landing in Bahrain. However, this segment is not considered as part of this market review as these cables are outside of the Authority's jurisdiction.

Q2. Do stakeholders agree with the elements and description of the international connectivity supply chain? Do you consider any elements missing or elements being defined to broadly?

2.5 Overview of international capacity into and out of Bahrain

38. A critical input into the market review is information and data on the levels and type of international capacity connected to the Kingdom. The Authority now, therefore, provides an overview of this capacity.

39. In so doing and as set out above, the Authority notes that there are two main types of routes over which international capacity is available.

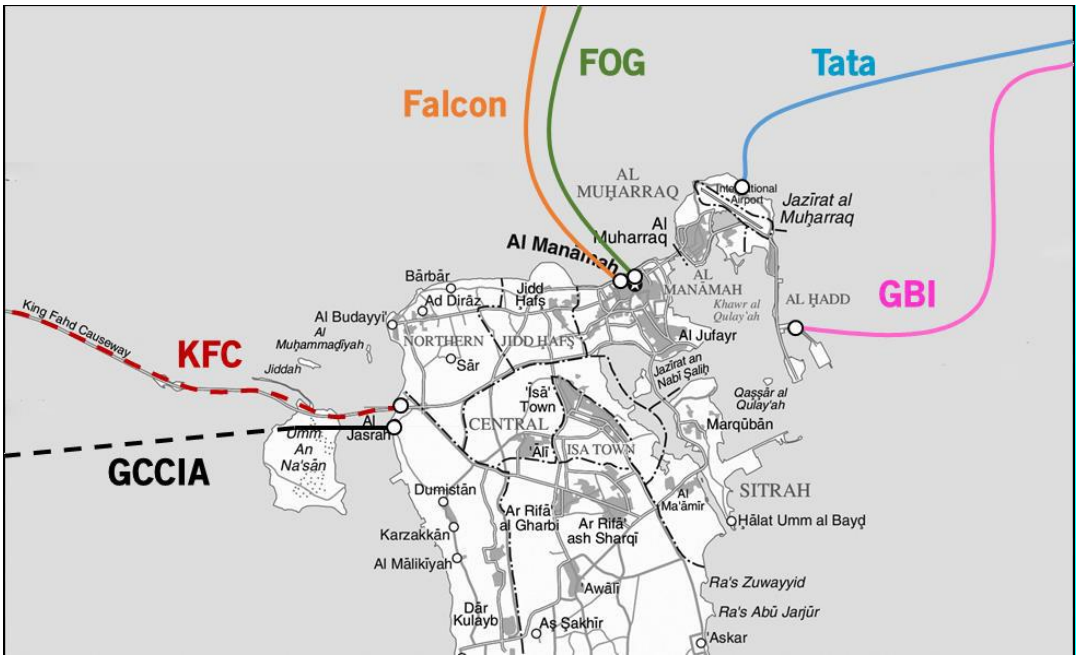
40. The first type relates to submarine cables, where an international cable system lands in Bahrain, providing Licensed Operators with access to global submarine networks. There are currently four operational submarine fibre optic cable systems connected to Bahrain.

41. The second type is terrestrial cables. This covers connections from Bahrain to Saudi Arabia using cross-border dark fibre and ducts. Providers using terrestrial cables to exit Bahrain then require arrangements for the onward transmission of traffic to international hubs such as those located at Jeddah and Riyadh. Dark fibre and ducts connected to the Kingdom is available on two terrestrial routes: the route along the GCC Interconnection Authority ("GCCIA") power transmission network and the route via King Fahd Causeway ("KFC").

42. In addition, a small amount of international capacity is delivered using satellite-based systems.

43. Figure 3 shows the international cable routes that are currently operational in Bahrain.

Figure 3: International Fibre Optic Cable routes in Bahrain



Source: the Authority

44. Each submarine and terrestrial cable route is described below. In doing so, the Authority refers to provisioned, available and design capacity subject to context and information available.[15]

2.5.1 Fibre Optic Gulf ("FOG")

45. The FOG system is comprised of a submarine cable running along the Arabian Gulf from Kuwait to the UAE, with spurs connecting Bahrain and Qatar. The FOG cable lands in Dubai and forward connection is required to get access to Fujairah in the UAE in order to connect to a number of global cable systems, including FLAG, SMW-3 and SMW-4[16].

46. The FOG cable was deployed in 1998 by a consortium of four regional operators, Batelco, Etisalat, Qtel (Ooredoo), and MOC Kuwait. The FOG cable is expected to come to its end of service in 2023. The available capacity on the cable is 179 Gbps.[17]

47. As one of the four operators in the FOG consortium, Batelco manages the capacity on the FOG cable out of Bahrain. This means that, to access the FOG cable, other Licensed Operators (OLOs) must purchase colocation and cross-connection services from Batelco, which will allow OLOs to set-up a POP and access the FOG cable system. Since Batelco is also the only company within that consortium to hold the appropriate licences, access

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15 Provisioned capacity refers to capacity that is used for retail or wholesale customer services. Available capacity is capacity that is enabled on a cable system; i.e. by installing the corresponding active network equipment at a cable landing station. Design capacity refers to the total capacity that can be carried over the cable system once the corresponding active network equipment is installed.

16 Batelco submission, "Response to the Telecommunications Regulatory Authority of Bahrain (TRA) Draft Dominance Determination for Wholesale International Services", 30 August 2012 (Ref GCL/312/12), page 12.

17 2018 International capacity report prepared for the TRA

seekers will only be able to gain access to the submarine cable through Batelco. In most cases, OLOs will also require a domestic data connectivity service to connect to the POP at the cable landing station. OLOs also have the alternative option of indirectly accessing the cable via Batelco's wholesale IPLC.

2.5.2 FLAG Alcatel-Lucent Optical Network ("FALCON")

48. The FALCON submarine cable system became operational in 2006 and established a fibre ring connecting the GCC countries, Yemen, Sudan, Egypt, and India. The FALCON cable is owned and operated by India's FLAG Telecom, a subsidiary of the Reliance group. FALCON accesses international connectivity through the FLAG global cable network.

49. A number of GCC operators contributed to the FALCON investment, with Batelco spending ***[✂]*** acquiring IRUs[18] for approximately 2.5Gbps (16 x STM-1) capacity on the FALCON system, ***[✂]***. However, Batelco has no controlling or non-controlling interest in the FALCON cable. As of 2018, Batelco reported (in response to the Article 53 Information Request) having access to 158.7 Gbps of capacity on FALCON. A 2018 international capacity report for the Authority[19] put that capacity at 73 Gbps which suggests that since then, the available capacity has significantly increased. The design capacity on the cable is 11.6 Tbps.

50. The FALCON cable terminates in Bahrain at Batelco's landing station in Salmaniya. Other Licensed Operators (OLOs) can access the FALCON cable by purchasing the (IFC) service, which is a regulated service included in Batelco's Reference Offer. The IFC service provides the links and colocation space that are needed for an OLO to directly connect to the FALCON cable. It was introduced following a dispute between Mena Telecom (now acquired by Viva) and Batelco that resulted in the Authority issuing Order No.1 of 2009, requiring Batelco to enable Mena Telecom to connect directly to FLAG. [20] Specifically, the Authority understands that the link included in the IFC service connects the OLO's POP to the intermediate distribution frame ("IDF"). However, there is an additional "connector link" required for interconnection with the optical distribution frame ("ODF") which is not currently included in the IFC service.[21]

51. Operators in Bahrain who have been leasing capacity on the FALCON cable hold both an IFL and ISL, although technically one would only require an ISL.

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18 Batelco, response to Article 53 information request.

19 2018 International capacity report prepared for the TRA

20 Article 35 Order No. 1 of 2009 Mena Telecom's Application for Facilities Access to FLAG Supplied Equipment at Batelco's Salmaniya Complex", 24 November 2009. This Order (and therefore the IFC service) was challenged by Batelco before an Arbitration Panel. The Arbitration Panel issued its decision on 30 October 2012. The Arbitration Panel supported the Authority on the principal substantive issue that under its regulatory obligations, Batelco was lawfully required to comply with Menatelecom's request for access to Batelco facilities for the purposes of co-locating with the FALCON cable system. The award of the Panel is available on the Authority's website.

21 Ibid, page 35.

2.5.3 Gulf Bridge International ("GBI")

52. The GBI submarine cable established a fibre optic ring around the Arabian Gulf, consisting of two fibre pairs with a design capacity of 2.56 Tbps per pair. The cable system became ready for service in 2011. GBI provides connectivity to Mumbai and Europe through the acquisition of fibre pairs on the Middle East North Africa (MENA) submarine cable system.

53. In Bahrain, the GBI cable branch terminates at Batelco's landing station in Hidd. GBI has signed a local partnership agreement with Batelco, and the first circuit was activated in August 2012. Batelco sells capacity on the GBI cable in the form of IP transit and IPLCs. Third-party access to the landing station is provided for under the landing party agreement between GBI and Batelco.

54. The part of the GBI submarine cable located in Bahrain's territorial waters was transferred/sold to Batelco. OLOs are able to purchase capacity on the international part of the cable from GBI directly while access to the landing station, cross connection and transmission over the national part of the submarine cable must be acquired from Batelco.

2.5.4 TATA

55. TATA's Global Network Gulf Cable Project deployed a submarine cable along the Arabian Gulf, connecting Saudi Arabia, Bahrain (where the cable lands at Amwaj Island), Qatar, the UAE and Oman[22]. TATA entered into agreements with operators in each of these countries, including BIX in Bahrain, to provide international connectivity from the BIX points of presence in Seef and Juffair[23] through TATA's global network. The designed capacity on the cable is 4.2 Tbps.

56. The TATA cable became ready for service in 2011.

57. TATA does not hold a telecommunications licence in Bahrain and therefore cannot sell services in Bahrain. However, BIX, the landing party for the TATA cable, operates the facilities required to land the TATA cable in Bahrain. The landing party agreement provides that BIX has ownership of the national segment of the submarine cable. Access seekers hence acquire access to capacity on the cable partly through BIX (for the national segment) and partly through TATA for the international segment (or other owners of capacity on that segment).

2.5.5 King Fahd Causeway ("KFC")

58. Duct access on the KFC can be used to deploy fibre from the toll-gate on the Bahrain side of the KFC to a telecommunications room at the border. These terrestrial cables can then cross-connect with Saudi operators, who can then link providers in Bahrain to international cable systems such as FLAG, SMW-3, and SMW-4 networks that land in Jeddah.

59. The Authority is aware that a number of operators have developed their own capacity across the Bahraini side of the KFC. These operators include Batelco, Infonas, Viva and Zain. Furthermore, ITC, Mobily, STC and Zain have developed fibre on the Saudi side.

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[22] The cable branch and the landing station for the TATA cable have been financed by the Government of the Kingdom of Bahrain.

[23] Connectivity today is also provided at the Alosra meet-me-room (MMR) for connectivity to Nuetel's network across Amwaj island towards the cable landing station and onto the submarine cable.

60. Where an operator wishes to access fibre over the KFC, that operator would have to hold or obtain the relevant licences. Batelco, Infonas, Viva and Zain each hold an ISL, which would allow them to supply international services. In addition, Batelco, Infonas, Viva and Zain (among others) each hold an IFL, which allows each operator to deploy fibre across the KFC.

2.5.6 GCCIA

61. The GCCIA operates a fibre optic network alongside its electricity transmission network throughout the GCC region. The GCCIA offers dark fibre to operators, with terrestrial cables connecting the GCC countries with the exception of Bahrain, which is connected to Saudi Arabia via a submarine cable that lands at the Al-Jasra electricity transmission station operated by Bahrain's Electricity and Water Authority (EWA).

62. The GCCIA has unused fibre pairs over two fibre optic cables which are surplus to its own requirements, with each cable containing 24 fibres. The GCCIA currently has several Licensed Operators in Bahrain using its dark fibre network (Batelco, Viva, Infonas and Zain).

63. The GCCIA with Cinturion, are in the process of expanding the GCCIA's current regional network of fibre cables to Europe and India. This will further improves the viability and usefulness of the network and is likely to benefit the region including Bahrain.[24]

2.5.7 Satellite

64. In 2005, the Authority noted that the only alternative suppliers of international capacity into Bahrain, other than Batelco, were satellite-based[25]. Specifically, the Authority referred to both Northstar and Mena Telecom (now acquired by Viva) [26] as offering access to satellite-based international capacity, although it concluded that the market share of these two operators was not significant.

65. In 2010 Batelco[27] noted that *"… satellite capacity is essentially immaterial and irrelevant to competition in the international capacity market."* Indeed, this was supported by the fact that responses to the Authority's survey of international connectivity and capacity in 2011 showed that Batelco and Orbit utilised only a small amount of satellite-based capacity. At the same time neither Northstar nor Mena Telecom reported that they used satellite-based capacity.

66. Satellite capacity continues to be insignificant in the context of international capacity in Bahrain. This is because there is an inherent latency in satellite communications that does not provide an adequate quality of service to customers that tend to purchase international connectivity services (e.g. large businesses). This is discussed further below in relation to the identification of the relevant markets.

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[24] https://cinturioncorp.com/cinturion/News.

[25] The Authority "Dominance in Wholesale Markets: A Consultation issued by the Telecommunications Regulatory Authority on Dominance in Wholesale Markets", 27 October 2005, page 41.

[26] During the 2005-2006 market review, the Authority referred to MENA Broadband Services, which subsequently became Mena Telecom.

[27] Batelco "Application for a determination that Batelco is not dominant in the wholesale market for access to international facilities", 14 December 2010, page 20.

Q3. Are there any further aspects of the international connectivity systems described in Section 2.5 that the Authority should be taking into account in its assessment, or any other connectivity systems that the Authority should consider?

3 Analytical framework

67. To determine whether one or more licensed operators hold SMP in a relevant retail market, or a Dominant Position in a relevant wholesale market, the Authority adopts a three-step process:

    a. definition of the relevant market(s);

    b. analysis of competition in the relevant market(s); and

    c. identification of operator(s) who have SMP or a Dominant Position, if any.

68. At each step, the Authority relies on well-established economic principles and tests to conduct its analysis.

69. However, it is also important to note that the identification of relevant markets is not an end in itself, but is a critical step in assessing the extent to which any firm or firms in those markets have market power. Defining markets and assessing competition within those markets involves a degree of judgment, with the overarching purpose being to ensure that all relevant competitive constraints operating in a market (from both existing and potential competitors) are identified so that ultimately, the Authority can apply the appropriate regulatory measures (if any are required) to further enhance outcomes in the relevant markets for the ultimate benefit of consumers in Bahrain and the Kingdom's economy.

70. Throughout the process, the Authority applies an analytical framework that is consistent with the Telecommunications Law and the Authority's Competition Guidelines[28]. The tools and principles employed by the Authority are similar to those employed by other National Regulatory Authorities (NRAs) and competition authorities, including the European Commission and national telecommunications regulatory authorities across the European Union (EU) and other Gulf Cooperation Countries (GCC).[29]

71. Having identified the markets for international connectivity services, the Authority then applies, as it has in other recent market reviews, the Three Criteria Test, to consider the extent to which those defined markets may be susceptible to ex ante regulation.[30] This test is applied commonly in regulatory frameworks elsewhere, including in the EU, and examines whether ex ante regulation could be appropriate in a given market, given the extent of any barriers to entry, the degree to which the market may be tending towards a competitive outcome and the potential ability of ex post regulatory action to resolve any concerns regarding anti-competitive behaviour.

72. Following the definition of the markets and the application of the Three Criteria Test, the Authority then examines, for those markets that pass the Three Criteria Test, the level of competition in those defined markets. The purpose of this competition assessment is to identify any constraints, such as those from existing competition, potential competition, and

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[28] See "Competition Guidelines: Guidelines issued by the Telecommunications Regulatory Authority", 18 February 2010 (Ref: MCD/02/10/019).

[29] For example, the TRAs in Oman and UAE both apply a Three Criteria Test during market reviews.

[30] See, for example, the Determination of Dominance in the Mobile Termination Markets (Ref: MCD/02/014), 7 February 2019; Section 5.3

any countervailing buyer power, that may limit the ability of an incumbent supplier of retail and wholesale international connectivity services to act independently of its competitors or customers and exercise market power.

73. When conducting these competition assessments, the Authority is aware that the Telecommunications Law refers to two concepts of market power, namely a Dominant Position and Significant Market Power. Findings of a Dominant Position and SMP impart different ex ante regulatory obligations on the affected operators:

    a. Article 57 of the Telecommunications Law states that an operator with a Dominant Position in a market shall make available access and interconnection services by way of a Reference Offer, with tariffs, terms and conditions that are fair, reasonable, and non-discriminatory;

    b. Article 58 of the Telecommunications Law states that operators with SMP shall be subject to tariff controls as specified by the Authority by way of regulation or Licence conditions.

    The regulatory obligations set out in Article 57 apply at the wholesale level while those set out in Article 58 apply to retail.

74. Article 1 of the Telecommunications Law defines both SMP and a Dominant Position.

75. An operator with SMP is defined as holding a share of 25% or more of the relevant market as determined by the Authority[31]. However, in determining whether an operator has SMP, the Authority must also take into account a number of other factors, including the ability of the Licensed Operator to influence market conditions, its turnover relative to the size of the market, its control over access to end users, its financial resources, and its experience of providing products and services in the market. The Authority may determine that a Licensed Operator has SMP even if its market share is less than 25%, or that it does not hold SMP even though its market share exceeds 25%.

76. In February 2010, the Authority issued the Retail Tariff Notification Regulation pursuant to Article 58, setting out a number of tariff controls that an SMP operator's retail tariffs must satisfy.

77. A Dominant Position is defined as "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." [32]

78. In practice, the Authority considers that the concepts of SMP and dominance are similar and seek to capture similar types of behaviour[33], namely the ability of a firm to act independently of its competitors, its customers and ultimately of consumers, for example by sustaining prices above the competitive level. This interpretation is consistent with

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31 Telecommunications Law of the Kingdom of Bahrain, page 8.

32 Ibid, page 7.

33 see the Authority, "Competition Guidelines", 18 February 2010 (Ref: MCD/02/10/019), paragraph 92.

international best practice[34]. However, the legal definition of SMP in the Telecommunications Law places special emphasis on market shares while recognising the need to carefully consider the ability of an operator to influence market conditions, i.e. to act independently.

79. The Authority notes that in undertaking an ex ante assessment of market power, the aim is to understand how competitive the market is currently and how the market is likely to evolve. As noted in the Competition Guidelines, the Authority typically takes the following factors into account when undertaking such a forward-looking competition assessment[35]:

    a. the market share of individual entities;

    b. competitive constraints arising from existing and potential competitors, barriers to entry and expansion and the degree of countervailing buyer power; and

    c. evidence on behaviour and performance.

80. In its competition analysis, the Authority assumes that existing regulations remain in place, with the exception of the regulation of retail and wholesale international connectivity services[36]. This approach is consistent with the so-called Modified Greenfield approach. In its analysis the Authority specifically identifies which existing regulations impact its findings (and how).

81. In the following sections, the Authority defines the relevant retail and wholesale markets relating to international connectivity services (Section 4) and then considers whether any of these markets pass the Three Criteria Test (Section 5). The Authority then evaluates whether any Licensed Operator has SMP in the relevant retail markets or a Dominant position in the relevant wholesale markets (Section 6).

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[34] For example, the regulatory framework governing the EU telecommunications sector considers the concept of SMP to be equivalent to that of dominance.

[35] The Authority, Competition Guidelines, paragraph 93.

[36] The Authority, Competition Guidelines, Section 3.3.

4 Identification of the relevant markets

82. At the first stage, The Authority defines the economic boundaries of the market(s) under consideration. That is, it identifies those services that are considered by users and suppliers to be sufficiently close economic substitutes to mean that a hypothetical monopolist supplying any of the products included in the market could not, profitability, maintain a small but significant increase in the price of that product from the competitive level (but that a hypothetical monopolist offering the full suite of products could maintain a price increase across those, due to the lack of other substitutes). This examines two key dimensions: the product and the geographic boundaries of the market(s).

83. Market definitions at the retail level and the wholesale level are considered separately. However, as noted in the Competition Guidelines, special consideration will be given to ensure that wholesale market definitions are consistent with retail market definitions[37]. This is because substitution possibilities at the retail level will influence the behaviour at the upstream level – if a product is not considered a sufficiently close substitute at the retail level to fall within the same market as another product then it will also not be an effective substitute for that product at the wholesale level. This is, in turn, because the demand for wholesale products is derived from the demand for retail products.

84. In practice, the Authority conducts this assessment by taking, as a starting point, retail international connectivity services. The Authority then evaluates demand and supply side substitution, by evaluating whether a hypothetical monopolist supplier could impose a small but significant non-transitory increase in price of the such services ("SSNIP") of 5-10% above the competitive level without losing sales to such a degree as to make this price rise unprofitable. If, under such a scenario, buyers would switch in sufficient quantities to alternative products (demand substitution), and/or suppliers of alternative products would switch production, in sufficient quantities, to supply international connectivity services (supply substitution), such that the hypothetical monopolist's price increase cannot be sustained, then the alternative products should be included in the same market. In line with other market reviews and established practice, the Authority considers first, demand side substitution.

85. In conducting such a market definition analysis, it is important to note that whether another service places a competitive constraint on products in the relevant market, such that the ability of the hypothetical monopolist to act independently in the provision of the that product is constrained, is not a binary question. That is, even though sufficient evidence may not exist to define two services as falling within the same economic market, it would not necessarily be the case that there is no competitive interaction between the products. That is, one service can still place some potential competitive constraint on the pricing of another service, on a forward looking basis, even though the services are not defined to be within the same market (although this potential, forward looking constraint would typically be

[37] The Authority, Competition Guidelines, Section 2.4.

considered to be less strong than any competitive constraint from services within the relevant market). This is also recognised by the European Commission.[38]

86. Furthermore, as noted in the Authority's Competition Guidelines, it may be appropriate, when defining markets for the purposes of ex ante market reviews, to group together markets/products into "cluster markets" where the benefits of analysing them separately are limited.[39]

87. In order to conduct this market definition exercise and the broader market review, the Authority has sought to collect, using its powers under Article 53 of the Law, a wide range of qualitative and quantitative information from licensees, international cable providers and major users of international connectivity within the Kingdom. In particular, the Authority has collected information on:

    a. the supply of international connectivity products and services, covering both the type and volume of services offered by licensees over time (including splits by destination and bandwidth), for both wholesale and retail services,[40]

    b. the capacity and characteristics of international bandwidth available to and used by each licensee over each of the cables (submarine and terrestrial) described in the previous section, and

    c. the nature of demand for international connectivity services (including, for example, the extent to which licensees and key customers demand access to particular cables).[41]

88. The Authority has then also cross-checked this data against the Periodic Market Data Request information regularly supplied by all licensees to the Authority.

89. However, given the nature of international connectivity services, most notably, the relatively small number (in volume terms) of circuits sold and the often bespoke nature of pricing for these services, it has not been possible for the Authority to conduct a quantitative SSNIP test – for example, to identify how demand for particular services has changed as a result of a relative change in prices, particularly given the range of other factors that will also influence demand over time. As such, the Authority has relied primarily on qualitative information in its market definition exercise, such as information around the characteristics of different products and the views expressed by licensees and major customers. This is,

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[38] European Commission (2018), *"Guidelines on market analysis and the assessment of significant market power under the EU regulatory framework for electronic communications networks and services*" (2018/C 159/01) at footnote 16.

Where no sufficient substitutability patterns can be established to warrant including such OTT-based services in the relevant product market, NRAs should, nevertheless, consider the potential competitive constraints exercised by these services at the stage of the SMP assessment

[39] The Authority, Competition Guidelines, Paragraph 32.

[40] For the avoidance of doubt, the Authority considers, as a retail product, any product or service sold by a licensed operator in Bahrain to another party who is not also a licensed operator in Bahrain, even if that other party is also a telecommunications carrier. Indeed, retail services sold by licensed operators in Bahrain can be used by international carriers to offer global networks to their customers.

[41] In the remainder of this document, this information collection process is referred to as the Article 53 information request.

however, in line with other market reviews conducted by the Authority, including its previous reviews for international connectivity services.

4.1 Identification of the relevant retail markets

4.1.1 Relevant product market

90. In defining this market, the Authority takes as a starting point the retail market defined in the 2008 Determination. The 2008 Determination defined a national market for international leased lines that included IPLCs and MPLS, but excluded substitute technologies such as Free Space Optics and Single Channel Per Carrier solutions. This was because the Authority was of the view that these substitute technologies were unable to meet the high quality of service requirements of international leased line customers (e.g. banks). For example, Free Space Optics services rely on line of sight and therefore are vulnerable to optical obstructions (e.g. sandstorms, fog).

91. The Authority considers that this is equivalent to taking as a starting point for its relevant market definition the range of international connectivity products described in Section 2.3 of this document, typically referred to as IPLCs, VPN and MPLS products (i.e., Layer 1 and Layer 2/3 services).

92. The Authority considers this is consistent with the 2008 Determination and continues to be appropriate because IPLCs, Wavelength, VPNs and MPLS services, while being based on different technical standards, all offer international connectivity. That is, all of these services provide retail customers with dedicated capacity between two or more locations, at least one of which is located in Bahrain and at least one other which is located beyond the Kingdom's international borders, These circuits are predominantly used by businesses and large customers to create enterprise networks between international locations. Retail customers that demand international connectivity services use the services for the reliability of having a dedicated connection, e.g. minimum capacity provided and guaranteed maximum latency.

93. From responses to the Article 53 Information Request, the Authority notes that an international leased line (IPLC) is a (OSI) Layer 1 solution, providing a basic physical connection over which a customer can establish its own Data Link and Network Layers. Other services facilitate (OSI) Layer 2 and 3 functionality directly as part of the international connectivity service. For example, Batelco offers two Global MPLS services. The first is a layer 2 service that transfers data in a "private and secure way", which is similar to an international ethernet service. The second is a layer 3 service that uses IP-VPN ethernet to offer a "fully-managed, converged, end-to-end IP solution". This is similar to an international VPN service. Although Batelco uses different terminology to other providers (i.e., "Global MPLS" rather than "international VPN or "international Ethernet"), the Authority considers that these services are functionally equivalent and hence could be substitutes. In the remainder of this document (and unless stated otherwise) it therefore groups these services together.

94. International connectivity services are available to customers in Bahrain at a range of capacities, starting at less than 1 Mbps and up to 100 Gbps.

95. Therefore, in defining the relevant product market for retail international connectivity services, the Authority has considered five questions:

    a. Whether other services, most notably retail broadband and dedicated internet access services, could act as an effective substitute to international connectivity services, in the event of a SSNIP in international connectivity services;

    b. Whether satellite connectivity services should also form part of the same market;

    c. Whether technically different (i.e., Layer 1, Layer 2 and Layer 3) international connectivity services implementations form part of the same market or whether there is a reason to consider them in separate markets;

    d. Whether international connectivity services of different capacities all form part of the same market, or whether there is any break in the degree of substitution between these different services; and

    e. Whether international connectivity services to different destinations form part of the same market.

Whether retail broadband and dedicated internet access services form part of the same market as international connectivity services

96. Broadband / dedicated internet access services can be used to connect to the global internet. Acquiring two (or more) such services, one in Bahrain and an equivalent service abroad allows customers to establish a logically dedicated link, through the use of VPN software, which could resemble a dedicated link between two or more sites established through international connectivity services. Broadband services are available with capacities of up to 500Mbps for residential customers while business customers (based on Batelco's retail offer) can acquire broadband of up to 40Mbps. Both offerings thus partly match the capacities available through international connectivity services. Business customers are also able to acquire dedicated internet services with capacities of, taking Batelco's offer as an example, of up to 10Gbps, again matching a wide range of capacities available through international connectivity services.

97. However, despite these similarities, the Authority does not believe that these services form part of the same economic market as international connectivity services.

98. In relation to broadband services, the Authority has set out in its previous market reviews, including most recently in its review for domestic data connectivity (MCD/04/14/026, 10 April 2014), that broadband services are unlikely to place a competitive constraint on leased line services. This is because dedicated connectivity services (including international connectivity services) offer a dedicated path between two locations, so offering customers uncontended and symmetric bandwidth. In contrast, broadband services, even those at higher bandwidths, are asymmetric and do not offer dedicated capacity, with all traffic being carried over the public internet. Indeed, such differences are generally reflected in the prices of such services, with higher bandwidth broadband services sold at a significant discount to IPLCs of similar bandwidths. For example, using the national market as a benchmark, the Authority finds that a business broadband service offered by Batelco is priced at BD 210 per month for a 20 Mbps product while a national MPLS based IP-VPN service is priced at BD 2,352 (access from two locations). An international link is likely to be priced above the level of a national link given that it would typically cover longer distances and uses additional network elements. As a result, the Authority considers it unlikely that a consumer taking an

IPLC would switch to a broadband service of similar bandwidth, following a SSNIP in the IPLC service. This is because of the differing characteristics and purposes for which these services are used.

99. A dedicated corporate internet access service is significantly more expensive than standard broadband services. This is likely to be the result of the guaranteed capacity the service provides and higher quality of service. For example, Batelco offers a dedicated internet service for businesses (Inet Dedicated Access) with the price of a 20Mbps service at BD 1,181 per month.[42] This is already significantly more expensive than a standard broadband product. However, a consumer of this Inet service must also purchase a national connectivity service which, when using an MPLS Layer 3 service adds a further BD 1,312[43] to the cost of the service (prior to any discounts being applied). However, unit revenue of Batelco for international MPLS services between 10 and 30 Mbps was around BD 5,000 per month in 2018[44]. This suggests that there are still significant differences between the service offerings which is likely to reduce the extent of substitution between the services.

Whether satellite connectivity forms part of the same market as international connectivity services

100. Satellite connectivity remains a technical option for establishing international connectivity. However, as demand for capacity increases and terrestrial and submarine cable systems provide vastly greater capacities than satellite connections, the scope for satellite based systems to provide a credible competitive constraint is limited. In fact, while the Authority's previous market reviews still found there was some minor use of satellite based international connectivity, no respondent to the Article 53 information request reported using satellite based routes. Given this and differences between the services that result in lower quality international connectivity over satellite (such as higher latency, a lack of resilience and the possibility of transmission being disrupted due to the wireless nature of the transmission), the Authority considers that international connectivity over satellite does not form part of the same market as connectivity using submarine or terrestrial cable systems. It is therefore not considered further as part of this market review.

Whether Layer 1 and Layer 2/3 services part of the same market

101. As set out above, international connectivity services are offered using a number of different technical solutions. These can lead to some differences in the equipment used to provide services and the features of the service. For example, VPN and Ethernet services use shared data transport streams and include aspects of network management that a customer of IPLCs self provides.

102. However, despite these different features, the Authority considers that these data services are likely to act as reasonable substitutes to each other, and should therefore be considered in the same relevant product market.

103. This is because the Authority considers that there is extensive demand and supply-side substitution between the different technical forms of international connectivity services. This is, in turn, because certain customers (typically larger businesses, with dedicated IT teams and corresponding technical knowledge) could migrate relatively easily from using, for

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42 Retrieved August 2019 - http://batelco.com/business/products-and-solutions/connectivity/inet-dedicated-access/

43 Retrieved August 2019 - http://batelco.com/business/products-and-solutions/connectivity/mpls-based-ip-vpn/

44 Batelco in response to the Article 53 Information Request.

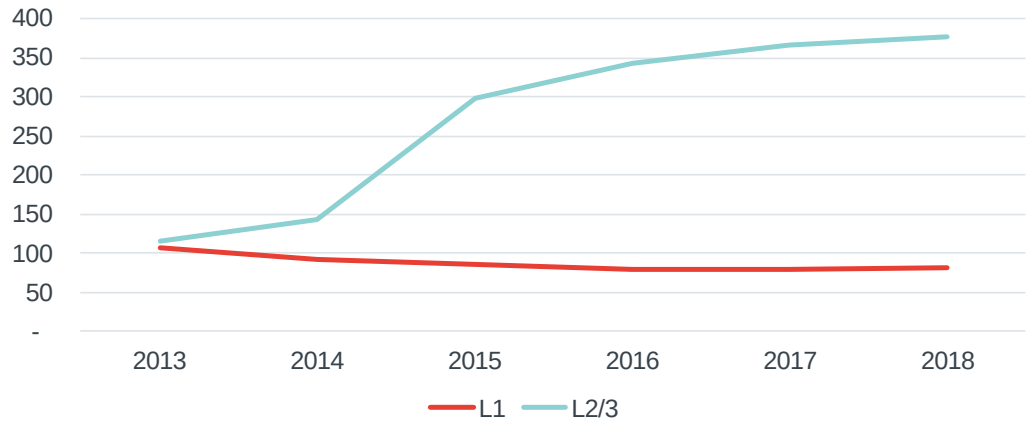
example, a Layer 3 IP based international service to a Layer 2 service (such as an Ethernet based service) by changing their customer premise equipment and deploying their own IP based equipment such as routers. Similarly, a user of an Ethernet based Layer 2 service could, in deploy SDH / DWDM transport equipment to establish its own Ethernet based services over an IPLC service (Layer 1).

104. The Authority accepts that smaller customers may not be able to switch between products as easily. However, the Authority considers that there is also likely to be extensive supply side substitution between the supply of different international connectivity services. This is because the underlying network infrastructure used to provide all international connectivity services is largely the same (i.e. the physical international connectivity provided by an international cable system (submarine or otherwise), thus supporting supply side substitution.

105. For example, the Authority understands that equipment used for establishing Ethernet based (Layer 2) international connectivity services is also likely to be capable of being used to establish IP based (Layer 3) services while SDH / DWDM transport equipment used for the downstream provision of Layer 2 / Layer 3 services could be used directly to provide Layer 1 (IPLC / DWDM) services instead (through directly connecting to corresponding customer premise equipment rather than an operator's own equipment). This means that a provider of any one of these services could, if faced with a SSNIP in the price of any of the other services relatively quickly and easily, and at low cost, switch capacity to offering these services.

106. In addition, the Authority notes, from the data supplied by parties in response to the Article 53 information request, that the total volume of retail IPLC circuits (i.e., the number of connections) supplied by licensees in Bahrain (when totalled across all bandwidths and all destinations) has declined between 2013 and 2018, from 106 connections at the end of 2013, to 81 connections at the end of 2018. Indeed, in their responses to the Article 53 information request, licensees provided a forecast showing further slight falls in the take-up of IPLCs, to around 70 connections in 2021. In contrast, the volume of international Ethernet / MPLS / VPN connectivity services (again measured by the number of connections) has increased significantly, from 115 in 2013, to 377 by the end of 2018, with further increases in demand forecast through to 2021 (with licensees forecasting market demand of almost 500 circuits by that time).

Figure 4: Evolution of Layer 1 and 2/3 connections

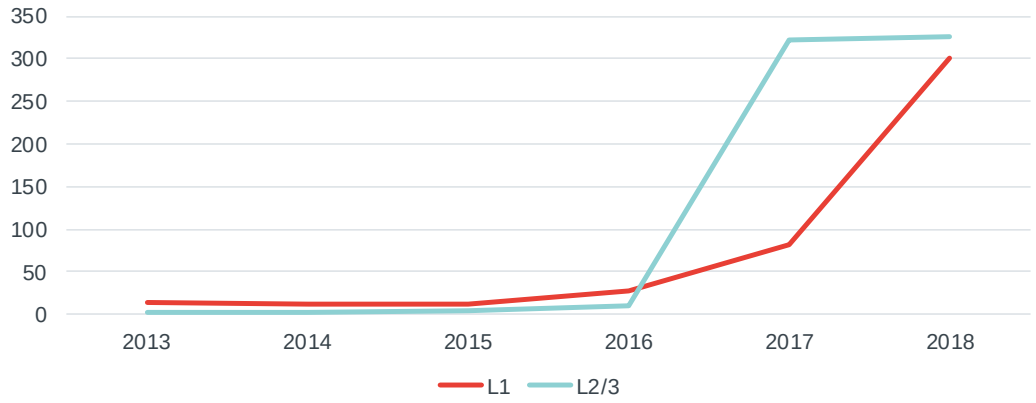


Source: Licensed Operators' response to Article 53 Information Request

This shows a growing trend for customers to purchase Layer 2 and Layer 3 international connectivity services, with this demand outstripping the decline in the demand for Layer 1 connections.

107. However, the Authority is aware that the total number of connections could mask changes in the total capacity provided over these services. The Authority has, therefore, further assessed the capacity of those connections and observes that total capacity of both Layer 1 and Layer 2/3 services has increased since 2013. This is illustrated in Figure 5.

Figure 5: Evolution of total capacity of L1 and L2/3 connections (Gbps)



108. This shows that total capacity has increased for Layer 1 and Layer 2/3 services significantly. While this could explain the reduction in the number of Layer 1 connections (as higher capacity Layer 1 services become available, so enabling customers to consolidate multiple lower bandwidth circuits into one higher bandwidth circuit), it is also possible that there has been some migration from lower bandwidth Layer 1 services to lower bandwidth Layer 2/3 services. Indeed, this would be consistent with the increase in both the number of Layer 2/3 connections and the increase in the average capacity of these services. In practice, there are likely to be a number of reasons behind these trends, most notably around consumer preferences and the growth in the overall volume of international traffic. As such, it is not possible to identify the extent to which some substitution has taken place from Layer 1 type to other services. Nevertheless, the Authority does believe that this pattern of demand does at least indicate the possibility of there being some degree of demand-side substitution between those services.

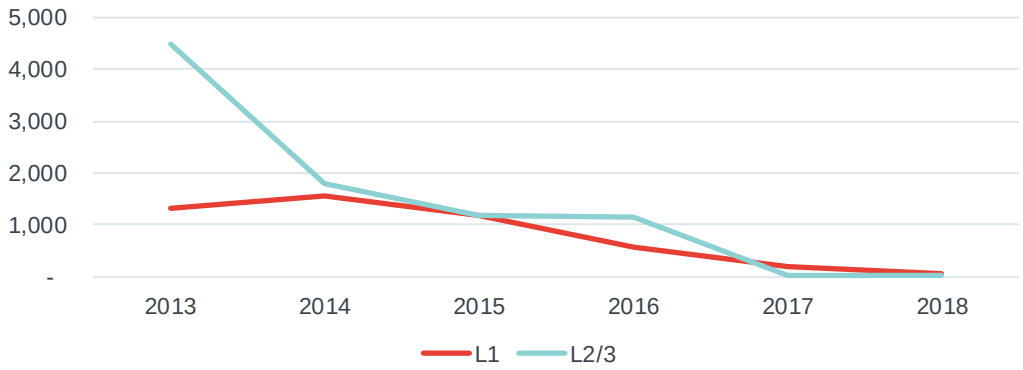
109. In reviewing responses to the Article 53 information request, the Authority has also examined average revenues for different types of services. In particular, the Authority has compared average revenue per connection for Layer 1 services with that for Layer 2 and 3 type services, with a view to understanding the extent to which these average revenue figures are similar. This is because relatively similar average revenue figures could, in certain circumstances, indicate that these services may form part of the same market, on the basis that it is likely to make demand side substitution more feasible.

110. However, as set out below, the Authority does not believe that this provides conclusive evidence one way or the other as to whether these services form part of the same market. That is, the average annual revenue from Layer 2 / 3 services decreased from BD52,000 in 2013 to BD35,000 in 2018 with an average over the period of approximately BD 39,000 per month. In contrast, average annual revenues for Layer 1 services have been between

approximately BD 163,000 and BD 210,000 with an average of 190,000 over the period 2013 to 2018. However, this is partly reflective of significant differences in the average capacities of these products: whereby the average capacity of Layer 1 products is 3.7Gbps in 2018 while the average capacity of Layer 2/3 products is 0.8Gbps.

111. To account for this difference in average capacity, the Authority has divided the annual revenue generated from these services with the average capacity of these services to illustrate, in the following chart, the average annual revenue in BD per Mbps for L1 and L2/3 services. This takes into account all Licensed Operators who consistently reported connection and revenue data by capacity[45].

Figure 6: Average annual revenue per Mbps (BD)



Source: Licensed Operators' response to Article 53 Information Request

112. This demonstrates a significant drop in average revenues and a significant difference between L1 and L2/3 products. However, the Authority is aware that a number of operators[46] were unable to provide reliable data for earlier years and the Authority therefore considers that average revenues in 2017 and 18 are most reliable. Those demonstrate very similar average prices per Mbps for L1 and L2/3 products. This could indicate that demand side substitution from one service to another is feasible.

113. However, even with more significant differences in average revenues per Mbps, the Authority is of the view that prices need not be identical for demand side substitution to be possible. For example, differences in prices could result from some economies of scale as capacities of international connectivity products increase (meaning average revenue per Mbps would be lower for Layer 1 services, given the significantly greater average capacity of those services). For example, customer premise equipment is required regardless of the capacity of the product acquired. In fact, looking at the most prevalent capacities across Layers 1 and 2/3 products (below 1Mbps) in Batelco's portfolio,[47] the Authority also notes that prices have converged over time.

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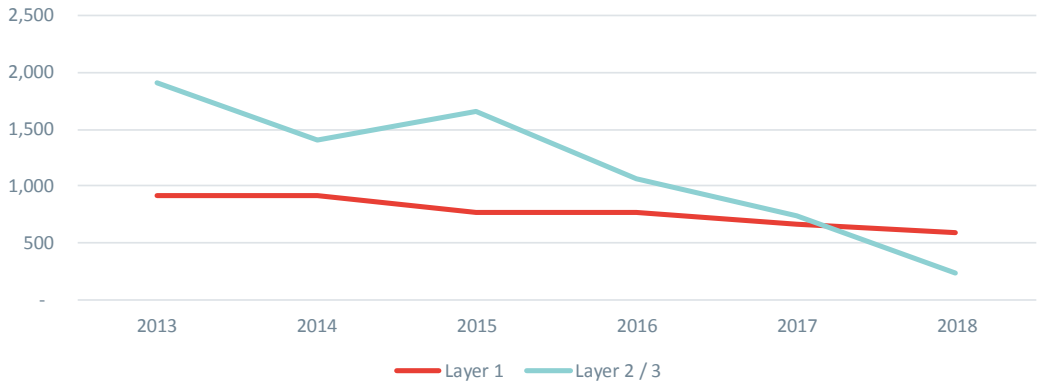
[45] Licensed Operators included in the average annual revenue per Mbps calculation: Batelco, Equant, Etisalcom, Infonas, Kalaam, Viva, Vodafone, Zain, Zajil.

[46] Equant, Viva, Zajil and Zain provide data from 2015 onwards. Kalaam provides data from 2016 and Infonas from 2017 onwards.

[47] Batelco's Article 53 submission provides data consistently for the period 2013 to 2018.

Figure 7: Average revenue per connection per month (BD) (all operators, products below 1 Mbps)



Source: Operator responses to Article 53 Information Request

Therefore, on the basis of all the evidence presented above, the Authority preliminarily concludes that Layer 1 and Layer 2/3 products should be considered in the same economic markets. The Authority also considers that this is consistent with the "cluster market" principle set out in paragraph 32 of its Competition Guidelines, given that the underlying physical infrastructure used to provide both Layer 1 and Layer 2/3 services is the same.

114. The Authority now goes on to consider if products of different capacities should be considered in separate markets.

Whether international connectivity services of different capacities form part of the same market

115. International connectivity services are offered at different capacities ranging from 64kbps to 100Gbps. For assessing the degree of substitution between the different speeds, the Authority has taken into account demand and supply-side considerations.

116. From a demand side perspective, it is clear that some capacities will not provide suitable substitutes for other capacities, as prices will typically increase with capacity. For example, it would not be economical for a customer to replace a 64kbps Layer 1 product (average revenue of approx. BD 550 per month) with a 2Mbps product (average revenue of approx. BD 5,000 per month), even in the presence of a SSNIP of the 64 kbps product. However, the prices of services at most capacities are close to the prices of the next capacity offered. For example, the following chart shows Batelco's average revenues of 64kbps and 128kbps services over time, and also over 1Mbps and 2Mbps services ***[✂]***.

Figure 8: Batelco average revenue per month (BD) across similar speeds[48]

[✂]

[✂]

[✂]

[✂]

[✂]

[✂]

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[✂]

[✂]

[✂]

Source: Batelco response to Article 53 Information Request

117. Given the gradual increase in capacities available, this means there is likely to exist a chain of substitution between international connectivity services of adjacent capacities.[49]

118. There is also likely to be a significant prospect of supply side substation between different capacities. This is because a hypothetical provider of one capacity (in practice all operators provide a similar range of capacities) would have a strong incentive to use its available productive capacity to supply another capacity in the event of a SSNIP for one particular service capacity. This is, in turn, because the means of providing the services, such as capacity on international cable systems, routers and transmission equipment are to a very large extent the same, regardless of the capacity offered to the end user. Minor differences may exist between equipment such as customer premise equipment and the ports they are connected to, although this is likely to be only where there are significant "jumps" in the capacity of a given service.

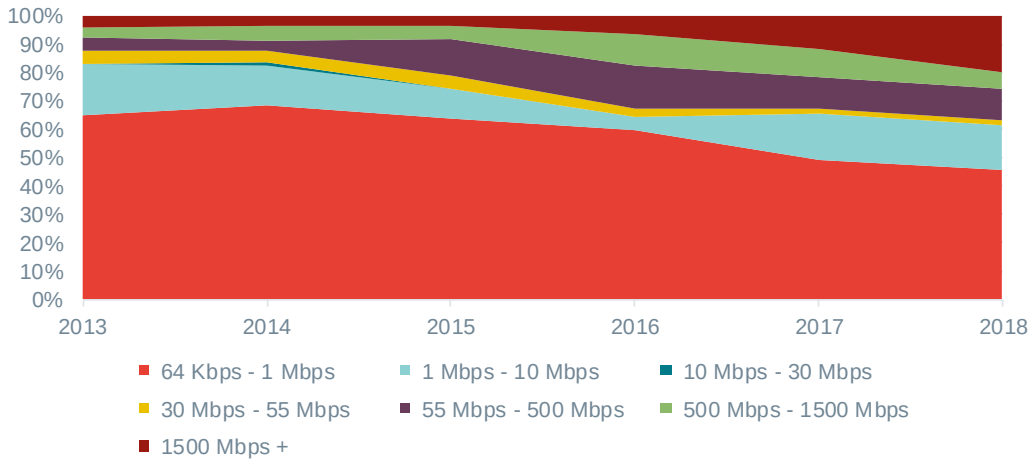
119. The ability to of both licensees and consumers to switch productive capacity from one service capacity to another is also indicated by changes in service take-up over time. The

[48] In 2018, no 1 Mbps Layer 1 services were sold.

[49] 1. For example, Batelco's Layer 1 international connectivity services are available at capacities of 64kbps, 128kbps, 256kbps, 512kbps, 1Mbps, 2Mbps, 20Mbps, 34Mbps, 45Mbps, 155Mbps, 622Mbps, 1Gbps, 2.5Gbps, 10Gbps and 100Gbps.

figure below shows that the mix of capacities in the market (here considering Layer 1 services) is gradually changing over time, demonstrating the ability of licensees to alter, within a reasonable period of time (i.e. less than 1-2 years typically considered SSNIP test) the mix of capacity they offer.

Figure 9: Distribution of services by capacity



Source: Licensed Operators' response to Article 53 Information Request

120. This also seems to be clear from the fact that all licensees active in the supply of international connectivity services typically provide a similar range of capacities, rather than individual operators offering different capacity bands.

121. Therefore, on the basis of the above, and primarily the evidence supporting supply side substitution, the Authority preliminarily concludes that the relevant product market should not distinguish retail international connectivity services by capacity.

Whether international connectivity services of different destinations form part of the same market

122. The Authority considers that, due to supply-side substitution, the relevant product market should also not distinguish retail international connectivity services by destination. As noted in the 2013 Dominance Determination, Licensed Operators in Bahrain have global reach as international cable systems connect to global systems. This means that a Licensed Operator that offers an international leased line to one destination will be able to offer an international leased line to another. As a result, a hypothetical monopolist supplier of international leased lines to Marseille, for example, would not be able to profitably impose a SSNIP as suppliers of international connectivity to other destinations could switch, relatively quickly and at low cost, supply to Marseille.

123. In addition, the Authority provisionally considers that distinguishing retail international connectivity services according to the international cable system over which traffic is carried, regardless of whether that cable is a terrestrial or submarine link, is not necessary. As noted above, international cable systems connect to global systems and therefore are not differentiated by their destination. What's more, the Authority notes that the responses to the Article 53 information request did not highlight consumer need for access to particular cable routes for the provision of specific retail international connectivity services.

124. The Authority does note that in some instances, particular (typically large) customers have a preference for access to specific cables in order to meet specific service requirements.

However, the Authority also understands that such preferences may be born out of a customer's requirement to ensure service resilience (i.e., where a customer seeks to obtain several, physically separate links to improve the resilience of its operations). Such requirements, combined with other technical requirements that may be better suited by one international cable system than another could, therefore, limit the choice available to such a customer. However, the Authority also considers that such requirements are too rare to warrant separating markets by international cable system or destination. This is also because, whilst customers referred to a requirement to access a specific cable for the purpose of resilience, they did not set out why other cables did not provide an alternative route for that purpose. Furthermore, the Authority also considers that, given the number of international cable systems connected to Bahrain, a well-functioning retail and wholesale market should provide sufficient options for customers to ensure resilient routing.

125. Therefore, for the purpose of this Draft Determination, the Authority defines a retail product market encompassing retail international connectivity services covering all technologies, all bandwidths and all international cable systems landing in Bahrain, including both terrestrial and submarine cable systems.

4.1.2 Relevant geographic market

126. Defining geographic markets involves assessing the extent to which competitive conditions and constraints are appreciably different across geographic areas within the Kingdom. As set out in the Competition Guidelines, the Authority takes, as a starting point, that the market is national[50]. This is consistent with the approach taken by the Authority in other market reviews and also consistent with the outcomes of the 2008 SMP Determination[51] and the 2013 Dominance Determination[52], which defined a national market for wholesale international leased lines.

127. The Authority considers that there is no evidence to suggest that the retail market should not be defined on a national basis. Service coverage of retail international connectivity services is national as the fixed infrastructure in Bahrain, offering interconnection with different international cables, is ubiquitous. Furthermore, for the reasons set out above, the Authority has concluded that all international routes out of Bahrain, regardless of the cable system over which those routes are provided, should be included in the same geographic market.

128. For the purpose of this Draft Determination, the Authority therefore defines a national market for retail international connectivity services.

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50 The Authority, Competition Guidelines, Section 2.3.

51 Para 104 defines a retail market international leased lines with para 114 defining the geographic scope of this (and other) market(s) as national.

52 Para 130 defines a national wholesale market for the supply of international capacity from locations within Bahrain.

Q4. Do stakeholders agree with the determination of the relevant retail product and geographic market?

4.2 Identification of the wholesale markets

4.2.1 Relevant product market

129. Having defined the boundaries of the retail market for international connectivity services in the Kingdom, the Authority now goes on to define the boundaries of the relevant wholesale market. In so doing, and as set out in Section 3, the Authority notes that the boundaries of the relevant wholesale market will be limited by the boundaries of the downstream retail market.

130. In the 2013 Dominance Determination, the Authority defined the wholesale market to include wholesale IPLCs (of all bandwidths and regardless of destination) and self-supply of international capacity.

131. Wholesale IPLCs provide other Licensed Operators with end-to-end services that offer dedicated international capacity between the Licensed Operator's POP in Bahrain and a location outside of Bahrain. As with the retail market, wholesale Layer 2/3 services such as international VPN and international Ethernet circuits are also available. As noted in the retail market definition, all of these services are provided over the same underlying infrastructure.

132. As well as purchasing end-to-end wholesale services from other licensees, licensed operators in Bahrain also have the option to self-supply international capacity and this self-supply is included in the relevant product market. This is in keeping with the Authority's general approach to market reviews.[53]

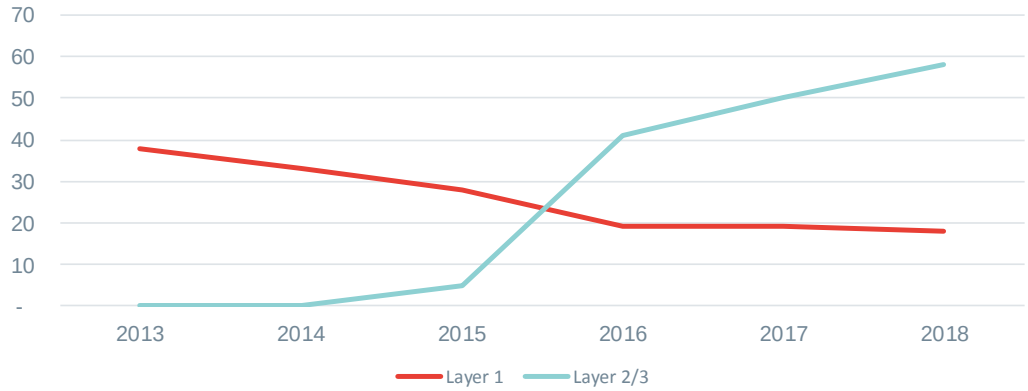
133. Self-supply can be done in one of two ways. Firstly, licensees can self-build international capacity. This has been the case, for example, with a number of licensees building capacity over the GCCIA and KFC and then interconnecting to network operators in Saudi Arabia, for onwards transmission to a global network. Batelco and BIX have also engaged in self-supply, for example, by landing a number of international submarine cables in Bahrain.

134. Secondly, in some instances, this self-build will make use of access to passive or active network infrastructure of other licensees in Bahrain, most notably that of Batelco (now BNET). That is, licensees may (either through using wholesale domestic network access or self-build) use their own network infrastructure up to the cable landing station and then connect through the use of cross connects at the landing station (including, where applicable, transmission over the national part of and international cable system) to the international cable. This has been the case, for example, with providers using Batelco's regulated IFC service to access capacity directly over the Falcon cable.

[53] The inclusion of self-supply in the relevant market impacts, in particular, the competition assessment. The Authority therefore considers that further in Section 6, including setting out how self-supply is measured in this instance.

135. In considering the boundaries of the relevant wholesale market, the Authority takes account of its definition of the related downstream retail market. As such, it considers it is appropriate to include, within the relevant wholesale market, both Layer 1 and Layer 2/3 type wholesale services, of all bandwidths, but excluding services delivered via satellite.

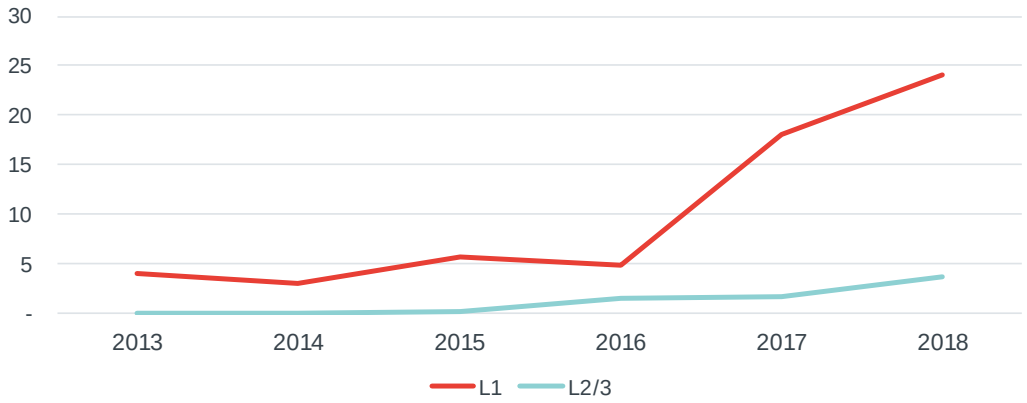
Figure 10: Total wholesale connections



Source: Licensed Operators' response to Article 53 Information Request

136. The chart above illustrates the evolution of the volume of Layer 1 and Layer 2/3 wholesale services sold by Licensees in the Kingdom to other licensees (excluding self-supply). This follows a similar trend to that seen in the retail market, with a decline in the volume of Layer 1 connections, combined with a more significant increase in the volume of Layer 2/3 connections sold.[54] However, considering again, the overall capacity of Layer 1 and 2/3 services shows that capacity has increased regardless of service type. This is shown in Figure 11 below.

Figure 11: Total wholesale capacity (Gbps)



137. Nevertheless, for the reasons set out in the relation to retail services, the Authority preliminarily considers that wholesale international connectivity services of all capacities form part of the same wholesale product market. This is because demand side substitution

[54] The Authority notes that not all licensees were able to provide it with a full data set for wholesale services, meaning that this chart may not be fully reflective of market developments, especially in the first years shown.

to adjacent capacities may be equally possible at the wholesale level as it is at the retail level, while supply side substitution would also be expected to be equally strong.

138. Lastly, in line with its retail market definition, the Authority considers, on the basis of evidence provided by stakeholders to date, that the wholesale product market should also not differentiate between destinations. That is, the Authority considers that it is not necessary to define separate markets for access to specific international cables (whether terrestrial or submarine) landing in Bahrain. The international hubs accessed by global cable systems provide a wholesale supplier of international connectivity from Bahrain with global reach. This enables supply-side substitution of wholesale leased lines between destinations. A hypothetical monopolist supplier of wholesale international leased lines to Frankfurt, for example, could not profitably impose a SSNIP as suppliers of wholesale international leased lines to other destinations could easily substitute supply to Frankfurt.

139. To further understand the substitutability of international cable systems, the Article 53 information request asked licensed operators about the extent to which they distinguish between routes and the basis for any such distinctions. The views expressed to the Authority are summarised in Table 1 below. These responses highlight two mains reasons for why a licensee will choose to use a given cable system out of Bahrain. The first reason is that the Licensed Operator has invested in the cable or is a consortium member of the cable system. This is the case for Batelco who has invested in capacities on the Falcon, GCCIA, GBI, Fog and Falcon cables, and Infonas who uses GCCIA and KFC as it has an IRU on these cables. Secondly, some licensees have noted that certain cable systems are not economically feasible for them to use, given the high costs of accessing those systems. For example, Kalaam, Viva and Zain all note that their use of the GCCIA and KFC cables is as a result of costly access to alternative cable systems.

140. The Authority does not consider that this second factor would be a valid reason to define access to particular cable systems in separate wholesale markets. This is because the Authority has not been presented with any information to suggest that the apparently relatively high cost of accessing certain cable systems is a result of differences in the costs of providing such access and hence that such differences would exist in a well-functioning market. Given the SSNIP test should be conducted on the assumption that prices (including, in this instance, the prices for accessing cable systems) are set at competitive levels, it would not be appropriate to use such differences as actually prevail in reality to define distinct markets by cable system.

Table 1: Supply chain of international connectivity in Bahrain

Licensed Operator	**If any routes are primarily used, please explain why?**

Batelco	*[✂]*
BIX	*[✂]*
Equant	*[✂]*
BT Solutions	*[✂]*
Infonas	*[✂]*
Kalaam and Tawasul	*[✂]*
VIVA	*[✂]*
Zain	*[✂]*

Source: Licensed Operators' response to the Article 53 Information Request

141. From the evidence set out above, the Authority preliminarily concludes that operators equally consider the entire range of international cable systems connected to Bahrain as substitutes. Preferences for some cable systems primarily arise due to bottlenecks Licensees appear to face when seeking to access other cable systems. However, the Authority does not consider such evidence as reason for considering different international cable systems in separate markets, since the assessment of substitutability should be considered where such bottlenecks, if the result of anti-competitive behaviour are removed.

142. For the purpose of this Draft Determination, and on the basis of the evidence received to date, the Authority therefore defines a wholesale product market that includes wholesale Layer 1 and Layer 2/3 international connectivity services and the self-supply of international connectivity. Consistent with the relevant retail product market, the Authority considers that the relevant wholesale product market covers all bandwidths and international connectivity offered over both terrestrial and submarine cable systems landing in Bahrain, but excludes satellite based services.

143. This market covers all elements of the supply chain set out previously by the Authority in Figure 2. One element of this (that for domestic connectivity) is already covered in other markets previously defined by the Authority, with BNET providing regulated domestic connectivity services to other licensees through its RO. However, for a licensee to offer international connectivity services to customers in Bahrain, whether on a retail or wholesale basis, it must have access to both domestic connectivity (i.e., from its customer's POP) and to international bandwidth over one or more of the international routes out of Bahrain. A bottleneck at any point in the value chain which disrupts such access could, therefore, have a significant impact on competition. In line with the modified greenfield approach to regulation, however, the Authority's assessment of the degree to which the market for international connectivity is susceptible to regulation will take into account the impact of existing remedies in the adjacent domestic markets.

4.2.2 Relevant geographic market

144. The Authority takes as a starting point that the wholesale market for international connectivity is national, which is consistent with the 2013 Dominance Determination. The Authority considers that there is no evidence to suggest that wholesale market is not national. As noted in the retail section, the fixed infrastructure in Bahrain which Licensees rely on to interconnect with cable systems is ubiquitous. This means that wholesale international connectivity can be offered at a national level.

145. Thus, given that the wholesale product market is found to mirror that for retail, the Authority defines a national market for wholesale international connectivity services.

Q5. Do stakeholders agree with the determination of the relevant wholesale product and geographic market?

4.3 Preliminary conclusion – Market definition

146. Based on the evidence presented above and the Authority's understanding of the relevant products and services for international connectivity, it preliminary concludes, for the purposes of the Draft Determination, that the boundaries of the relevant markets are as follows:

    a. The retail market for the supply of international connectivity services in the Kingdom of Bahrain, covering international connectivity services, inclusive of all bandwidths, but excluding services provided over satellite infrastructure; and

b. The wholesale market for the supply of international connectivity services in the Kingdom of Bahrain, covering wholesale international connectivity services and self-supply, inclusive of all bandwidths, but excluding services provided over satellite infrastructure.

Q6. In relation to questions 4 and 5, do you specifically agree with the proposed market definitions including international connectivity services provided over terrestrial and submarine cable systems in the same markets?

5 Applying the three criteria test

147. Having identified the markets, the Authority has assessed whether, in its view, these markets remains susceptible to ex ante regulation. This is undertaken based on the so called 'three criteria test'. The application of this test was set out by the Authority in the 2015 SMR and has already been applied in the 2019 Final Determination of Dominance in the Mobile Termination Markets. It is in line with international (e.g. across the European Union[55]) and regional precedence (for example, regulatory authorities in Saudi Arabia[56] and Qatar[57], among others, have applied this test in market reviews). This test aims to identify those markets where ex ante regulation could be necessary. It does this by considering the following three criteria:

    a. Whether there is evidence in the market of high and non-transitory barriers to entry;

    b. Whether there is evidence that the market does not tend towards effective competition within a relevant time horizon (typically the time horizon covered by the market review); and

    c. Whether competition law (or, in the Authority's case, its powers under Article 65 of the Telecommunications Law) are, by themselves, inadequate to address any market failure(s) that could arise in the market under consideration.

148. Any market cumulatively complying with these criteria is then considered as susceptible to ex ante regulation. Only these markets are then considered further in the market review. Any remaining markets are considered prospectively competitive and not susceptible to ex ante regulation and so are not considered further. This is because ex ante regulation can be both intrusive and high cost, considering not only the costs of designing, implementing and enforcing the regulatory measures, but also the potential impact on investment and innovation of measures which may restrict the behaviour of, and ultimately the returns available to, market players. As such, it should only be imposed in circumstances where other forms of intervention (namely ex post intervention) are not appropriate and where the market is likely to remain uncompetitive.

149. The Authority is also aware that ex ante remedies should be put in place as far upstream as possible, in order to resolve any bottlenecks, with remedies further downstream only

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55 See, for example, 2014 Commission Recommendation on relevant product and service markets within the electronic communications sector susceptible to ex ante regulation L 295/79 (see http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32014H0710&from=EN); 2007 Commission Recommendation on relevant product and service markets within the electronic communications sector susceptible to ex ante regulation L 344/65 (see: http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2007:344:0065:0069:en:PDF); 2003 Commission Recommendation of 11 February 2003 on relevant product and service markets within the electronic communications sector susceptible to ex ante regulation (see: http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32003H0311&from=EN)

56 Communications and Information Technology Commission (2017), "Market Definition Designation and Dominance Report".

57 Communication Regulatory Authority of the State of Qatar (2015) "Market Definition and Dominance Designation in Qatar - Market definition and review of Candidate Markets".

introduced if those upstream remedies are unlikely to be sufficient to ensure that the retail market tends towards a competitive outcome, even if it is not competitive today.

150. As set out above, when considering the extent to which the markets for international connectivity (as defined in the previous section) meet the three criteria test, the Authority assumes that current regulatory measures in adjacent markets remain in place. This is because those regulatory measures are not dependent on the findings of this current review. In particular, this means that all downstream licensees (including Batelco) will, regardless of the outcomes of this review, and subject to their eligibility to purchase individual products, continue to have access to the wholesale domestic connectivity products included in the BNET Reference Offer (notably, WDC, OWS and the Exceptional FAS product). However, the Authority assumes that Batelco would no longer be required to offer its IFC service on regulated terms, should it not be found to have a dominant position in the wholesale market for international connectivity services. It, therefore, conducts the three criteria test by assuming initially that this service will not be offered. as part of Batelco's RO.

151. However, it is also the case that regulatory intervention upstream is only warranted in the event that, absent intervention upstream, there are competition problems in downstream retail markets which appear to stem from the lack of wholesale network competition. This is because, in the absence of any market failure at the retail level there would be no basis for intervention in wholesale markets. Therefore, in assessing the need for regulatory intervention (i.e., the extent to which the markets pass the three criteria test), the Authority:

    a. Firstly considers the extent to which the retail market would meet the test, in the absence of intervention in the wholesale market (but taking into account existing remedies in adjacent wholesale markets);

    b. Then also considers whether the retail market would still be susceptible to regulation, in the event that remedies are imposed in the upstream wholesale market; and finally

    c. Considers whether the wholesale market passes the three criteria test.

5.1 Applying the three criteria test to the retail market

152. In this section, the Authority applies the three criteria test to the relevant retail market defined in Section 4, considering both the situation where no remedies are imposed in the upstream market and also, if required (i.e., if there is evidence of market failure), the situation where appropriate remedies are imposed.

5.1.1 Presence of high and non-transitory barriers to entry

153. In the absence of effective access (be it regulated or offered on commercial terms) to all parts of the supply chain, the Authority considers that barriers to entering the retail market for international connectivity services are high.

154. In such a situation, a licensee would need to access capacity on an international cable system, access the landing station / point where that cable terminates in Bahrain and access domestic connectivity to its end customer. Whilst the last of these could be covered through the remedies currently applied on Batelco and BNET in the domestic connectivity market, a party would still need to self-supply the first two elements.

155. To self-supply such international services in Bahrain, a party must hold a valid International Facilities Licence (IFL). Specifically, an IFL authorises the licensee, on a non-exclusive basis, to install, operate and manage its international telecommunications facilities in the territory of the Kingdom of Bahrain (i.e., facilities connecting Bahrain with other countries).

156. Whilst these licensing requirements can place some limitation on entry, the Authority does not consider this to be of a "high and non-transitory" nature. This is because the Authority is not limited in the number of such licences it grants, whilst the fees associated with obtaining such licences are also not significant.[58] The Authority does, however, believe that there are potentially other barriers related to the structure of international connectivity services.

157. In examining these potential structural barriers to entry, the Authority considers it is reasonable to take into account any recent entry, i.e. additional international cable systems being connected to Bahrain. This is because, to the extent that such entry has been successful, it would indicate that any barriers are not significant. In particular, the Authority notes that in the time since the last review, parties have continued laying new terrestrial fibres (and lighting already laid dark fibres), while both the TATA and GBI cables, anticipated at the time of the last review, have been landed in Bahrain and are operational.

158. However, while the TATA and GBI cables have landed in Bahrain, the Authority notes that this has not increased significantly the options available to other parties for self-supplying international connectivity services to retail customers. This is because the GBI cable lands at a Batelco controlled landing station and parties wishing to purchase capacity on GBI must purchase that capacity (at least up to the international boundary) from Batelco. The TATA cable, landed by BIX, is similarly controlled by BIX. This means that now, three out of four submarine cables are controlled by Batelco, with parties wishing to access capacity over those cables having to deal with Batelco in some form.[59] The option to self-supply would be costly absent wholesale regulation as a potential entrant would require access at the POP for international connectivity (e.g. colocation and cross-connection services). These costs are difficult to bypass for a potential entrant looking to match the degree of resilience and redundancy Batelco is able to offer to customers as a result of the number of different cable systems it uses for international connectivity.

159. Furthermore, a party wishing to deploy its own international capacity, completely separately from Batelco, would incur significant upfront costs associated with landing a cable (including, potentially investing in a stake in a new cable route). Given the current levels of underutilisation on existing submarine cable routes this is likely to constitute a significant barrier to entry. This is because an operator with access to underutilised cable capacity can easily undercut the offer of a new cable provider, hence making the significant upfront investment unviable. Furthermore, the existence of significant spare capacity implies that an entrant may not consider there is sufficient demand to viably invest in extra capacity.

160. Despite this, however, and in the absence of any licensees being required to offer wholesale international connectivity services) on regulated terms, the Authority notes that OLOs have,

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[5858] As set out in the Authority's Schedule of Fees Regulation (v12), the initial licence fee for an ISL is BD10,000. The initial licence fee for an IFL is BD20,000.

[59] In one case (FALCON), parties are able to access capacity directly, through purchasing the IFC service included in Bateco's RO. However, in line with the modified greenfield approach, the impact of this remedy is not considered at this stage.

in recent years, expanded their service offering in the retail market for international connectivity services. For example, according to the Article 53 information provided to the Authority, both VIVA and Infonas have, since the time of the last review, started to offer Layer 1 retail services, between them taking close to ***[✂]*** of the retail market (by value) in 2018. Similarly, international carriers holding ISLs in Bahrain also now offer Layer 2/3 international connectivity services, with Equant and Vodafone having both started to offer services. This has resulted in players other than Batelco having, by year end 2018, a total market share of more than ***[✂]*** (by value) in the defined retail market (i.e., covering Layer 1 and Layer 2/3 services), compared to less than 10% in 2013.

161. These entrants have a mix of business models. For example, VIVA and Infonas hold both an IFL and an ISL. In contrast, Vodafone and Equant operate using only an ISL and rely on a combination of wholesale products purchased from licensees in Bahrain and their own global connectivity footprints (offered through their group companies). In effect, the Authority notes that parties such as Vodafone and Equant act as resellers of international capacity from Bahrain and so do not have network equipment within the Kingdom (indeed, these parties are not licensed to operate networks in Bahrain).[60] This means that they do not seek access to individual landing stations to access capacity directly from cable owners in the same way that other parties, holding both an IFL and ISL (such as VIVA) might choose to do.

162. The extent to which this entry will be effective at promoting competition will depend on the terms with which access is offered. This, in turn, is likely to depend on the competitiveness of the wholesale market. The Authority, does, however, consider that wholesale regulation, of access at the POP for international connectivity in particular, would effectively lower the barriers to entry for licensees wishing to self-supply services and so enhance the diversity and utilisation of available capacity, ultimately to the benefit of end users in the Kingdom. Wholesale regulation would encourage entry by ensuring access to all parts of the supply chain for international connectivity at fair, reasonable and non-discriminatory terms. Although some parties have entered the market through self-supply, the Authority notes that this entry has been limited, with a number of concerns raised regarding potential anti-competitive behaviour of those parties owning the cable landing infrastructure, meaning that the extent of retail competition is likely to have been limited.

163. To summarise, therefore, the Authority considers that significant barriers to entry in relation to physical infrastructure exist in the form of:

    a. high up-front costs;

    b. significant demand risks;

    In relation to other forms of entry over existing infrastructure, the main barrier is effective access to bottleneck infrastructure in the international connectivity supply chain.

[60] For example, in a response to a query from the Authority, Equant confirmed that it rents local access circuits from BNET to run between its customers' premises and the Equant POP in Manama. From there, Equant rents wholesale international capacity from various operators.

5.1.2 Whether the market is tending towards competition

164. As set out in the preceding section, some entry into the retail international connectivity market has occurred since the Authority's last market review. However, despite this, the retail market is still concentrated. According to responses to the Article 53 information request, Batelco supplied ***[✂]*** of international connectivity services[61] in 2018, and accounted for ***[✂]*** of revenues from the services. This shows that, despite entry, Batelco continues to have a significant share of the market. Indeed, it also appears that Batelco is able to extract significantly more value from the services it offers than other Licensed Operators. For example, Batelco's average revenue per connection for international connectivity services with a capacity of less than 4 Mbps is around BD ***[✂]*** per annum. The equivalent revenue for ***[✂]*** is BD ***[✂]***.[62]

165. Given this and the concerns investigated by the Authority in recent years concerning alleged anti-competitive behaviour in this market, the Authority does not consider there to be clear evidence that the relevant retail market will become, over the course of this review period, effectively competitive in the absence of sufficient competition or, if required, regulatory intervention, at the wholesale level. Indeed, the forecast information provided by licensees does not suggest that any other licensee will increase significantly its share of the market over the next three years. The Authority also notes that whilst parties such as Equant (i.e. holders of an ISL) have established a notable presence in the market, this is only over a very narrow part of the supply chain which is unlikely to benefit consumers as much as a greater competition for larger parts of the supply chain.

166. Furthermore, as set out above, the Authority is not aware of plans for new cables to be landed in Bahrain. Given the control that Batelco and BIX (for the TATA cable) have over access to international capacity over existing submarine cable routes this means that, in the absence of wholesale access on reasonable terms, the potential for increased competition in the provision of international connectivity services is, currently, limited.

167. Indeed, as a result of this relative lack of competition, the Authority notes that prices for international connectivity services offered to customers in the Kingdom are still significantly above those elsewhere, while a number of stakeholders have also raised concerns with the Authority concerning the relatively high prices. For example, a recent comparison of regional leased line prices by Terabit Consulting[63] shows prices for 10Gbps and 100Gbps connections from Bahrain exceed prices from any other comparator, except Kuwait.

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61 Batelco's share of connections is made up of an ***[✂]*** share of L1 services and a ***[✂]*** share of L2/3 connections.

62 This comparison does not take into account the destination of the leased line but the majority of services from both operators terminate in the GCC and MENA region and the Authority therefore considers the figures broadly comparable.

63 https://www.terabitconsulting.com/mt-content/uploads/2018/01/201704-international-submarine-cables-and-terrestrial-cables-in-the-middle-east.pdf

Figure 12: Supply chain of international connectivity in Bahrain

Source: Terabit Consulting, Strategic Analysis of the International Cable Systems in the GCC Region

168. In addition, a large customer in the market noted, as part of its response to the Authority's Article 53 information request, that prices for comparable services in Europe are 1/70th of the prices it faces in Bahrain. It also set out that prices for links between Europe and North America and Europe and India are, respectively, 1/12th (broadly consistent with the benchmark provided by Terabit Consulting above) and 50% of the prices it pays for links from Bahrain to destinations elsewhere in the GCC. For example, that stakeholder compared monthly prices for a 1Gbps "Ethernet Private Line" between Bahrain and the UAE and a submarine link of similar distance in Europe, stating that the service between Bahrain and the UAE would cost above US$20,000, whilst its equivalent in Europe would be only around $1,000. While the Authority acknowledges that there are significant differences between such routes, especially in terms of scale, which could affect unit costs and hence prices, the difference in prices appears stark when considering the considerably longer distances of such links compared with average distances in the GCC region.

169. Given this, the Authority does not consider that, absent regulation upstream, the downstream market would tend towards effective competition over the course of this market

review period over the full extent of the supply chain. While some entry has occurred, it primarily covers only a very narrow part of the supply chain, whilst barriers to licensees (other than Batelco and BIX) accessing directly connectivity at submarine cable landing stations has led to parties focusing their international connectivity needs over terrestrial links and not having access to the resilience / redundant links sought by a number of retail clients.

170. However, the Authority does considers that, in the presence of effective wholesale competition or regulation, the relevant retail market could be expected to tend toward effective competition. This is because the Authority considers Batelco's role in the wholesale market as the source of the high barriers to entry and limited effective competition in the retail market. If these high barriers to entry are addressed through wholesale regulation, the Authority considers that there should be no additional barriers to effective competition in the market. For example, if the bottlenecks (access at cable landing stations and access to the national parts of submarine cable) are removed, other licensees would be able to access capacity directly on international submarine cables, potentially leading to price reductions for connectivity services. The Authority also expects that there would be no barriers to customers switching between suppliers. Given the nature of this market (with customers typically being large corporates), the degree of market knowledge and technical expertise is likely to be reasonably high, whilst customers will also often tender services, thus enabling multiple licensees to bid to provide those services.

5.1.3 The application of competition law alone or the Authority's powers under Article 65 of the Telecoms Law would not adequately address the market failure(s) concerned

171. The Authority is of the view that absent effective competition (or regulation) in the upstream wholesale market, licensees with market power would have the ability and incentive to:

    a. Engage in price and non-price discriminatory practices for the supply of wholesale inputs; and

    b. Charge excessive prices to end-users and provide services at standards below those which would be expected in a competitive market, to the detriment of those end-users.

172. The Authority does not consider that its powers under A65 of the Law would, alone, adequately address this ability and incentive. Whilst the Authority has undertaken a number of ex post investigations into potential anti-competitive practices in the markets for international connectivity, it notes that those investigations have, necessarily, been time consuming, while it can also be challenging to identify genuinely anti-competitive behaviour. Combined with the Authority's relatively limited ability to place an emergency "cease and desist" order on a party engaging in alleged anti-competitive behaviour, the Authority considers that this means there is a significant risk to the efficient functioning of the market from relying solely on its ex post powers. Indeed, the Authority has, since the last review, relied largely on its ex post powers in this market and despite that, Batelco still enjoys a reasonably high market share, while complaints regarding potential anti-competitive behaviour remain.

173. Furthermore, the Authority notes that in those cases it has examined, it has imposed remedies related to the provision of wholesale services. The design of such remedies is, however, complex and time consuming. Indeed, in other markets the Authority notes that this is a key reason for regulators to apply ex ante regulation – a recognition that having to

design and impose wholesale access obligations, as part of an ex post inquiry, may not provide sufficient and timely support to access seekers who are being affected by the anti-competitive behaviour in question.

174. The Authority considers that with wholesale regulation, the resulting entry and expansion of services provided over existing submarine cable systems that this would enable at all levels of the supply chain would provide a competitive constraint to a licensee's ability to engage in the above activities. Whilst anti-competitive practices could still occur (for example, through margin squeeze between retail and regulated wholesale prices; or through the provision of access on discriminatory non-price terms), the Authority considers that such instances should be reduced, especially given that the Authority would be able to use its powers to enforce fully its ex ante measures. As such, the Authority considers that relying on its powers under Art 65 of the Law could be sufficient to remedy any anti-competitive behaviour that does arise, in a situation where relevant upstream inputs are the subject of ex ante regulation.

5.1.4 Conclusion on the application of the three criteria test to the retail market

175. The Authority notes that, despite some increased competition since the time of the last market review, that there is still some evidence of market failures within the defined retail market for international connectivity. Although providers such as Equant have entered the market, Batelco still controls the landing for three out of four submarine cables coming to the Kingdom, with other IFL holders often struggling to access, on reasonable terms, those landing stations in order to connect directly to international capacity. This has resulted in relatively high costs for international connectivity services offered in Bahrain and a concentration of capacity over terrestrial routes to Saudi Arabia. This has, in turn, limited the ability of licensees to offer, on reasonable terms, the degrees of resilience and redundancy sought by many clients.

176. However, in the light of the entry that has taken place and the number of international cables landing in Bahrain, the Authority considers that addressing issues in the wholesale market is likely to be sufficient to remedy these market failures in the retail market and promote effective competition. In keeping with the view that ex-ante remedies should be the minimum and least interventionist measures necessary to remedy competition problems, the Authority considers that the retail market for international connectivity is not susceptible to ex-ante regulation, as more proportionate regulation to effectively deal with the competition issues identified can be applied further upstream. Specifically, in the presence of sufficient and effective wholesale remedies, the Authority concludes that the retail market may tend towards effective competition and that any concerns around potential anti-competitive behaviour could be dealt with through the Authority's powers under Art 65 of the Law.

177. Given this, the Authority does not continue to consider whether any parties hold a position of SMP in this market.

Q7. Do stakeholders agree with the Authority's assessment that the retail market is not susceptible to ex-ante regulation?

5.2 Applying the three criteria test to the wholesale market

178. The Authority now applies the three criteria test to the relevant wholesale market defined in Section 4: a national wholesale market for international connectivity that includes end-to-end wholesale international connectivity services and self-supply of international connectivity services, excluding those provided over satellite infrastructure.

5.2.1 Presence of high and non-transitory barriers to entry

179. Entry into the wholesale market for international connectivity requires a party to access the supply chain for international connectivity, set out previously in Section 2.4.

180. Currently, access to some elements of the supply chain are regulated. As mentioned in Section 2.4, an access seeker can acquire access to the POP for international connectivity by purchasing the regulated domestic data connectivity services offered in Batelco's and BNET's RO. However, access to other elements of the supply chain is unregulated and there are significant barriers to parties acquiring those elements. In response to the Article 53 Information Request, several Licensed Operators noted that purchasing international capacity on submarine cables is economically infeasible due to high charges for cross connects at landing stations and other domestic elements such as transport across Amwaj. The Authority understands that a potential entrant would have the option to use GCCIA and KFC cables, but given the growing importance of offering diverse routes for redundancy and resiliency reasons, and the importance of these features to end-users of international connectivity, the Authority still considers the cost of access to submarine cables a relevant barrier to entry.

181. It is also unlikely to be feasible for a licensee to land a new international cable in Bahrain over a relatively short period of time. For example, the deployment of the TATA cable was announced in 2009 and finished in 2012. Such cables are typically deployed by international consortia or independent submarine cable operators and involve high fixed and sunk costs. It is also worth noting that they are rarely deployed for connecting to one country alone. That is, their deployment requires extensive coordination between a number of landing parties and the submarine cable operator. Again, the extension of TATA's global submarine cable into the region was a joint effort between TATA Communications and five Middle Eastern landing parties and required, as far is Bahrain is concerned significant public funding to be realised. Indeed, the Authority is not aware of any plans by any licensee to land a new cable in Bahrain.

182. Based on the above, the Authority considers that there are high barriers to entry in the wholesale market for international connectivity services.

5.2.2 A market structure tending towards effective competition within a relevant time horizon

183. Effective competition requires that wholesale suppliers of international connectivity can access the international cable systems required to meet the service quality requirements of its customers. In the current situation, access on reasonable terms for parties who do not, themselves, land cables in Bahrain, appears to be limited to only 2 of the 6 cable routes / systems coming into the Kingdom. This issue will not correct itself over time, as access to the remaining cables is controlled and managed by the cable landing partner, and it is not

possible to have more than one cable landing station for each cable.[64] Indeed, as set out above, the Authority is not aware of any plans for new cables to be landed in Bahrain.

184. Furthermore, the Authority notes that Batelco, the cable landing partner of 3 of the 4 submarine cables, is not incentivised to provide access to other Licensed Operators. The Authority understands that Batelco accrues value from being the only provider of wholesale and retail international connectivity services that is readily able to use all cable systems connected to Bahrain. This is based on revenue information submitted in response to the Article 53 Information Request that evidence Batelco's higher revenue per connection relative to other operators, even when controlling for the capacity of the connection.

185. This is further seen when considering market shares in the relevant wholesale market, as measured through the capacity controlled (i.e. capacity that is either rented or owned) on all international links by licensees in Bahrain.

Figure 13: Controlled (rented, used) international capacity (Gbps)

[✂]

[✂]

[✂]

[✂]

[✂]

[✂]

[✂]

[✂]

Source: Licensed Operators' responses to the Article 53 Information Request

186. This figure shows that the total capacity on all international links has increased significantly since the time of the last market review. However, this increase in capacity has largely been driven by Batelco, with the capacity it controls increasing from *[✂]* Gbps in 2013 to *[✂]* Gbps in 2018 (based on Licensed Operators' responses to the Article 53 Information Request). This is equivalent to a share of *[✂]* of all controlled capacity. The majority of this increase (approx. 2/3) occurred on submarine cable systems.

187. Based on the above, the Authority considers that the wholesale market will not tend to effective competition over the relevant time horizon of this review. While this conclusion differs to that set out in the Authority's previous market review of international connectivity services, the Authority notes that its previous conclusion was predicated on parties having reasonable and open access to international capacity at cable landing stations. However, such access has not been provided, as demonstrated by the complaints received by the Authority since the 2013 Dominance Determination in relation to the provision of cross connects at landing stations controlled by Batelco.

[64] Although additional spurs to a main cable may be laid, such measures also require significant investments into additional submarine cable infrastructure and may be contrary to landing agreements made between submarine cable operators and cable landing parties.

5.2.3 The application of competition law alone or the Authority's powers under Article 65 of the Telecoms Law would not adequately address the market failure(s) concerned

188. The Authority has powers to impose regulation on an ex post basis, following any complaints or own-initiative investigations. However, the Authority considers that ex-post regulation is complex and can take considerable time to impose. In addition, ex-post regulation tends to relate to very specific issues. For example, the dispute between Batelco and Mena Telecom (now part of Viva) following Batelco's refusal to provide access to the Falcon cable and landing station focused on access to the Falcon cable only.

189. The Authority considers that ex-ante regulation will address current issues in the wholesale market more completely and ensure that parties have access to suitable wholesale services, on reasonable terms and conditions, rather than first having to raise concerns regarding potential anti-competitive behaviour and have the Authority reach a conclusion on those concerns.

5.2.4 Conclusion

Based on the above, the Authority considers the wholesale market for international connectivity services as defined in Section 4.2 meets the three criteria test. As such, the Authority considers that this market is susceptible to ex-ante regulation, subject to one or more parties being found to hold a dominant position in the market. The Authority now turns to consider whether this is the case.

Q8. Do stakeholders agree with the Authority's assessment that the wholesale market is susceptible to ex-ante regulation?

6 Assessment of dominance in the relevant wholesale market

190. According to the Telecommunications Law, a dominant position is defined as[65]:

> *"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."*

191. In undertaking an ex ante assessment of market power, the aim is to understand how competitive the market is currently and whether this is likely to evolve within a reasonable timeframe

192. As noted in the Competition Guidelines, [66] market power generally derives from a combination of several factors which, taken in isolation, may not necessarily be determinative. The main factors that the Authority considers when assessing market power are as follows[67]:

    a. market shares and existing competition (including evidence on behaviour and performance);

    b. potential entry and expansion; and

    c. countervailing buyer power.

193. Unlike for the definition of SMP, neither the Act nor the Competition Guidelines define a threshold market share, above which a provider is deemed to hold a dominant position. Nevertheless, the Guidelines do refer to precedent from the EU, according to which there is a presumption of dominance if an entity has a market share above 50%, whilst there being limited precedent for finding an entity to hold a dominant position with a market share of less than 40%.[68] In this market review, therefore, the Authority measures actual market shares against these values, whilst also recognising that market shares alone are not determinative of whether or not an entity has market power.

194. For the purpose of assessing dominance in this market review, the Authority has defined a wholesale market for the supply of international connectivity services in Bahrain, excluding services provided over satellite infrastructure. Under the terms of the Law (specifically, Art 57), any provider found to be dominant in this market will be required to submit a Reference Offer to the Authority for approval. The Authority considers possible remedies it may impose on any dominant providers in Section 6.4 of this annex. It first sets out, below, its assessment of competition in the relevant market.

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[65] see the Authority "Authority's Draft Order on the Wholesale Local Access Service", 12 July 2012 (Ref: MCD/07/12/097), paragraphs 6-29.

[66] The Authority "Competition Guidelines", 18 February 2010, Section 3.

[67] ibid, Section 3.2.

[68] Ibid, Section 3.2, paragraph 96

6.1 Market shares and existing competition

195. In Section 4.2, the Authority defines the wholesale market for international connectivity services to include end-to-end Layer 1 and Layer 2/3 services, and the self-supply of international connectivity. This includes all the elements of the supply chain identified in Section 2.4.

196. However, when measuring market shares, the Authority notes that an estimate of the volume of wholesale IPLCs sold by each licensee is unlikely to characterise the true position of each player in the market. This is for a number of reasons. Firstly, some licensees will self-supply wholesale IPLCs to their own retail businesses, in order for their retail business units to then sell those to end customers. For example, this is likely to be the case with Batelco. Adding each party's supply of self-supplied retail IPLCs to wholesale IPLCs sold to third parties will, therefore, give a better indication of the likely market power of each party at the wholesale level. For example, this will show more clearly the scale of network infrastructure and capacity available to each party.

197. However, in the case of international connectivity services, this could further understate the position of some parties in the market and overstate the position of others. This is because parties may not purchase an end-to-end wholesale IPLC service from another licensee, but still be reliant on wholesale inputs from other licensees. For example, parties may use domestic connectivity services and then connect directly at a Batelco (or other party) landing station in order to access capacity. Providing a retail service in this manner clearly relies on wholesale access to the network of another licensee, but would not appear in the statistics for the sale of wholesale Layer 1 or Layer 2/3 international connectivity services , as the access seeker is not, in this case, purchasing a wholesale end-to-end service.

198. Given this, the Authority considers that the most suitable measure of market share and indeed, of possible market power, is the share of international bandwidth (capacity) controlled by each licensee, whether through ownership or leases from cable / infrastructure operators (lease or IRUs). However, in order to assess the competitive situation from a number of angles, the Authority, in line with the approach considered in the 2013 Determination, considers also market shares based on used capacities.

199. Table 2 summaries the share of capacity controlled by each licensee as at December 2018.

Table 2: Share of capacity controlled on international cable systems (2018)

Licensee	Owned	Rented	Owned and rented
Batelco	[✂]	[✂]	[✂]
BIX	[✂]	[✂]	[✂]
BT Solutions	[✂]	[✂]	[✂]
Equant	[✂]	[✂]	[✂]
Etisalcom	[✂]	[✂]	[✂]
Infonas	[✂]	[✂]	[✂]
Kalaam and Tawasul	[✂]	[✂]	[✂]
Northstar	[✂]	[✂]	[✂]
Nuetel	[✂]	[✂]	[✂]
Rapid Telecom	[✂]	[✂]	[✂]
Viva	[✂]	[✂]	[✂]

Vodafone	[✂]	[✂]	[✂]
Zain	[✂]	[✂]	[✂]
Zain Global	[✂]	[✂]	[✂]
Zajil	[✂]	[✂]	[✂]

Source: Licensed Operators' responses to the Article 53 Information Request

200. This table clearly shows that Batelco continues to hold a high share in this market, with its share of controlled capacity being close to [✂] and with no other provider having more than 10% in the market. This is despite the landing of two additional submarine cables in Bahrain since 2013 (i.e., GBI and TATA). Batelco controls access to three out of four submarine cables landing in Bahrain and hence half of all routes (submarine and terrestrial) to Bahrain, meaning that any party who wishes to be able to offer retail customers high levels of resilience and redundancy must, in practice, deal with Batelco, either through purchasing end to end wholesale international connectivity services from Batelco, or by seeking access at a specific part of the value chain, most notably the submarine cable landing station, from where the access seeker can (subject to parties meeting the necessary licence requirements) connect directly to international cable owners / consortia.

201. The Authority further requested information for years prior to 2018 so that it could assess the development of this market share over time. This is because persistently high market for one party may be more indicative of market power than a short-term, transitory, high market share. That information consists of both, used and controlled capacity. While this information shows there is some degree of variation in controlled capacity over time, Batelco's share of capacity has always remained above 50%. Batelco's market share in relation to used capacity is initially lower (which appears to be the case due to some missing data) but also tends towards and significantly above 50% of the total used capacity in 2016 to 2018. This is shown in the following chart.

Figure 14: Batelco share of used and controlled capacity

[✂]

Source: Licensed Operators' responses to the Article 53 Information Request

Interestingly, however, the share of capacity controlled by Batelco varies significantly according to whether the links in question are terrestrial or submarine. For example, the figure below illustrates the evolution of capacity taken up on terrestrial routes by Batelco, other operators and in total.

Figure 15: Controlled capacity on terrestrial links (Gbps)

[✂]

[✂]

[✂]

[✂]

[✂]

[✂]

[✂]

[✂]

Source: Licensed Operators' responses to the Article 53 Information Request

202. This shows that both Batelco and other licensees have increased capacity on terrestrial routes, with Batelco having been responsible for much of the growth since 2016. As a result, Batelco now controls around half of capacity on terrestrial routes, with all other licensees controlling the other 50%.

203. In contrast, on submarine links, take-up in capacity is almost exclusively driven by Batelco. This is shown in the following chart.

Figure 16: Controlled capacity on submarine links (Gbps)

[✂]

[✂]

[✂]

[✂]

[✂]

[✂]

[✂]

[✂]

Source: Licensed Operators' responses to the Article 53 Information Request

204. Since 2013, submarine cable capacity has outstripped capacity over terrestrial cables with any growth in that capacity being driven by Batelco. This suggests that there is significant demand for submarine cable based international capacity.[69]

205. The analysis of market shares, as set out above, suggests that competition may not be effective in the relevant wholesale market. Indeed, this is even more so the case because Batelco's market share (measured as a share of controlled capacity on international cable links) has been consistently above 50%, whilst as set out further, below, the likelihood of

[69] The Authority considers that it is also possible that Batelco's privileged position on submarine cable routes has supported its expansion of terrestrial capacity, as these submarine routes enable it to offer parties also using terrestrial routes sufficient redundancy.

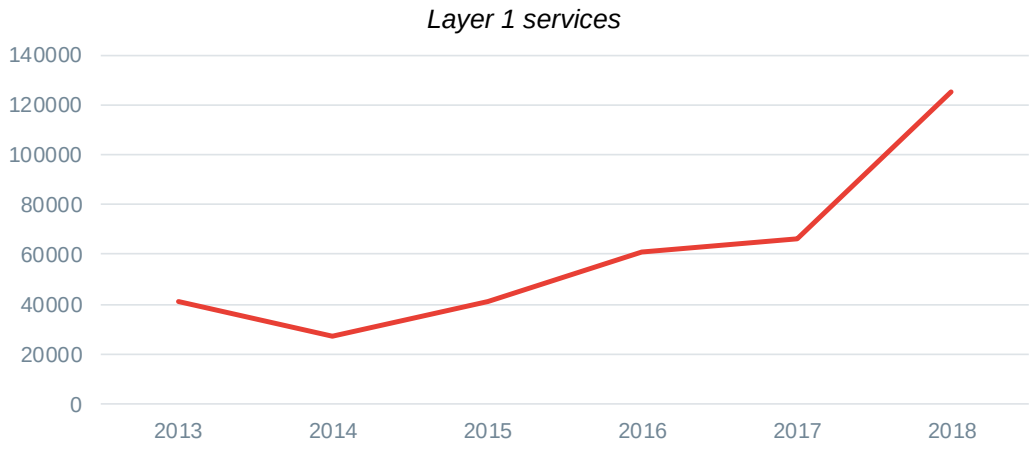
additional international capacity being landed in Bahrain over the short to medium term is limited, given the high fixed costs and long lead times associated with deploying such capacity.

206. While a number of operators have become active in the market over the period of this review, by relying on Batelco's wholesale products, this increase has not been able to significantly affect Batelco's market shares. In fact, the increase in the number of operators may have contributed to individual operators being less effective in competing with Batelco as the average market share of alternative operators has decreased.

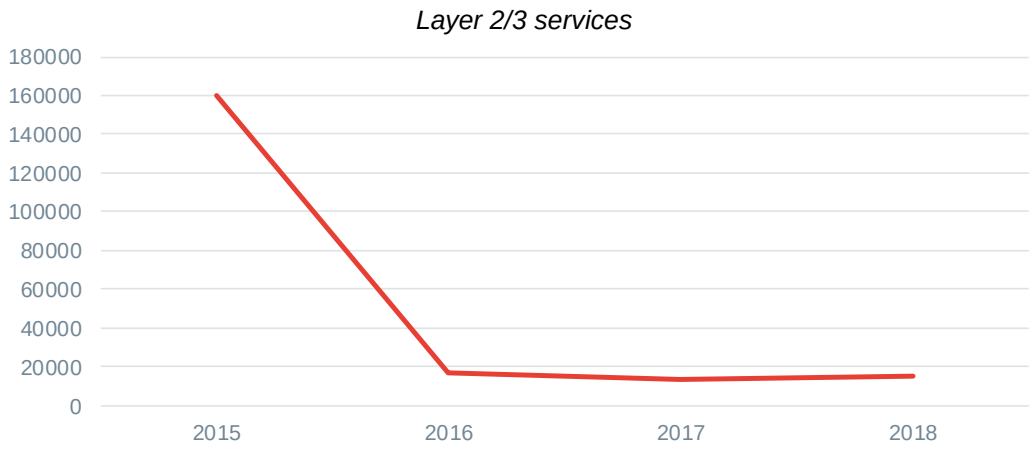
207. Market shares alone are not, however, sufficient to determine whether a provider (Batelco, in this case) holds a dominant position in the relevant market. The Authority has also, therefore, considered performance in this market. One key aspect of market performance is the pricing of services.

208. Analysing the prices for international capacity is challenging, because of the often bespoke and non-public nature of that information. The charts below demonstrates that average wholesale prices, proxied through average revenue per connection, have changed in opposite directions, upward for Layer 1 services and downward for Layer 2 services. It should be noted, however, that the averages are based on relatively few services, less than 80 in total in any of the years considered with the service mix (in terms of capacity) varying significantly.

Figure 17: Average annual wholesale revenues per connection (BD) (all operators)[70]



[70] The Authority notes that the significant drop in Layer2/3 average revenues from 2015 to 2016 are driven by much smaller volumes in 2015 which is likely to imply a significant change in the mix of services sold and may not represent a significant change in price.



Source: Licensed Operators' responses to the Article 53 Information Request

209. The Authority notes, however, that the evolution of revenues per connection does not consider the change in capacity of the underlying services over time. The following charts therefore explore the evolution of revenues per Mbps.

Figure 18: Average annual wholesale revenues per Mbps (BD) (all operators, all products)

Source: Licensed Operators' responses to the Article 53 Information Request

210. The above demonstrates that prices, when controlling for the capacity of services offered, are decreasing over time. However, the Authority notes that some of these movements, for example for Layer 1 in 2017 and 2018, are influenced by an increase in volumes of some comparatively high capacity services, which are typically offered at lower prices per Mbps than lower capacity services. In other words, the movement does not necessarily represent a reduction in per Mbps service prices but a change in the mix of services offered.

211. Finally, the Authority also considers the following comparison of Batelco and OLO wholesale prices for Layer 1 services.

Figure 19: Average annual wholesale revenues per Mbps (BD) (Layer 1 services)[71]

[✂]

[✂]

[✂]

[✂]

[✂]

[✂]

[✂]

[✂]

212. While this comparison does show that Batelco appears able to maintain somewhat higher prices, the Authority notes that this does not provide a clear indication of the effects of market power. It is equally likely that this is the result of comparing relatively few services of different capacities and different destinations.

213. Nevertheless, the Authority considers the evidence on prices presented in relation to the retail market (Section 5.1.2) equally relevant for the wholesale market. That is, with very limited end to end wholesale services being traded and the majority of that market being self-supply (as demonstrated earlier in this Section), higher retail prices charged by a vertically integrated firm can be evidence of the dominance of that firm in the upstream market.

214. In addition to examining market shares and prices, the Authority also has regard to the quality of service available. Responses to the Authority's Request for Information noted the importance of redundancy in the network and resiliency. Infonas's response to the Authority's Request for Information set out that market requirements and over-the-top services are not only contributing to increased demand for capacity, but also increased demand for diversity. Licensed Operators may have options for meetings their needs for international connectivity, however, access to one international cable system is unlikely to provide the quality of service requirements of retail customers. The importance of a diversified network is highlighted by the fact that Batelco, Infonas, Kalaam and Tawasul, and Viva rent or own capacity on at least two international routes. Currently, only Batelco can provide that redundancy.

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[71] The Authority considers for this comparison Layer 1 services only due to Batelco offering only a very small number of lower capacity Layer 2/3 services. However, even for

6.2 Potential entry and expansion

215. The Authority has already set out above, in the context of the three criteria test, that it considers there are significant, non-transitory barriers to new providers entering this market, whilst also that the market is unlikely to tend to competition over the period covered by this market review. This is, in turn, driven by the significant nature of barriers to expansion within this market. The Authority expands on this below, by considering in more detail the nature of barriers to entry and expansion in this market.

216. In so doing, the Authority notes that entry and expansion can be limited for a number of reasons. The Competition Guidelines consider the following:

    a. Access to important assets or resources, including users
    b. Access to finance
    c. Experience of providing the products and services
    d. Vertical integration
    e. Sunk costs
    f. Economies of scale
    g. Economies of scope
    h. Technological advantages or superiority
    i. Reputation for predatory pricing.

217. In line with the observations made in the context of the three criteria test, the Authority considers that access to important assets is a primary obstacle to entry and expansion. To some extent that is the result of Batelco being able to combine a number of elements of the international connectivity supply chain, especially combining access to cable landing stations with access to the actual international cable system. As a result, absent intervention, some areas of the market do not seem accessible to operators other than Batelco. This has resulted in Batelco's high market share of international capacity, as illustrated in the preceding section.

218. The following table discusses other reasons for barriers to entry and expansion.

Table 3: Potential reasons for barriers to entry and expansion

Potential reason	Assessment
Access to finance	The Authority has no conclusive evidence that this is one of the primary reasons why other operators may not be able to invest in additional capacity coming to Bahrain. However, the Authority notes that 3 out of 4 submarine cables were landed by Batelco which could suggest some advantage in this area.
Experience in providing products and services	The Authority does not consider that this is a factor leading to barriers to entry and expansion in this market as a number of operators are present in the market and technologies are commonly used and

	widely established and traded.
Vertical integration	Vertical integration is to some extent observed today, especially in relation to submarine cables and could contribute to barriers to entry and expansion given that retail services by vertically integrated operators will generally be provided over the infrastructure of the vertically integrated entity. Additional investment in international capacity may therefore struggle to attract the demand needed to recover the costs of the investment (see also economies of scale and scope).
Sunk costs	Similar to access to finance, the need for large upfront payments for capital that is sunk after the investment is made may play a role in a market where other than Batelco, only a number of smaller operators are active and hence be a barrier to entry. This is because, a large operator such as Batelco would be able to hold back demand from a new submarine cable hence reducing the ability of that cable to attract a viable share of the market.
Economies of scale and scope	Establishing new cable systems creates a large amount of additional capacity but comes at the expense of significant costs that need to be recovered from customers. Since a significant share of (retail) demand is currently served by Batelco, an alternative operator may be less able to fill the capacity and recover the costs of its infrastructure, thus creating a barrier to entry.
Technological advantages or superiority	The Authority considers that this aspect is not a factor in creating barriers to entry and expansion. As mentioned above, a number of operators are active in the market with technologies widely available and understood.
Reputation for predatory pricing	The Authority is not aware of such issues and considers in light of evidence regarding relatively high prices in Bahrain that this is not a factor contributing to barriers to entry and expansion in this market.

219. The Authority therefore considers that there is unlikely to be sufficient entry and expansion over this review period to counterbalance the position that Batelco has in the market for international connectivity services.

6.3 Countervailing buyer power

220. The Authority considers that there is unlikely to be sufficient countervailing buyer power to prevent Batelco from enjoying a dominant position in the relevant market.

221. The Authority acknowledges that there are relatively few purchasers of wholesale international connectivity services and in some circumstances, this could lead to the creation of buyer power. However, for this to take effect, the buyers must have sufficient bargaining power to offset the market power of the supplier. In addition to being an important consumer of the product in question, for a buyer to have bargaining power, it must:

    a. Have alternative choices for supply and be well informed about those choices;

    b. Be able to switch to alternative sources without incurring significant costs;

    c. Be able to either self-supply the product, or sponsor entry by another supply.[72]

222. For similar reasons to those set out in the preceding section, the Authority does not consider that these criteria are likely to hold. There are significant barriers, both legal and economic, to consumers looking to either self-supply international connectivity or sponsor the entry of another provider. Similarly, given Batelco' position in this market, there are limited other sources of supply for buyers who are looking to negotiate access with Batelco. While buyers could look to use terrestrial capacity, this is unlikely to give them the resilience and redundancy that buyers look for.

6.4 Conclusion for the wholesale market for international connectivity

223. Having considered the development of the market since 2013, the evolution of market shares, evidence on prices and ex-post interventions over the period of this market review, the Authority is of the view that Batelco is dominant in the wholesale market for the supply of international connectivity services.

224. While facing some competition from a number of sources, Batelco has expanded its capacity on submarine cable networks. Alternative operators have expanded their capacity to a much lesser extent, resulting in a decline in their market shares over the course of the later years of this review period.

225. The Authority is particularly of the view that this dominance enjoyed by Batelco is the result of a lack of access that other licensees have to cable landing and submarine infrastructure connected to those stations which are owned by Batelco, with such access being a vital input to the supply chain of international connectivity.

226. The Authority is further of the view that effective competition is unlikely to emerge over a reasonable period of time through potential entry or expansion. This is because of significant lead times and investments required for such entry / expansion to emerge.

227. In line with having found in the previous market review that effective competition in the market for international connectivity is dependent on access to bottleneck facilities in the supply chain for international connectivity services and the competition complaints considered over the period of this market review in this regard, the Authority now preliminarily concludes that the provision of such access is unlikely to emerge without corresponding remedies imposed on the dominant player in the market.

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[72] The Authority's Competition Guidelines, paragraphs 120 – 122.

Q9. Do stakeholders agree with the Authority's assessment of dominance in the wholesale market and its conclusion that Batelco is dominant in that market?

Q10. Do stakeholders agree with the Authority's assessment of the source of that dominance in the form of Batelco's exclusive access to key bottleneck facilities at cable landing stations and the national part of international cable systems?

Q11. Considering the services already available to parties through BNET's Reference Offer, do stakeholders consider there any other bottlenecks in the supply chain in relation to domestic connectivity for the purpose of providing international connectivity services?

7 Final conclusion and proposed remedies

228. Having found Batelco dominant in the market for wholesale international connectivity services, the Authority considers in this section the appropriate ex ante remedies that should be imposed on Batelco for the period of this market review or until notified otherwise.

229. In doing so, the Authority has regard to Article 57 of the Law and Article 132 of the Competition Guidelines. In particular, Article 132 of the Competition Guidelines sets out that the Authority shall seek to identify and define appropriate and proportionate remedies, while Article 57 of the Law sets out the requirements on dominant operators to offer network access on fair, reasonable and non-discriminatory terms and to publish such terms in a Reference Access and Interconnection Offer (RAIO).[73]

230. In considering appropriate remedies, the Authority has provisionally considered and evaluated two measures for enhancing competition in the provision of wholesale international connectivity services.

    a. Firstly, requiring Batelco, as a dominant licensee in the relevant market to provide wholesale access on regulated terms, consistent with the relevant market in which it was found dominant, to end to end international connectivity services; and

    b. Secondly, requiring Batelco, as a dominant licensee in the relevant market, to provide wholesale access, on regulated terms, only to bottleneck infrastructure in the supply chain of international connectivity services. [74]

231. In considering these measures, the Authority has taken into account the possible impact of different remedies on the promotion of effective and sustainable competition in the provision of international connectivity services, the burden the remedy places on the dominant operator and the potential impact on parties' incentives to invest in international connectivity.

7.1 Assessment

232. The market assessment identified that Batelco is dominant in the market for wholesale international connectivity services. While having also found a high degree of concentration in the retail market for international connectivity services, the Authority concluded that the provision of appropriate wholesale services is likely to improve the level of competitiveness in the retail market over a reasonable period of time.

233. Having found dominance in the wholesale market, the law requires that a dominant licensee offers, upon request, access to its telecommunications network on fair and reasonable terms. However, the Law does not specify the exact form that this network access should

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[73] Article 58 of the Law, on tariffs for telecommunications services, sets out specific obligations on parties with SMP in a relevant market. The TRA does not consider this article here, because, consistent with previous market reviews, the Authority considers that this relates to obligations in retail rather than wholesale markets.

[74] The Authority notes that changes to the licensing regime for international connectivity, such as merging the IFL and ISL licence types could potentially also impact competition in the market. However, the Authority does not believe that such changes should be introduced as a remedy to one parties' dominance and as part of a market review. As such, it does not consider, in this document, possible changes to the licensing regime.

take. In the context of this market review, the market where Batelco was found to be dominant is the one for end-to-end wholesale international connectivity services. However, the Authority considers that the primary source of that dominance relates to specific several elements of the supply chain, namely access to cable landing stations and the national part of international cable systems where these are owned/operated by Batelco.

234. In particular, as outlined in Figure 2 earlier in this Annex, the Authority considers that there are five distinct elements of the supply chain that form the end-to end service. However, the Authority is of the view that three of those elements do not represent a bottleneck for the provision of wholesale international connectivity services. This is because they are either subject to a separate access obligation under an adjacent market or are subject to a reasonable degree of competition (and indeed, may also fall outside the jurisdiction of the Authority in some cases). In particular, the Authority notes the following:

    a. National access to the POP for international connectivity typically relates either to:

        i. national infrastructure owned by licensees and used to self-provide an international connectivity service; or

        ii. a national connectivity service (such as WDC) used to provide a connection from a Licensee's national point of presence to a POP for international connectivity.

    Some, but not all, Licensees have access currently to their own infrastructure. However, all Licensees have access, on regulated terms approved by the Authority, to BNET's national data connectivity service, WDC, which enables Licensees to connect between any two locations in Bahrain (except for locations on the island on Amwaj).

    b. That several operators provide connectivity over the international part of connectivity systems connected to Bahrain (i.e., that part beyond Bahrain's territorial boundary). Indeed, many of these providers are independent from Licensees in Bahrain and outside the Authority's jurisdiction. This does, however, provide Licensees in the Kingdom with a choice of parties from which to purchase such connectivity.

    c. As with international cable systems landing in Bahrain, there is also a wide range or providers who offer capacity on the wider international cable systems connected to international cables landing in Bahrain. Again, therefore, purchasing capacity over this wider cable system is not a bottleneck for Licensees in Bahrain.

235. The remaining elements, which in the Authority's view represent bottlenecks in the provision of international connectivity are *access at the POP for international connectivity* and *access to those parts of international connectivity systems landing in Bahrain which fall within Bahraini territory*. Batelco has control over these elements at three (FOG, FLAG and GBI) out of four submarine cable systems landing in Bahrain.

236. Considering now the impact of a remedy of end to end international connectivity services first, the Authority finds:

    a. *Impact on the promotion of effective and sustainable competition in the provision of international connectivity services:* Requiring Batelco, as the dominant licensee, to provide an end to end wholesale international connectivity service on fair and reasonable terms is a viable remedy to improve competition in the sector, as evidenced by the requirement for dominant providers to offer similar end to end

wholesale access services in other markets, such as for domestic data connectivity. An end to end service seems particularly suited to simplify the access to international connectivity services by combining all supply chain elements into a single product. This could help improve the competitive landscape by not only allowing established operators access to a greater set of international routes but also allow new, less established operators access to the international connectivity market. This is because new operators may not have, initially, the means to easily establish access to all elements of the supply chain, hence making it harder to rely on a wholesale product focussed on bottleneck facilities only.

b. *Burden the remedy places on the dominant operator:* A downside of an end to end wholesale international connectivity remedy is the burden it places on the dominant licensee in the form of a wholesale obligation that covers several elements of the international connectivity supply chain that are found to operate competitively and did not contribute to Batelco reaching its dominant position.

c. *Impact on parties' incentives to invest in international connectivity:* The Authority considers that another potential downside of an end to end international connectivity service is that access seekers using such a service are unable to take-up their own capacity on international cable systems. In other words, access to the international cable system is only provided through capacity already obtained by Batelco.

237. Turning now to the bottleneck specific wholesale access remedy, the Authority finds:

a. *Impact on the promotion of effective and sustainable competition in the provision of international connectivity services:* While there is the potential downside of new entrants in the market being deterred if access to international connectivity service is based on accessing individually the different elements of the international connectivity supply chain, the Authority considers this to be of limited importance to establishing greater competition in the market. This is because there are already a number of operators in the sector (see Table 2) who are likely to be comfortable with accessing all elements of the international supply chain. In addition, access to a greater share of the supply chain is likely to improve the ability of access seekers to compete. This is because operators are better able to differentiate their offers from those provided by Batelco then if they had to rely on a wholesale product of Batelco's technical specification. Indeed, the Authority further notes that a number of end to end wholesale international connectivity services are already available on the market, thus meaning that any providers who wish to use such a service are already able to do so.

b. *Burden the remedy places on the dominant operator:* Imposing a remedy focussed on bottleneck facilities alone would also limit the burden imposed on the dominant licensee by limiting the extent of the regulated service. That is, Batelco would be able to continue to offer end to end wholesale services on reasonable commercial terms.

c. *Impact on parties' incentives to invest in international connectivity:* having access to a greater share of the supply chain provides additional incentives to access seekers for investing in international connectivity. While this is unlikely to translate directly into investment in additional cable systems, it is likely to encourage access seekers to invest in their own capacity on submarine cable systems (leases or IRUs). IRUs in particular are long term commitments for capacity on international cable systems that can encourage more extensive competition. This is because,

by obtaining IRUs an operator incurs a regular or upfront fixed costs for a period of several years which implies that the marginal costs, a key driver in setting retail and wholesale end to end international connectivity prices, are lower, improving price based competition. Direct access to the international cable operator also allows access seekers to engage in discussions about their own technical specifications and requirements for international connectivity services. This can improve service / quality based competition by enabling access seekers to offer a more diverse set of products. Implemented appropriately, the Authority is also satisfied that requiring Batelco, as the dominant licensee, to offer, on fair and reasonable terms, access to the bottleneck assets within the supply chain, should not harm its incentives to invest. This is because any regulated charges should be set at a level which will enable Batelco to earn a reasonable return on its investment, taking into account the costs of its investment and its cost of capital.

238. Given the advantages and disadvantages of the two options set out above, the Authority is of the view that the access obligation that shall be imposed on Batelco under Article 57 of the Law and as a result of its dominant position in the relevant market should focus on these parts of the value chain that currently constitute a bottleneck. This is because:

    a. An obligation imposed on Batelco to provide access to the entire value chain would impose regulation on Batelco disproportionate relative to the size of the bottleneck identified by the Authority.

    b. An obligation on Batelco to provide access on regulated (and hence non-discriminatory) terms to the entire value chain may actually limit the range of services available to access seekers and hence consumers in Bahrain and incentives to invest. It may also keep prices for access to capacity on international cable systems at a higher level than when access seekers have direct access to international cable systems.

    c. The provision of an end-to-end service would imply that OLOs have access to a much smaller part of the value chain, which, in the Authority's view, would be detrimental to enhancing competition in the sector at the deepest possible level of the value chain.

7.2 The form of access Batelco must provide

239. Access to the bottleneck segments of the value chain covers a range of different network elements and technical solutions. However, in simple terms, the Authority considers that the access service Batelco could be required to provide covers any network element that is required to enable an access seeker to connect between the point at the POP for international connectivity where a national connectivity service terminates and one of two locations, depending on the ownership of the national part of the international cable system:

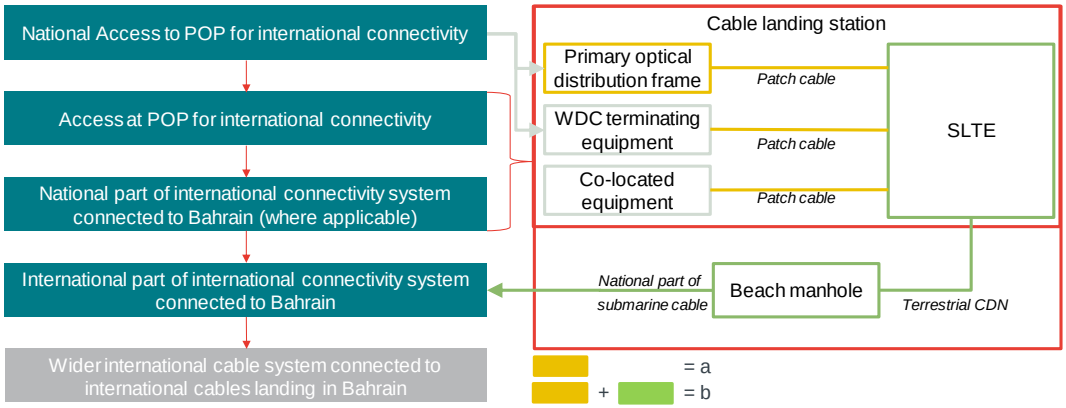
    a. the submarine line terminal equipment (SLTE) at the cable landing station (in situations where the national part of the international cable system is owned by the international cable system operator and that operator is licensed to provide international services and facilities in the Kingdom); or

    b. the point at which the national part of the international cable systems links to the international part of the international cable system (i.e., at the territorial border of

the Kingdom), where that national part of the international cable system is owned by Batelco.

240. The authority notes that the type of connection between these locations may take various forms. That is, the type of termination at the POP for international connectivity may vary as well as the type of connectivity required over the national part of the international connectivity system. This is illustrated below.

Figure 20: Illustrative example of the bottleneck access service



241. However, regardless of whether, in any individual circumstance, the access service is required to terminate on the SLTE or on the territorial boundary of Bahrain, the access service to be provided by Batelco must be seamless, and so must not require an access seeker to purchase any other services or subservices or ancillary services in order for that access seeker to establish, in conjunction with domestic data connectivity, a functioning international connectivity service from a cable owner holding the appropriate licenses required.

242. The Authority expects that this service shall be provided on price terms consistent with the principles set out in Article 57 of the Law. That is, price terms shall reflect the costs incurred in providing the wholesale access to bottleneck facilities (as indicated in Figure 20 above or similar) in line with established principles of cost causality and taking into account the cost of capital. For example, this means that tariffs for access to certain facilities whose costs are driven by capacity should be charged with reference to capacity (i.e. different tariffs for 1Mbps, 10Mbps, 1Gbps, etc.). Other facilities whose costs are not driven by capacity should be charged differently, e.g. a fixed charge per access. This may imply that, if the costs of providing access to different facilities with different cost drivers are material, that tariffs for these services shall include two parts; i.e. a fixed fee component (e.g. for access to a cross connect) and a capacity based component (e.g. for transmission of capacity on the SLTE and national part of the international cable system).

7.3 Conclusion on remedies

243. The Authority considers provisionally that, as an appropriate remedy to address the competition issues faced in the market for international connectivity services, Batelco should be required to provide wholesale access to its bottleneck infrastructure as set out in Section 7.2. The Authority considers that this is reasonable at this point in time as these services can be introduced within a reasonably short period of time and so lead to enhanced

competition across the full value chain of services, and improved consumer outcomes, within the timeframe of this market review, consistent with the overall objectives of NTP4.

244. Considering the findings of the SMR referred to at the start of this Annex, this remedy will address the concerns raised in relation to (a) the *Cost of national connectivity to and cross-connects at submarine cable landing stations*. This is because the remedy requires Batelco to provide access to bottlenecks including cross connects on fair and reasonable terms. The Authority considers that this also remedies point (b) from the SMR, namely the c*onstraints created by the licensing regime on the ability of cable operators to sell international capacity directly to other parties in Bahrain.* This is because the remedy imposes on Batelco the requirement to provide access on a regulated basis to the national segments of the international cable systems controlled by Batelco.

245. In accordance with Article 5 of the Authority's Access Regulation, the Authority therefore requires Batelco to, within two months of the date of this Determination, to submit a draft service description, including price and non-price terms for this service to the Authority for its approval. In accordance with the provisions of Article 57 of the Law, the Authority expects, in order to be able to approve the terms on which this service is offered, that Batelco's proposals in relation to terms, conditions and prices for this service shall be fully documented and justified. Finally, to the extent that such services overlap with services that Batelco is already required, as a result of ex-post inquiries, to provide, the Authority expects that such services will be replaced with those developed as a result of the remedies prescribed by this Determination.

246. Should Batelco not comply fully with this obligation, or should this remedy not lead to the removal of the bottlenecks identified through this market review, the Authority shall, in conjunction with policymakers, consider what other forms of action could be taken to further enhance the supply of international connectivity services in the Kingdom.

Q12. Do stakeholders agree with the Authority's final conclusions and the remedies it proposes be imposed on Batelco?

Annex 2 - List of questions

1. Do stakeholders agree with the retail and wholesale services considered relevant for this international connectivity market review?
2. Do stakeholders agree with the elements and description of the international connectivity supply chain. Do you consider any elements missing or elements being defined to broadly?
3. Are there any further aspects of the international connectivity systems described in Section 2.5 that the Authority should be taking into account in its assessment, or any other connectivity systems that the Authority should consider?
4. Do stakeholders agree with the determination of the relevant retail product and geographic market?
5. Do stakeholders agree with the determination of the relevant wholesale product and geographic market?
6. In relation to questions 4 and 5, do you specifically agree with the proposed market definitions including international connectivity services provided over terrestrial and submarine cable systems in the same markets?
7. Do stakeholders agree with the Authority's assessment that the retail market is not susceptible to ex-ante regulation?
8. Do stakeholders agree with the Authority's assessment that the wholesale market is susceptible to ex-ante regulation?
9. Do stakeholders agree with the Authority's assessment of dominance in the wholesale market and its conclusion that Batelco is dominant in that market?
10. Do stakeholders agree with the Authority's assessment of the source of that dominance in the form of Batelco's exclusive access to key bottleneck facilities at cable landing stations and the national part of international cable systems?
11. Considering the services already available to parties through BNET's Reference Offer, do stakeholders consider there any other bottlenecks in the supply chain in relation to domestic connectivity for the purpose of providing international connectivity services?
12. Do stakeholders agree with the Authority's final conclusions and the remedies it proposes be imposed on Batelco?